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AND SOCIAL WELFARE:
A THEORY OF EMPTY VOTING
AND HIDDEN OWNERSHIP

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Abstract

The prevailing view among many economists is that derivatives markets simply enable financial markets to incorporate information better and faster. Under this view, increasing the size of derivatives markets only increases the efficiency of financial markets.

We present formal economic analysis that contradicts this view. Derivatives allow investors to hold economic interests in a corporation without owning voting rights, or vice versa. This

leads to both empty voters—investors whose voting rights in a corporation exceed their economic interests—and hidden owners—investors whose economic interests exceed their voting rights. We show how, when financial markets are opaque, empty voting and hidden ownership can render financial markets unpredictable, unstable, and inefficient. By contrast, we show that when financial markets are transparent, empty voting and hidden ownership have dramatically different effects. They cause financial markets to follow predictable patterns, encourage stable outcomes, and can improve efficiency. Our analysis lends insight into the operation of securities markets in general and derivatives markets in particular. It provides a new justification for a robust mandatory disclosure regime and facilitates analysis of proposed substantive securities regulations.

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I. INTRODUCTION

In late 2005, Henderson Land made an offer to acquire all outstanding shares of Henderson Investments, its partially owned subsidiary, for a substantial premium.[1] Henderson Investments' minority shareholders reacted favorably.[2] The transaction appeared highly likely to be consummated,[3] and the market price of Henderson Investments shares rose 44% in response.[4]

However, in January 2006, market watchers were surprised to discover that Henderson Investments' minority shareholders had cast enough votes against the deal to prevent it from happening.[5] According to reports, a lone hedge fund surreptitiously acquired enough Henderson Investments shares to block the transaction.[6]

But what took this development from merely surprising to outright troubling was that this same hedge fund had also placed large bets that the price of Henderson Investments' shares would drop.[7] As a result, even though this hedge fund held a significant percentage of Henderson Investments' shares, it stood to profit if Henderson Investments decreased in value. In other words, the hedge fund voted to block the takeover because the takeover was

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[1] The exact offer was a share swap, in which shareholders of Henderson Investments could exchange 2.5 shares of Henderson Investments for 1 share of Henderson Land. *Business Brief—Henderson Land Development Co.: Bid Is Sweetened for Proposal to Take Investment Unit Private*, WALL ST. J., Dec. 13, 2005. We are grateful to Henry T.C. Hu and Bernard Black for unearthing this example, as well as many others that we discuss in this paper. *See* Henry T.C. Hu & Bernard Black, *Equity and Debt Decoupling and Empty Voting II: Importance and Extensions*, 156 U. PA. L. REV. 625, 661 tbl.1 (2008).
[2] Florian Gimbel & Francesco Guerrera, *Henderson Stock Lending Fears—Unusually Heavy Volumes of Borrowed Shares Ahead of Decisive Vote—Critics Claim the Practice Is a Form of Market Abuse*, FIN. TIMES ASIA, Feb. 15, 2006, at 15.
[3] *Id.*
[4] *Compare* Jonathan Li, *UPDATE: HK Henderson Investments Holders Reject 2nd Buyout Bid*, DOW JONES NEWSWIRE, Jan. 20, 2006, *with* Henderson Investments Ltd., Joint Announcement—Proposed Privatisation of the Company by Henderson Land Development Company Limited ("HLD") by way of a Scheme of Arrangement (the "Privatisation Proposal") (Supplemental) (Nov. 18, 2005).
[5] *Hong Kong Shares Fall 0.1 Percent, But China-Related Issues Continue To Do Well*, ASSOC. PRESS FIN. WIRE, Jan. 20, 2006.
[6] Alex F. McMillian, *Hong Kong Studying Voting Issues on Borrowed Shares,* INFOVEST21 NEWS, Jan. 25, 2006.
[7] *See id.*

good for Henderson Investments and the hedge fund wanted to make Henderson Investments *less* valuable.

This incident is an example of empty voting.[8] Empty voting arises when an actor's voting interest in a corporation is larger than her economic interest.[9] It is an instance of a larger phenomenon, known as decoupling, in which the legal control rights and the economic ownership rights that accompany share ownership are separated from each other. Decoupling raises a host of issues because it turns the conventional logic for granting shareholders voting rights—their economic interest in the corporation—on its head.

Most decoupling incidents have involved the use of financial derivatives,[10] and the explosive growth of these financial derivatives has spurred a surge in empty voting and other decoupling behavior.[11] Decoupling incidents have cast a tremendous shadow over world financial markets: They have produced front-page headlines,[12] produced cloak-and-dagger clandestine corporate takeover attempts,[13] and led to the ousters of CEOs at major banks.[14]

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[8] *See* Henry T.C. Hu & Bernard Black, *The New Vote Buying: Empty Voting and Hidden (Morphable) Ownership*, 79 S. CAL. L. REV. 811, 815 (2006); *see also* Shaun Martin & Frank Partnoy, *Encumbered Shares*, 2005 U. ILL. L. REV. 775, 787-804 (2005) (referring to this phenomenon as encumbered shares).

[9] Hu & Black, *supra* note 8, at 815.

[10] Derivatives are securities whose value depends on (i.e., is derived from) other securities. FRANK PARTNOY, F.I.A.S.C.O.: BLOOD IN THE WATER ON WALL STREET 27 (1997). For more detailed discussion and examples, see Part II.B–C, *infra*.

[11] *See* Hu & Black, *supra* note 1, at 629, 661 tbl.1; *see also* Part II.B–C, *infra*.

[12] *See, e.g.*, Simon Targett, *Top Pension Funds Plan Security Lending Code*, FIN. TIMES (LONDON), June 14, 2004, at 1; John Waples, *Ritblat Hits at CSFB and Laxey for Vote "Conspiracy,"* FIN. TIMES (LONDON), July 21, 2002 at 1.

[13] *See, e.g.,* Katharina Bart, *Backlash for Swiss Bank—Politicians Consider ZKB Privatization Amid Options Dispute*, WALL ST. J., Sept. 18, 2007; Haig Simonian, *Victory Jitters Strike Swiss Industrialists—Loopholes in Disclosure Rules Allow Austrian Corporate Raider To Build Large Stakes in Its Targets by Stealth*, FIN. TIMES, Mar. 19, 2007, at 24; *Swiss Reinsurer Rejects Takeover Bid by French*, INT'L HERALD TRIB., Feb. 20, 2007; Adam Jones & Haig Simonian, *Converium Accepts New Scor Bid*, FIN. TIMES, May 11, 2007 at 17.

[14] *See*, *e.g.*, Haig Simonian, *ZKB Head Quits in Row on Disclosure*, FIN. TIMES, May 8, 2007, at 24. They have also led to police raids. *See, e.g.*, *ZKB, Deutsche Offices Raided by Swiss Watchdog*, REUTERS, May 24, 2007, *available at* http://www.reuters.com/article/2007/05/24/idUSL2463554520070524.

Regulators from numerous jurisdictions, including the United States,[15] Canada,[16] the United Kingdom,[17] Switzerland,[18] Hong Kong,[19] Australia,[20] Italy,[21] and the Netherlands,[22] have scrambled to respond to the growing wave of decoupling transactions. Unfortunately, these responses have largely been reactive measures taken in response to specific incidents.[23]

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[15] *See, e.g.*, Order Approving Proposed NYSE Rule 452, Release No. 34-60215, File No. SR-NYSE-2006-92 (July 1, 2009), *available at* http://www.sec.gov/rules/sro/nyse/2010/34-62874.pdf (restricting brokers' ability to vote shares they do not beneficially own) ; Press Release, CtW Investment Group, CtW Investment Group Commends the SEC for Approving Changes to Broker Vote Rule in Director Elections (July 1, 2009), *available at* http://www.ctwinvestmentgroup.com/index.php?id=119; WILSON SONSINI GOODRICH & ROSATI, 2009 PROXY SEASON UPDATE, Apr. 16, 2009, http://www.wsgr.com/wsgr/Display.aspx?SectionName=publications/PDFSearc h/wsgralert_proxy_season.htm ("Institutional investors have urged the SEC to adopt the proposed amendment, citing . . . the CVS Caremark 2007 director election and Washington Mutual 2008 director election . . . .").

[16] *See, e.g.*, Janet McFarland, *Hedge Funds Praise OSC Ruling on Sears*, THE GLOBE AND MAIL (CANADA), Sept. 15, 2006.

[17] *See, e.g.*, WEIL, GOTSHAL & MANGES, WEIL BRIEFING: UK TAKEOVERS (Mar. 2010), www.weil.com/files/Publication/ (discussing new disclosure rules for cash-settled derivatives and other changes to the UK's disclosure regime).

[18] *See, e.g.*, Alexander Vogel & Andrea Sieber, Meyerlustenberger Lachenal, *Disclosure Rules in Switzerland: Recent Developments*, US.PRACTICALLAW.COM/ (discussing 2007 and 2011 amendments expanding Swiss disclosure laws in response to decoupling incidents); Dieter Gericke & Emanuel Dettwiler, Homburger, *Disclosure of Shareholdings: Tightened Requirements*, HOMBURGER BULLETIN (Nov. 30, 2007), homburger.ch/fileadmin/publications/HBDISCSH_01.pdf (discussing 2007 amendments).

[19] *See, e.g.*, SLAUGHTER AND MAY, A GUIDE TO THE SECURITIES AND FUTURES ORDINANCE 17-19 (Apr. 2003), www.slaughterandmay.com/media/ (discussing new Hong Kong regulatory rules requiring increased disclosure of derivatives positions); William Mackesy, Deacons, *Hong Kong: Disclosure of Interests in Securities of Hong Kong Listed Companies: SFC Consultation Conclusions*, HG.ORG, Oct. 24, 2005, www.hg.org/articles/article_850.html (discussing further expansions enacted in 2005)

[20] *See, e.g.*, Glencore Int'l AG v Takeovers Panel (2006) 151 F.C.R. 277 (reviewing the Australian takeover panel's response to Glencore's decoupling behavior); Corporations Amendment (Takeovers) Act, 2007, No. 64, 2007 (Austl.) (changing the law in response to the court's ruling).

[21] *See, e.g., Italy's Consob Rules IFIL Not Obliged to Bid for Fiat, But Swap Deal Probed*, AFX NEWS, FEB. 8, 2006 (discussing a decoupling incident that sparked investigations by Italy's securities regulator and Italian prosecutors).

[22] *See, e.g.*, Jan Willem Van der Staay, *Public Takeovers in the Netherlands*, CORP. FIN., Jan. 1, 2000, at 83 (discussing decoupling incidents and Dutch regulators' responses).

[23] *See, e.g.*, Order Approving Proposed NYSE Rule 452, *supra* note 15 (responding to incidents at Caremark and Washington Mutual); Corporations Amendment (Takeovers) Act, 2007, No. 64, 2007 (Austl.) (changing Australian

A more proactive response to decoupling would be desirable, but one must be careful not to throw the baby out with the bathwater: although some decoupling incidents are quite troubling, there are many instances in which decoupling is socially beneficial. For example, if managers misbehave, observant shareholders can use decoupling strategies to acquire additional voting interests more cheaply than would otherwise be possible.[24] These shareholders can then use their additional (empty) voting power to pressure management to improve their behavior.[25] Other examples abound.[26]

Thus, for regulators to respond to decoupling appropriately, they need a framework that allows them to predict when decoupling will be good for society and when it will be detrimental. The framework that economists typically use to analyze markets and how those markets will react to changes in legal rules or other factors, is based on a concept known as competitive equilibrium. Competitive equilibrium chiefly focuses on prices. The heart of the competitive equilibrium framework is the notion that, if each actor acts to maximize her own well-being, there is a set of prices at which the market will clear. In other words, at the prices in question, everyone who wishes to purchase or sell items may do so.

As we show in this Article, the competitive equilibrium framework breaks down when applied to markets that include choices beyond the decision to buy or sell goods. For example, corporate shareholders decide, by vote, which directors to elect and whether to approve certain corporate actions. We term the right to make such non-purchase decisions "control rights." As we will demonstrate, once control rights are introduced into a market, competitive equilibria lose their normative appeal and may fail to exist altogether. This problem gets much worse when control rights with respect to a corporation can be bought and sold independently of economic interests in that corporation. When corporate ownership and control can be fully decoupled—as

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securities law in response to a decoupling incident involving Glencore and Austral Coal).

[24] *See, e.g., Laxey Gets Digging in Switzerland*, FT.COM, Nov. 2, 2007 at 9:26, ftalphaville.ft.com/blog/2007/11/02/8581/laxey-gets-digging-in-switzerland.

[25] *See id.*

[26] See discussion in Part II.E, *infra*.

modern derivatives markets increasingly ensure—competitive equilibria essentially never exist.

Our results offer insight into the implications of sizable derivatives markets. The prevailing view among many economists is that derivatives markets simply enable the markets for other securities to incorporate information better and faster. Under this view, increasing the size of derivatives markets can only increase the efficiency of financial markets.

Our formal analysis contradicts this view. We illustrate how large derivative markets can make financial markets unpredictable, unstable, and inefficient. Thus, large derivatives markets can have major and, potentially (but not exclusively), negative consequences for financial markets.

As an alternative to the concept of competitive equilibria, we propose a different concept, which we term the "core outcome."[27] The hallmark of a core outcome is that no group of actors can change their behavior in a way that makes the group as a whole better off.[28] We demonstrate that core outcomes have numerous attractive properties that make the core outcome framework well-suited for analyzing markets that include control rights: In contrast to competitive equilibria, core outcomes always exist and are always efficient. Core outcomes can always be achieved through voluntary trading among self-interested actors. Core outcomes are stable; once the market reaches a core outcome, no group of actors has both the capability and the desire to move the market to a different outcome. The core outcome framework enables us to predict how all significant control rights will be exercised.[29] Finally, the core outcome framework predicts what types of portfolios actors will hold. These predicted portfolios closely resemble the diversified portfolios that most investors hold

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[27] This concept is adapted from a concept in cooperative game theory known as the core. *See* ROGER B. MYERSON, GAME THEORY: ANALYSIS OF CONFLICT 417-482 (1991).

[28] This is equivalent to showing that there is no way to make every group member better off. Essentially, if the group's winners gain more than its losers lose, they could (over-)compensate the losers for their losses and remain winners. *See* APPENDIX, *infra* note 33, at 1.2.

[29] This will not be true if there are different decisions that give the same social utility, but it is unlikely that this would be the case with respect to any two significant decisions.

in the real world.[30] Even when ownership and control are fully decoupled, all of these features persist.

We show that knowledge of all major market participants' economic and control rights is both sufficient and essential for achieving a core outcome.[31] When this information is widely available, our model suggests that decoupling should occur only in those situations in which it is socially beneficial, and not in more troubling cases such as the Henderson Investments incident described above. However, private parties left to their own devices will generally not have the proper incentives to ensure that this information is provided to the market. Our analysis therefore provides a strong justification for a comprehensive, effective mandatory disclosure regime for securities markets, including derivatives markets.[32]

Finally, the core outcome framework also allows us to evaluate substantive regulatory interventions that have been proposed to address decoupling. It supports some of these interventions, and counsels caution with respect to others. It suggests that substantive rules to address decoupling may be particularly useful when disclosure is imperfect and when other regulations effectively align individual firms' interests with the larger social good.

Part II of this Article provides the necessary background on decoupling. It begins by explaining how derivatives enable investors to separate economic and voting interests. It then discusses how rapid derivatives market growth has fueled decoupling behavior, undermining the traditional justification for shareholders' control rights and challenging securities regulators. Part III explains the concept of competitive equilibrium and catalogs its failings in the context of markets with control rights. It

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[30] *See, e.g.*, William N. Goetzmann & Alok Kumar, *Equity Portfolio Diversification*, 12 REV. FIN. 433, 435-38 (2008) (discussing portfolio diversification by U.S. investors).

[31] *See* APPENDIX, *infra* note 33, at 1.2.

[32] The lack of disclosure and the opacity of many decoupling transactions has also been a significant problem for regulators, who have struggled to get a clear picture of how different actors currently employ decoupling strategies in the marketplace. *See, e.g.*, EUROPEAN SECURITIES AND MARKET AUTHORITY, CALL FOR EVIDENCE ON EMPTY VOTING (Sept 14., 2011), *available at* esma.europa.eu/consultation/ (asking market participants to provide information about empty voting incidents).

also illustrates how derivatives markets greatly exacerbate these failings. Part IV presents the core outcome, which we propose as an alternative to the competitive equilibrium, and demonstrates its key properties. Part V explores the policy implications of the core outcome analytical framework for several areas of interest, including derivatives markets and securities regulation. Throughout the Article, we include citations to a mathematical appendix that contains formal proofs of our results.[33]

II. THE CLASSICAL THEORY AND THE MODERN WORLD

A. *The Classical Theory*

The interests of shareholders are central to U.S. corporate law. Corporate managers generally have fiduciary duties to shareholders,[34] and only to shareholders.[35] Managers are overseen by the corporation's board of directors,[36] which is elected by the corporation's shareholders[37] and is thus accountable to them.[38] Like managers, directors are legally obligated to further shareholders' interests.[39] In addition, certain major corporate actions, such as liquidations,[40] large asset sales,[41] and mergers[42] must be approved by the shareholders directly.

It is not immediately obvious why shareholder interests deserve so much attention.[43] Shareholders are not the only parties affected by the corporation's activities; its choices can have serious

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[33] *See* JORDAN M. BARRY ET AL., MATHEMATICAL APPENDIX, *at* faculty-gsb. stanford.edu/hatfield/documents/EVMathematicalAppendix.pdf [hereinafter Appendix].

[34] Dodge v. Ford Motor Co., 170 N.W. 668 (Mich. 1919).

[35] *Id.*; *see also* N.Y. Bus. Corp. Law § 717(b); 15 Pa. Cons. Stat. § 1717; STEPHEN M. BAINBRIDGE, CORPORATION LAW AND ECONOMICS 410-17 (2002) (discussing same).

[36] BAINBRIDGE, *supra* note 35, at 192-93.

[37] *See, e.g.*, Del. Code Ann. tit. 8, § 211(b) (2011).

[38] BAINBRIDGE, *supra* note 35, at 192-93.

[39] *Dodge*, 170 N.W. at 672.

[40] *See, e.g.*, Del. Code Ann. tit. 8, § 275(b) (2011).

[41] *See, e.g.*, Del Code Ann. tit. 8 § 271(a) (2011).

[42] *See, e.g.*, Del Code Ann. tit. 8 § 251(c) (2011).

[43] *See* Edwin M. Epstein, *The "Good Company," Rhetoric or Reality? Corporate Social Responsibility and Business Ethics Redux*, 44 AM. BUS. L.J. 207, 212-13 (2007). Some other countries' laws place relatively less importance on shareholders' interests. *See* Terrence L. Blackburn, *The Societas Europea: The Evolving European Corporation Statute*, 61 FORDHAM L. REV. 695, 744-52 (1993).

effects on the welfare of its employees,[44] its creditors,[45] its customers,[46] and society at large.[47] Why should the interests of the shareholders be paramount?

The classic justification for shareholder control rights, and their centrality in corporate law more generally, stems from shareholders' economic interest in the corporation. Shareholders, by virtue of their share ownership, are entitled to whatever profits remain after the corporation satisfies its other obligations.[48] As the residual claimants of the firm's assets,[49] they are, in a sense, the "owners" of the firm; they ultimately reap the benefits, or bear the costs, of any change in the firm's value. Accordingly, shareholders want to maximize the corporation's value,[50] and making their interests central encourages managers to do just that.[51] A long line of legal and economic scholarship supports and reinforces this view.[52] This whole theoretical structure rests on the correspondence between shareholders' economic interests and their voting interests.[53]

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[44] BAINBRIDGE, *supra* note 35, at 466.

[45] *See* Sudheer Chava et al., *Managerial Agency and Bond Covenants*, 23 REV. FIN. STUD. 1120 (2009) (considering how corporate activities affect bondholders and responses to this dynamic).

[46] *See* Shawn L. Berman et al., *Does Stakeholder Orientation Matter? The Relationship Between Stakeholder Management Models and Firm Financial Performance*, 42 ACAD. MGMT. J. 488, 490 (1999).

[47] *See* E. Merrick Dodd, Jr., *For Whom Are Corporate Managers Trustees?*, 45 HARV. L. REV. 1145 (1932); E. Merrick Dodd, Jr., *Is Effective Enforcement of the Fiduciary Duties of Corporate Managers Practicable?*, 2 U. CHI. L. REV. 194 (1935).

[48] BAINBRIDGE, *supra* note 35, at 469-70; FRANK H. EASTERBROOK & DANIEL R. FISCHEL, THE ECONOMIC STRUCTURE OF CORPORATE LAW 66-72 (1991).

[49] This assumes that the corporation is not in bankruptcy. In such instances, the creditors' interests become paramount. BAINBRIDGE, *supra* note 35, at 431.

[50] BAINBRIDGE, *supra* note 35, at 469 n.16.

[51] Some have questioned whether it would be better to prioritize only the interests of some shareholders, such as long-term owners. *See, e.g.*, Lynne Dallas, *Short-Termism, the Financial Crisis, and Corporate Governance*, 37 J. CORP. L. 264 (2011).

[52] *See, e.g.*, Bernard Black & Reinier Kraakman, *A Self-Enforcing Model of Corporate Law*, 109 HARV. L. REV. 1911, 1945-46 (1996); Frank H. Easterbrook & Daniel R. Fischel, *Voting in Corporate Law*, 26 J.L. & ECON. 395 (1983); Sanford J. Grossman & Oliver D. Hart, *One Share-One Vote and the Market for Corporate Control*, 20 J. FIN. ECON. 175 (1988); Milton Harris & Artur Raviv, *Corporate Governance: Voting Rights and Majority Rules*, 20 J. FIN. ECON. 203 (1988).

[53] *See* Martin & Partnoy, *supra* note 8, at 788.

B. *Decoupling and Derivatives: The Small Picture*

However, in the last few decades there has been a quiet but dramatic increase in the frequency with which shareholders hold economic interests and control interests of differing sizes. Economic ownership and control rights have become increasingly decoupled from each other. This trend has been driven by rapid growth in derivatives markets.

A derivative is a security whose value derives from the value of another security or securities.[54] This abstract concept can be easily understood through a simple example. Consider a contract that provides for the sale of a specified quantity of something—a bag of potatoes, a barrel of wheat, a ton of coal, etc.—at a particular price on a set day in the future. Such a contract is known as a futures contract[55] and the item being sold is termed the underlying asset, or simply the underlying.[56] The value of the futures contract depends on the value of the underlying.[57] If the underlying is a security—such as a share of Microsoft stock— then the futures contract is a derivative.[58]

For example, consider a futures contract that provided for the sale of one share of Microsoft stock three months from now at a sale price of $10. Since Microsoft stock trades freely in public markets, the value of that futures contract depends on the value of Microsoft stock. Three months from now, if shares of Microsoft stock are being bought and sold for $14, a contract to buy a share for only $10 is a valuable asset. The stock purchaser would pay $10 for stock that she could immediately sell for $14. On the other hand, if Microsoft stock is trading at $6 per share, the obligation to buy at $10 is a costly liability.[59] The stock purchaser would be

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[54] PARTNOY, *supra* note 10, at 27 (1997). This second security is known as the underlying.

[55] Depending on the specifics, such a contract may be a similar derivative known as a forward contract. The differences between forward and futures contracts are generally irrelevant for our purposes. We refer to such contracts as futures contracts because we believe that readers often find that terminology more intuitive.

[56] *See Underlying Asset*, INVESTOPEDIA.COM, investopedia.com/terms/u/underlying-asset.asp.

[57] *Id.*

[58] *Id.*

[59] Or, alternatively, the right to sell Microsoft at $10 is quite valuable.

paying $10 for something that she could easily buy for only $6.[60] Thus, the value of the futures contract depends on the value of Microsoft stock; the futures contract's value derives from Microsoft stock's value.

Now suppose that Alice has ten shares of Microsoft stock, currently worth a total of $100. Alice then enters into a futures contract with Bob. Pursuant to that contract, Bob agrees to buy ten shares of Microsoft stock from Alice in three months for a total price of $100. Consider what happens to Alice if the price of Microsoft stock increases from $10 a share to $20 a share. Her Microsoft holdings will become more valuable; their worth will increase from $100 to $200. However, Alice will not benefit; pursuant to the terms of their contract, she will still have to sell her shares to Bob for $100. Similarly, if the price of Microsoft shares drops from $10 to $5, Alice will not be hurt because she will still get to sell her shares to Bob for $100. As long as Alice and Bob honor their contract, Alice has no economic interest in Microsoft stock and she will not care what happens to Microsoft's value.

But while Alice has no economic interest in her ten Microsoft shares, she remains the legal owner of those shares for the next three months. Until then, she retains all legal rights of share ownership, including the right to vote those shares. Because Alice's vote is detached from any economic interest in Microsoft stock, she does not care about Microsoft's value; her vote is truly "empty."

Moreover, Alice can enter into a futures contract with Bob even if she does not own ten shares of Microsoft stock. From the seller's perspective, a futures contract is just an obligation to deliver the underlying security at some specified point in the future. So long as the seller acquires that security before she is obligated to deliver it to the buyer, all will be well. In such a scenario, the seller is not indifferent to price changes in the underlying security, as Alice was above. In these circumstances, the seller has a *negative* economic interest; she actively wants the security to decrease in value.

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[60] Equivalently, she must pay $10 for something that has an objective value of only $6.

The logic behind this result is that, in order to meet her obligations under the futures contract, the seller must deliver the underlying security to the buyer. To do that, she herself must first acquire the underlying security, which generally means going out into the market and purchasing that security. Thus, the cost to the seller of fulfilling the contract is the market price of the underlying security.[61] Accordingly, the lower the underlying security's market price, the less it will cost the seller to fulfill her obligations and the better off she will be.[62]

An example helps illustrate this point.[63] Suppose that Alice initially owns five shares of Microsoft stock, each worth $10, and agrees to sell Bob ten shares of Microsoft stock in three months, for $100. If the value of a share of Microsoft stock increases from $10 to $15, the value of Alice's original five shares of Microsoft stock increases from $50 to $75, a gain of $25. However, the value of the shares that Alice must deliver to Bob under the futures contract increases from $100 to $150, a gain of $50. Since Alice's obligations under the contract have increased by $50 while the value of her holdings has only increased by $25, she is $25 worse off.

On the other hand, consider Alice's position if the value of a share of Microsoft stock declines to $5. The five Microsoft shares that Alice owns will drop in value from $50 to $25, a loss of $25. However, the value of the shares that Alice must deliver under her contract with Bob will drop from $100 to $50. Thus, Alice is now better off; although the value of her holdings decreased by $25, the cost of fulfilling her contractual obligations to Bob decreased by an even larger amount ($50).

This example demonstrates how, even though Alice is a Microsoft shareholder, she now has a *negative* economic interest in

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[61] This is true even if the seller already owns the security, because, absent her contractual obligation to give the security to the buyer, the seller could sell that security for its market price. *Cf.* HAL R. VARIAN, INTERMEDIATE MICROECONOMICS: A MODERN APPROACH 318 (4th ed. 1996) (discussing opportunity cost).

[62] For cash-settled futures contracts, the payment that the seller receives from the buyer increases as the value of the security decreases. Thus, the seller's economic interest is the same in both cases. *See* Part II.C, *infra*.

[63] This example assumes that the futures contract is settled in kind, but the analysis is analogous for a cash-settled futures contract. *See* Part II.C, *infra*.

Microsoft. In other words, Alice actively hopes that the shares will drop in value. Despite this, Alice still owns Microsoft shares, and remains entitled to vote in Microsoft's corporate elections. Given Alice's incentives, she should consistently vote against Microsoft's interests—to the chagrin of Microsoft's other shareholders.[64]

When an actor's control rights exceed her economic rights, such as Alice's do in the examples above, that actor is termed an empty voter.[65] Similarly, the act of exercising those control rights is referred to as empty voting.[66] Empty voting derives its name from the fact that, because the voter has less of an economic stake in the corporation—she has less "skin in the game," so to speak— her vote has been emptied of the economic consequences it might have for her.[67]

Thus far we have focused on Alice; what of Bob's position? Once the futures contract is made, Bob has an economic interest in Microsoft shares, but not a voting interest: Under the terms of the contract, he will receive Microsoft shares.[68] In either instance, if the value of Microsoft changes, Bob will reap the benefit or bear the loss. But, until the end of the contract, Bob will not actually own any shares in Microsoft.[69] Thus, in counterpoint to Alice, Bob's economic interest in Microsoft stock exceeds his voting interest.

When a person's economic rights exceed his control rights, such as Bob's do in the examples above, it is referred to as hidden ownership.[70] Public disclosures by key actors, such as large shareholders,[71] institutional investors,[72] and corporate insiders[73] are

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[64] *Cf.* BAINBRIDGE, *supra* note 35, at 469 n.16 (noting that shareholders generally share the desire to maximize firm value).

[65] Hu & Black, *supra* note 8, at 815; *see also* Martin & Partnoy, *supra* note 8, at 780 (using the term "encumbered shares").

[66] Hu & Black, *supra* note 8, at 815.

[67] *Id.* To be clear, it may not be emptied of all of its economic consequences. Alternatively, if she has a negative economic interest in the corporation, her vote still holds economic consequences, but they run in the opposite direction of what one would ordinarily expect.

[68] If the contract is cash-settled, he may receive a cash payment of equal value. *See* Part II.C, *infra*.

[69] If the contract is cash-settled, Bob may never own any Microsoft shares. *See* Part II.C, *infra*.

[70] Hu & Black, *supra* note 8, at 815.

[71] *See, e.g.*, SECURITIES AND EXCHANGE COMM'N, SCHEDULE 13D, *available at* secfile.net/forms/sched13d.pdf (for investors who own 5% or more of a class of

fundamental to modern securities laws worldwide.[74] However, many of these disclosure obligations are triggered by actors amassing a particular degree of voting power.[75] Accordingly, economic interests such as Bob's often do not trigger disclosure obligations and thus are hidden from public view.

If a hidden owner can easily acquire or control a voting interest proportional to his economic interest, then his interest is also morphable, as it may "morph" into an interest with both economic and voting rights.[76] For example, suppose Bob and Alice enter into a futures contract under which Bob will purchase all of Alice's Microsoft shares for a particular price on a particular date. Alice informally agrees that, until the transaction closes, she will vote the shares in accordance with Bob's preferences.[77] Bob's position would constitute hidden and morphable ownership.[78]

C. *Decoupling and Derivatives: The Big Picture*

The examples above provide clear illustrations of how economic and control rights may be decoupled, but they are by no means the only ways. Modern finance offers a multitude of ways for an investor to hold divergent interests with respect to the economics and control of a corporation: She can engage in short

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registered equities with voting rights); SECURITIES AND EXCHANGE COMM'N, SCHEDULE 13G, *available at* secfile.net/forms/sched13g.pdf (abbreviated disclosure form for similar).

[72] *See, e.g.*, SECURITIES AND EXCHANGE COMM'N, FORM 13F, *available at* sec.gov/about/forms/form13f.pdf (for institutional investment managers with $100 million or more in specified assets under management).

[73] *See, e.g.*, Robert A. Friedel & Andrew L. Romberger, Pepper Hamilton LLP, *Expedited Disclosure of Insider Trnsactions Under Section 16*, CORPORATE AND SECURITIES LAW UPDATE (Aug. 28, 2002), *available at* pepperlaw.com (discussing disclosure rules applicable to directors, executive officers, and other insiders).

[74] *See* Stephen Bainbridge, *Mandatory Disclosure and Securities Regulation: A Behavioral Analysis*, PROFESSORBAINBRIDGE.COM, Jan. 29, 2010 ("Mandatory disclosure is a—maybe *the*—defining characteristic of U.S. securities regulation.").

[75] *Cf.* Hu & Black, *supra* note 8, at 866 tbl.3 (illustrating the different interests that trigger filing obligations under various U.S. disclosure laws).

[76] *Id.* at 815-16.

[77] Note that Alice would be likely to agree to this because she has no economic interest in Microsoft. She therefore only cares about votes by Microsoft shareholders to the extent they affect other interests she may have. *See* notes 104105, *infra* and accompanying text.

[78] Hu & Black, *supra* note 8, at 815-16. Note that Alice would be an empty voter. *Id.*

sales.[79] She could purchase or sell call or put options on the company's stock.[80] She could purchase or sell credit default swaps on the company's debt.[81] The list goes on.[82] These scenarios vary significantly,[83] but they all arise through the use of derivatives.[84]

For many years, the derivatives market was quite small compared to the public market for stocks. As a result, it was generally too expensive for major shareholders to acquire derivatives positions sizable enough to enable large-scale decoupling.[85] However, over the past few decades, the size of derivative markets has grown explosively.[86] This has made decoupling an increasingly common problem.

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[79] An investor who sells short borrows a security, then sells it. The investor later purchases an identical security to give back to the lender. The investor profits if the price of the security drops after she sells it. *See Short Selling*, INVESTOPEDIA.COM.

[80] The buyer of a call (put) option receives the right, but not the obligation, to buy (sell) a specified quantity of another security on a particular date at a specified price, known as the strike price. If the strike price is lower (higher) than the market price for the underlying security, the option can be quite valuable. Fischer Black & Myron Scholes, *The Pricing of Options and Corporate Liabilities*, 81 J. POL. ECON. 637 (1973); *see also* Martin & Partnoy, *supra* note 8, at 789.

[81] The buyer of a credit default swap receives a payment from the seller if a particular borrower fails to make payments on a specified debt obligation. It resembles an insurance policy against default by the borrower. Since buyers only receive payment if the borrower defaults, the value of the credit default swap closely (and inversely) depends on the value of the borrower's debt and equity. *See* FRANK PARTNOY, INFECTIOUS GREED: HOW DECEIT AND RISK CORRUPTED THE FINANCIAL MARKETS 372-73 (2009).

[82] *See* Martin & Partnoy, *supra* note 8, at 789-92 (collecting examples).

[83] *See id.* (discussing the incentives of shareholders with varied derivatives holdings).

[84] To be clear, we do not mean to imply that similar decoupling scenarios cannot arise without the use of derivatives. *See* Joseph Bankman & Ian Ayres, Substitutes For Insider Trading, Stanford Law and Economics Olin Working Paper No.214, Yale Law and Economics Research Paper No. 252 (April 2001), *available at* ssrn.com (discussing connections between certain firms' securities that investors can utilize); Hu & Black, *supra* note 8, at 844-45 (similar). Our point is simply that derivatives offer many opportunities for decoupling. They make decoupling far cheaper and easier to accomplish, and therefore much more likely to take place. Even decoupling strategies that do not require derivatives—such as a shareholder acquiring a large stake in the stock of a competitor whose shares increase in value whenever the first company's value decreases—are much easier and cheaper to execute by using derivatives. *Id.* at 844-45.

[85] *Cf.* PARTNOY, *supra* note 81, at 250-54 (discussing the difficulty of finding counterparties for sufficiently large derivatives transactions).

[86] Derivatives often allow parties to hedge risk at lower cost than would otherwise be possible. They also can allow parties to speculate or avoid regulations or taxes. The relative size of these motivators in growing the market

For example, take 1985, the year that the swaps and derivatives dealers formed ISDA,[87] their industry trade association.[88] At that time, the size of the swaps market was estimated to be approximately $100 billion.[89] While clearly considerable, this paled in comparison to the $2.1 trillion U.S. market for public traded equities.[90]

Since then, derivatives markets have become so large that it is difficult to conceptualize how big they are.[91] In June 2011, the size of the global derivatives market was estimated at over $700 trillion.[92] This is approximately a dozen times larger than the peak equity value of all publicly traded companies in the world.[93] This is nearly 50 times the economic output of the United States[94]—and almost nine times the economic output of the entire world—that year.[95]

The tremendous growth of derivatives markets has led to a surge in decoupling incidents. Professors Hu and Black, who have been at the forefront of decoupling scholarship, have catalogued significant decoupling incidents stretching back over two decades.[96] They found five times as many examples from 2000–

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is a matter of debate. *See id.* at 4-5; Victor Fleischer, *Regulatory Arbitrage*, 89 TEX. L. REV. 227, 229-30. (2010-2011).

[87] ISDA stands for the International Swaps Dealers Association. PARTNOY, *supra* note 81, at 45.

[88] *Id.*

[89] *Id.* The numbers quoted herein are notional amounts, which is, roughly, the amount of money at stake in the contract. Typically, this will be much larger than the amount of money that changes hands in the course of the contract. *See id.* at 148-49.

[90] This number comes from the USDVAL variable in the CRSP database for December 31, 1985.

[91] To be clear, much of the derivatives market is not directly related to corporate equities or debt. *See* PARTNOY, *supra* note 81, at 3-5. Nonetheless, the point remains that markets for derivatives, including those related to firms, have become much larger.

[92] BANK FOR INTERNATIONAL SETTLEMENTS, OTC DERIVATIVES MARKET ACTIVITY IN THE FIRST HALF OF 2011 (Nov. 2011), *available at* www.bis.org/publ/otc_hy1111.pdf.

[93] WORLD FEDERATION OF EXCHANGES, 2010 WFE MARKET HIGHLIGHTS (2011), *available at* world-exchanges.org/focus/.

[94] Statista.com, *United States Annual GDP 1990-2011*, www.statista.com/ statistics/188105/annual-gdp-of-the-united-states-since-1990/ (identifying U.S. GDP as $15.094 trillion).

[95] CENTRAL INTELLIGENCE AGENCY, WORLD FACTBOOK (2012), *available at* cia.gov/library/publications/the-world-factbook/ (identifying 2011 world GDP as $78.95 trillion).

[96] *See* Hu & Black, *supra* note 1, at 661 tbl.1 (collecting examples).

2003 as from 1995–1999,[97] and fifteen times as many from 2004–2006.[98] Since derivatives markets show few signs of slowing their growth,[99] let alone shrinking, decoupling seems likely to be an increasingly frequent and important occurrence.

There are two additional features of derivatives markets that increase decoupling and which deserve special mention. First, most derivatives are entered into "over the counter." In other words, an investor who wants to acquire a derivative position goes to an investment bank or similar entity and privately negotiates a contract. The investment bank itself generally does not want the risk that comes with the contract they have entered into; usually, the bank's goal is simply to earn a profit by charging the investor a fee to enter into the transaction. Thus, the bank typically finds a way to hedge its risk under the contract. These hedging transactions frequently render the investor a hidden and morphable owner and the bank an empty voter.

For example, suppose that an investor wants to enter into a derivative that gives her the same opportunity to profit as owning Microsoft stock.[100] Essentially, the bank would make payments to the investor whenever Microsoft issues a dividend or its stock increases in value.[101] To eliminate this liability, the bank might purchase shares of Microsoft stock. Then, if Microsoft stock increases in value, the bank's obligation to make payments to the investor will be completely offset by the increase in the value of the bank's Microsoft stock.[102] Similarly, any losses the bank would experience from a drop in the value of Microsoft stock will

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[97] *See id.*

[98] *See id.*

[99] In the first half of 2011, it grew by an estimated 18%. BANK FOR INTERNATIONAL SETTLEMENTS, *supra* note 92, at 1.

[100] Such contracts are commonly referred to as swaps or contracts for difference. These derivatives because sometimes receive more favorable tax treatment or regulatory treatment than stock does than buying stock directly. Fleischer, *supra* note 86, at 247-48.

[101] Simultaneously, the investor would make payments to the bank whenever Microsoft stock decreases in value.

[102] If Microsoft stock's value increases by $10, the share of Microsoft stock in the bank's portfolio will be worth $10 more. However, under the swap agreement, the bank must pay the investor $10. The additional asset and liability net out to zero.

be exactly offset by payments that the bank receives from the investor.[103]

The bank holds Microsoft shares, which give it control rights, but it has no economic interest in Microsoft. It is an empty voter. The investor has an economic interest in Microsoft, but no control rights, making it a hidden owner. And, since the investment bank has no economic interest in Microsoft, but does have an interest in its relationship with its client the investor, the bank may well be willing to vote its shares according to the investor's wishes.[104] Thus, the investor's hidden ownership is likely to be morphable as well.[105]

This example leads us into the second feature of derivatives markets. Our previous examples involve the physical exchange of the underlying securities; at the end of the day,[106] Alice must actually give Bob shares of Microsoft stock. These types of derivatives are known as physically settled, because the underlying physically changes hands.

Many derivatives, like the example above, do not fit this mold. The underlying never changes hands; instead, the parties simply make cash payments to each other that simulate the economic effects of buying and selling the underlying. Such derivatives are termed cash-settled. Because no physical securities actually change hands, cash-settled futures contracts do not require either contracting party to ever own the underlying security. All it takes to create a derivative is for two parties to agree to create it. This means that there is no upper bound on how large derivative

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[103] If Microsoft stock's value falls by $10, the investor must pay the bank $10. However, the bank's Microsoft stock will be worth $10 less. Again, the additional liability and asset cancel out.

[104] The bank may have other interests that offset this in particular cases. For example, Microsoft may also be a client of the bank, and Microsoft management might want the bank to vote its shares in the opposite way that the investor does. *See BNS Post Says U.S. Hedge Fund Looks to Block Sears Deal*, CANADA STOCKWATCH, Apr. 10, 2006 (describing a similar situation in which Scotiabank voted in accordance with the interests of its client, Sears Holdings, instead of its other client, the hedge fund Pershing Square).

[105] Alternatively, since the bank has already accomplished its goal of earning fees from arranging the transaction, it will likely be willing to unwind the transaction, cancelling the contract and selling its Microsoft shares to the investor at the market price. Then the investor would be entitled to vote by virtue of her share ownership.

[106] More specifically, three months.

markets can become. And as derivative markets grow, decoupling becomes ever cheaper and more commonplace.

D. *The Problems of Decoupling*

This growth in decoupling raises several potential problems. First, recall that the classical theory postulated that giving shareholders control rights promoted efficient results. This conclusion was built on the correspondence between shareholders' economic interests and control rights. Under this framework, any divergence between these interests undermines the standard justification for shareholder voting. The larger the divergence, the worse the theory predicts that outcomes will be. A negative correspondence between economic and voting interests should lead corporations to actively squander resources and destroy as much value as possible—a terrible outcome for society.

The direct correspondence between shareholders' economic and control rights is important for a second reason as well.[107] As mentioned previously, disclosure rules are fundamental to modern securities laws worldwide.[108] However, the triggers for these disclosure obligations vary. Some are based on economic ownership.[109] Others focus on the degree of voting power that an actor controls.[110]

Once decoupling is permitted, it becomes much easier for an investor to structure her holdings in a way that circumvents regulation.[111] This is true with respect to both the ownership thresholds that trigger public filings[112] and with respect to the

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[107] We assume, in this discussion, that mandatory disclosure of large ownership stakes is socially beneficial. Some commentators have argued to the contrary. *See* Frank H. Easterbrook & Daniel R. Fischel, *The Proper Role of a Target's Management in Responding to a Tender Offer*, 94 HARV. L. REV. 1161 (1981); Alan Schwartz, *Search Theory and the Tender Offer Auction*, 2 J.L. ECON. & ORG. 229 (1986). We revisit this question in Part II.E, *infra*.

[108] *See* Part II.B, *supra*.

[109] *See* Hu & Black, *supra* note 8, at 839-40 (discussing examples from Italy and Australia).

[110] *Id.* at 836 (discussing examples from New Zealand).

[111] *See generally* Jordan M. Barry, *On Regulatory Arbitrage*, 89 TEXAS LAW REVIEW SEE ALSO 69 (2011); Fleischer, *supra* note 86, at 229.

[112] Disclosure regimes sometimes fail to require disclosure for functionally equivalent holdings. *See GPG Bid for Rubicon Hits a Snag*, THE DOMINION POST (WELLINGTON), Sept. 9, 2002 (discussing whether investor Perry's cash-settled derivatives positions triggered disclosure obligations under New Zealand

interests that those filings must detail.[113]   In one instance, a telecommunications minister allegedly used hidden ownership to maintain a secret 25% stake in a multibillion-dollar telecommunications company he was charged with regulating.[114]

The more that investors can custom-tailor their holdings, the easier it is for them to exploit any gaps in the regulatory net. This increases the pressure on regulators to construct a regulatory net with fewer and smaller gaps.[115]   Even if regulators succeed, more investors will be burdened by regulation, which itself has costs.[116]

Finally, there is also a potential fairness issue. Anecdotal evidence surrounding decoupling strategies frequently links these strategies with hedge funds and extremely wealthy individual investors.[117]   Since most investors are not extremely wealthy and cannot invest in hedge funds, they do not have the same access to decoupling strategies. This is particularly troubling if decoupling strategies confer an advantage over other strategies.[118]

Switzerland recently provided a number of dramatic examples that illustrate all of these points.[119]   In 2007, several investors shocked the market by announcing that they held large ownership stakes in several major Swiss public companies.[120]

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law); Hu & Black, *supra* note 8, at 818 (discussing same); *id.* at 866 tbl.3 (illustrating variance among the interests triggering U.S. disclosure obligations).

[113] *See* Hu & Black, *supra* note 8, at 866 tbl.3 (illustrating variance among the interests that must be disclosed under various U.S. disclosure laws).

[114] *See, e.g.*, Geoffrey T. Smith, *Russian Minister Laundered Money to Buy Mobile Operator*, CELLULAR-NEWS, May 23, 2005; *Government Minister May Be Secret Telecoms Fund Investor*, CELLULAR-NEWS, Jan. 29, 2006.

[115] *See generally* Fleischer, *supra* note 86; Frank Partnoy, *Financial Derivatives and the Costs of Regulatory Arbitrage*, 22 J. CORP. L. 211 (1997).

[116] *See* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 18 (1960) (discussing the costs of regulation).

[117] *See* Hu & Black, *supra* note 1, at 661 tbl.1 (collecting examples).

[118] Presumably, those actors who use decoupling strategies believe them to confer an advantage or they would not use them.

[119] *See* Hu & Black, *supra* note 8, at 655-59.

[120] These companies included Sulzer AG, a Swiss engineering firm; Ascom, an electronics company; Unaxis, a technology company; Saurer, a machinery maker; Implenia, a construction group; and Converium, an insurance company. In January 2007, before these takeover attempts were announced, these companies had a combined value of several billion dollars.

These previously undisclosed ownership stakes ranged from 20%[121] to a jaw-dropping 68%.[122]

These announcements were so surprising because Swiss law required public disclosures by any shareholders with a 5% or larger stake in a Swiss public company.[123] At the time, the 5% threshold counted an investor's share ownership as well as certain derivatives, but not others.[124] These acquirers avoided Swiss securities law disclosure requirements by constructing their ownership stakes out of derivatives that did not count toward the 5% threshold.[125]

Who were these various surreptitious acquirers? At the center of these transactions were a few very wealthy individuals, their investment vehicles, and a hedge fund.[126]

These events prompted significant responses from regulators and market participants. Two large banks, Zurcher Kantonalbank (ZKB) and Deutsche Bank, were heavily involved in arranging some of the derivatives that acquirers used to build their ownership.[127] Swiss police raided both banks' offices.[128] ZKB's

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[121] Chris Flood, *Dexia 'Hidden Jewel' Highlighted*, FIN. TIMES, Jan. 19, 2007, available at ft.com/intl/ (discussing Victory Industrial's stake in Ascom).

[122] Hu & Black, *supra* note 8, at 657 (discussing Victory Industrial's stake in Unaxis, later renamed OC Oerlikon).

[123] *Id.* at 655; Federal Act on Stock Exchanges and Securities Trading [SESTA] (Switz.), Mar. 24, 1995, SR 954.1, art. 20, para. 1.

[124] More specifically, they included call options on Swiss corporate stock, but not cash-settled futures, swaps, or similar derivatives. *See* Hu & Black, *supra* note 8, at 655; Ordinance of the Swiss Federal Banking Commission on Stock Exchanges and Securities Trading [SESTO-SFBC] (Switz.), Jun. 25, 1997, art. 13, para. 1; Ordinance of the Swiss Financial Market Supervisory Authority on Stock Exchanges and Securities Trading [SESTO-FINMA] (Switz.), Oct. 25, 2008, art. 15, para 1; Federal Act on Stock Exchanges and Securities Trading [SESTA], *supra* note 123, art. 20, para. 2.

[125] *See* Simonian, *supra* note 13. Many of these transactions were later unwound so that the acquirer held the shares directly. See discussion in Part II.C, *supra*.

[126] Key players in these various takeover attempts included Viktor Vekselburg, a billionaire Russian oligarch, and his company Renova (Sulzer); multi-millionaires Georg Stumpf and Ronny Pecik, their company Victory Holdings, and its subsidiaries (Ascom, Saurer, Sulzer, and Unaxis); billionaire Martin Ebner and his company Patinex (Converium); and hedge fund Laxey Partners (Unaxis and Implenia). *See* Carl Mortished, *Swiss Investigate Vekselberg Firm Over Stake-Building in Engineer*, THE TIMES (LONDON), April 27, 2007. Jones & Simonian, *supra* note 13; Simonian, *supra* note 13; Waples, *supra* note 12.

[127] *See* Mortished, *supra* note 126.

CEO and several of its other high-ranking executives resigned or were fired, and the bank changed its policy with respect to such transactions.[129]

Swiss regulators promptly expanded the securities used in calculating an investor's ownership to include a wider range of derivatives.[130] The Swiss Parliament reduced the disclosure threshold from 5% to 3% and expanded the class of derivatives that trigger disclosure even further.[131] These actions tightened the regulatory net, making it harder to evade the disclosure regime. However, commentators have noted that these measures do not address all gaps.[132] And, by requiring more investors to file disclosures, these changes impose additional recordkeeping costs on investors as a class, including those who will never attempt a takeover.

It bears emphasis that Switzerland is one of the world's largest financial centers. The market value of traded shares in Swiss public stock markets is approximately $1.2 trillion.[133] Further, Switzerland's securities laws have much in common with those of other major financial centers, including the United States and the European Union.[134] Similar decoupling episodes can happen in other places—and increasingly have.[135]

E. *The Classical Theory Revisited*

The Swiss experience illustrates decoupling's importance. However, responding to decoupling is complicated by the fact that

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[128] Carl Mortished, *Deutsche's Zurich Offices Raided in Options Inquiry*, THE TIMES (LONDON), May 25, 2007; *ZKB, Deutsche Offices Raided by Swiss Watchdog*, *supra* note 14.

[129] Simonian, *supra* note 13. Note that ZKB did not leave the derivatives market, it merely agreed that it would not knowingly participate in hostile takeovers of its clients. *Id.*

[130] *See* Vogel & Sieber, *supra* note 18; Gericke & Dettwiler, *supra* note 18.

[131] *See* Vogel & Sieber, *supra* note 18; Gericke & Dettwiler, *supra* note 18.

[132] Hu & Black, *supra* note 1, at 659.

[133] CENTRAL INTELLIGENCE AGENCY, *supra* note 95 (listing the market value of all publicly traded shares on Swiss markets at $1.229 trillion at the end of 2010). This puts it well ahead of many larger economies, such as Russia ($1.005 trillion) and Italy ($318 billion). *Id.*

[134] *See* Mathias M. Siems & Michael C. Schouten, The Evolution of Ownership Disclosure Rules Across Countries, University of Cambridge Centre for Business Research Working Paper No. 393 at 11 (Dec. 2009) (discussing similarities between UK, Swiss, and EU securities laws).

[135] *See* Hu & Black, *supra* note 1, at 661 tbl.1 (collecting many examples).

decoupling is not always bad. The classical theory generally assumes that, at least on average, maximizing the value of the corporation is best for society.[136] This assumption is often justified on the ground that the public and private regulatory apparatus give corporations optimal incentives; that is, laws and contracts address negative externalities[137] and align the corporation's incentives with the social good.[138]

But, in practice, there are instances in which the course of action that is best for a corporation is not best for society at large. In such circumstances, it would be better for society if that corporation's shareholders do not vote for the option that maximizes the value of the corporation. Empty voting would facilitate such behavior. In these cases, empty voting would seem to be an outright social positive. Thus, decoupling may be a good thing.

For example, suppose that shareholders of widget manufacturer AcmeCo are considering a takeover offer from rival widget manufacturer BuyerCo. Assume that BuyerCo is motivated to pursue the transaction because acquiring AcmeCo will give BuyerCo a monopoly on widget production. As a monopolist, BuyerCo will increase its profits by raising widget prices and reducing widget output.[139] Such a transaction generally is not socially beneficial;[140] while BuyerCo (and AcmeCo) shareholders will reap benefits, widget purchasers will suffer even larger losses.[141]

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[136] *See* RICHARD POSNER, ECONOMIC ANALYSIS OF LAW 284 (8th ed. 2011).

[137] An externality is a cost or benefit of an activity that accrues to actors who are not involved in the activity. A positive externality creates a benefit to, and a negative externality imposes a cost on, actors who are not involved in the activity. Jordan M. Barry, *When Second Comes First: Correcting Patent's Poor Secondary Incentives Through an Optional Patent Purchase System*, 2007 WISC. L. REV. 585, 611 n.3.

[138] *See* POSNER, *supra* note 136, at 353. An alternative is to assume that negative externalities are small or nonexistent in a particular context, or that they are balanced or outweighed by positive externalities. Yet another is to assume that they are addressed by private contract by the affected parties. *See* Coase, *supra* note 116, at 15.

[139] *See* Barry, *supra* note 137, at 597-99.

[140] There could be an exception if the industry is characterized by efficient monopoly, *see* POSNER, *supra* note 136, at 559-62, but for simplicity we will assume that this is not the case here.

[141] Barry, *supra* note 137, at 597-99.

This is precisely the sort of transaction that antitrust regulators should prevent.[142] Yet suppose that they do not. What will happen? If shareholders make their decision based solely on whether the transaction is in the best interests of AcmeCo, the takeover is likely to occur.[143] Yet, as discussed previously, this result is bad for society.

On the other hand, the more empty voting there is at AcmeCo, the more likely it becomes that the takeover attempt will fail.[144] This is a better result for society; thus, empty voting would appear to be a good thing in this instance. Similar examples can easily be constructed around environmental, banking, insurance, labor, food and drug safety, tax, and many other regulatory failures, as well as other types of decoupling behavior. Examples can also be constructed around contracting failures by private actors, such as imperfect takeover offers, bond covenants, and corporate governance mechanisms.[145]

Similarly, hidden ownership can also promote efficient results in some circumstances. Disclosure requirements are often criticized for discouraging parties from gathering information

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[142] POSNER, *supra* note 136, at 387-89.

[143] The transaction will boost BuyerCo's profits, so it should be willing to offer AcmeCo shareholders a significant premium for their shares to induce their agreement. Alternatively, BuyerCo could structure the transaction as a share-for-share deal so that AcmeCo shareholders would share proportionally in the monopoly profits. ANDREW J. SHERMAN & MILLEDGE A. HART, MERGERS AND ACQUISITIONS A TO Z at 13 (2nd ed. 2005) (discussing the choice among acquisition structures).

[144] Note that the incentives of the empty voters themselves need not correspond to the incentives of society at large for this to be true. For example, they could be AcmeCo managers or employees concerned about losing their jobs after the takeover. *See, e.g.*, Jordan M. Barry & John William Hatfield, *Pills and Partisans: Understanding Takeover Defenses*, 160 U. PA. L. REV. 633, 658 (2012). Multiple instances of empty voting have involved corporate managers resisting takeover attempts. *See, e.g.*, Paul Waldie, *Arcelor Parks Dofasco in Dutch Foundation; Move Seen as a Defense in Battle Against Rival Mittal's Takeover Attempt*, THE GLOBE AND MAIL (CANADA), Apr. 5, 2006 (describing how Arcelor management used empty voting to resist a takeover offer); *The Hungarian Defense*, THE ECONOMIST, Aug. 9, 2007 (describing how MOL management used empty voting to resist a takeover offer).

[145] *See, e.g.*, Bruce H. Kobayashi, & Larry D. Ribstein, *Outsider Trading As an Incentive Device*, 40 U.C. DAVIS L. REV. 21 (2006); Larry Ribstein, *The Obscure Efficiency of Empty Voting*, TRUTH ON THE MARKET, Dec. 17, 2010, truthonthemarket.com/2010/12/17/the-obscure-efficiency-of-empty-voting/;
Alon P. Brav & Richmond D. Matthews, Empty Voting and the Efficiency of Corporate Governance, Am. Fin. Assoc. 2009 San Francisco Meetings Paper, *available at* papers.ssrn.com/.

about securities' underlying values.[146]   The basic logic is that collecting and processing this information is costly. The prospect of entering into advantageous transactions with others who are less informed induces parties to collect and process information. Disclosure regimes enable other parties to learn of the new information earlier than they would otherwise, reducing the initial incentive to gather information and therefore market efficiency. Hidden ownership mitigates all of these negative effects. Thus, there may be instances in which it, too, is socially beneficial.

Accordingly, to enact a comprehensive response to decoupling behavior, one must have a framework for analyzing precisely when decoupling is problematic and when it is beneficial. So far, such a framework has proven elusive. As we discuss below, this is because competitive equilibrium, the most commonly used framework for economic analysis, fails once control rights are introduced.

III. COMPETITIVE EQUILIBRIUM AND THE CHALLENGE OF CONTROL

To study markets, economists employ models that abstract and simplify real-world transactions. Although the details of these models vary significantly, they generally share several basic structural features: Each model, like each market, is composed of various actors. Each actor has preferences with respect to different combinations of goods that she might buy or sell.[147] Using these building blocks, economists can build frameworks with which to analyze markets.

A. *Competitive Equilibrium Generally*

Competitive equilibrium is by far the most common analytical framework that economists use. Given a set of actors with specified preferences, a competitive equilibrium consists of a market price for each good and an allocation of goods among the actors. This allocation must be consistent with (1) each actor acting to maximize her well-being, given market prices, and (2) each actor being able to buy or sell as much of each good at its market price as she wishes. In other words, given market prices, it

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[146] *See, e.g.*, Easterbrook & Fischel, *supra* note 107; Schwartz, *supra* note 107.

[147] They might also be able to produce, or consume goods. Since we are focused on financial markets, we do not address these cases here.

cannot be possible for any actor to make herself better off by buying or selling goods.

At a competitive equilibrium, all mutually beneficial trades are consummated. There are no frustrated sellers or buyers; anyone who wants to buy or sell at the prevailing market price may do so. In essence, a competitive equilibrium is a set of prices at which the market clears.[148]

A simple example helps illustrate these abstract points. Consider a market with two actors, Alice and Bob, and one asset, FirmCo stock. Assume that there are 100 shares of FirmCo stock, that the value of each share is simply the present value of the stream of future dividends that the owner of that share is expected to receive,[149] and that this amount is $10 per share. Consider the outcome in which the share price of FirmCo stock is $10 and Alice and Bob each own 50 shares. Alice and Bob are both acting in ways that maximize their well-being; neither can make herself better off by buying or selling shares. Accordingly, this outcome is a competitive equilibrium.[150]

Competitive equilibria have a number of features that make them such a useful analytical tool. First, competitive equilibria have been proven to exist in a wide range of settings.[151] Second, at competitive equilibrium, there is no way to make any actor better off without making at least one other actor worse off. This concept is known as Pareto efficiency[152] and, since competitive equilibria have this property, they are referred to as Pareto efficient, or simply efficient.[153] Competitive equilibria can generally be reached through voluntary trading, without outside intervention.[154] Once a competitive equilibrium is reached, the market should be

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[148] *See* APPENDIX, *supra* note 33, at 1.1.

[149] This is a common assumption in corporate finance, and we generally adopt it going forward. *See* IVO WELCH, CORPORATE FINANCE (2d ed. 2011).

[150] In this simple example, any allocation of shares between Alice and Bob would also qualify. The key issue is that the price of FirmCo stock be $10.

[151] *See* ANDREU MAS-COLELL ET AL., MICROECONOMIC THEORY 511-782 (1995) (exploring competitive equilibrium under a wide variety of assumptions).

[152] The term derives from the Italian economist Pareto. HAL R. VARIAN, INTERMEDIATE MICROECONOMICS: A MODERN APPROACH 455 (4th ed. 1996).

[153] *Id.* When there is a numeraire good, as financial market models typically assume, competitive equilibria are globally efficient as well as Paretto efficient.

[154] MAS-COLELL ET AL., *supra* note 151, at 660-64, 694-99.

stable, as all transactions that improve the parties' utilities have been consummated.[155]   Finally, competitive equilibria offer significant predictive power as to the outcome that particular markets will produce; in many instances, competitive equilibria are unique.[156]

Our simple competitive equilibrium example above illustrates many of these properties. Since the example presented constitutes a competitive equilibrium, a competitive equilibrium exists. The outcome is stable, in that neither party has the ability and incentive to move the market away from the given outcome. The equilibrium provided is not unique, but in all competitive equilibria, the market price of FirmCo stock is $10; thus, competitive equilibrium provides a clear prediction about market prices.

B. *Competitive Equilibrium with Control Rights*

Analyzing phenomena, such as empty voting, that involve corporate decisions, requires a model that includes control rights. Traditional economic models generally do not include meaningful control rights. However, it is possible to augment such models by adding in control rights. A natural step is to require that each actor exercise such rights in accordance with her self-interest, just as competitive equilibrium requires that each actor buy and sell in accordance with her self-interest. In other words, for an outcome to constitute a competitive equilibrium, an actor cannot be able to make herself better off by either or both (1) buying or selling goods at their market prices and (2) changing how she exercises her control rights.

Unfortunately, once one introduces meaningful control rights into standard economic models, competitive equilibrium analysis becomes much less useful:[157] Competitive equilibria may cease to be efficient;[158] worse, they may not exist at all.

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[155] *Id.* at 652-60.

[156] *Id.* at 589-98, 606-16.

[157] The appendix provides formal proofs of the statements in this section.

[158] *See* Eddie Dekel & Asher Wolinsky, *Buying Shares and/or Votes for Corporate Control*, 79 REV. ECON. STUD. 196 (2012) (finding inefficient equilibria).

Simple examples are useful for illustrating these points.[159] We begin with inefficiency. Consider two companies, FirmCo and GiantCo, and four people, Alice, Bob, Carol, and Dan. Assume that FirmCo and GiantCo each has 100 shares of stock outstanding and that the aggregate value of each company's stock reflects the entire economic value of that company.[160] Alice, Bob and Carol each have a one-third economic interest in GiantCo. Dan owns all of FirmCo. GiantCo's shareholders[161] have the option to approve or reject a proposed takeover of FirmCo.[162] Alice, Bob and Carol each have a one-third voting interest in GiantCo, and voting rights are not transferable. The acquisition will take place if any two of Alice, Bob, and Carol vote in favor of it; otherwise, it will not. Suppose that if the takeover attempt fails, each share of GiantCo stock will be worth $16, and each share of FirmCo stock will be worth $6. On the other hand, if the takeover attempt succeeds, each share of GiantCo stock will be worth $8, but each share of FirmCo stock will be worth $21.[163] Table 1 summarizes these outcomes.

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[159] *See also* APPENDIX at 1.1.1 ex. 1.

[160] In other words, assume that the company has no other outstanding classes of equity or debt. We generally adopt this assumption in our examples throughout the rest of the paper unless otherwise noted.

[161] For simplicity, we assume that FirmCo's shareholders' approval is not necessary; the analysis is essentially identical in both cases.

[162] This example works equally well for any action requiring a shareholder vote.

[163] Evidence suggests that this fact pattern is very common; empirical studies generally find that acquirers' returns from takeovers are either indistinguishable from zero or slightly negative, but that the gains to target shareholders are sizable and positive. *See, e.g.*, Babu G. Baradwaj et al., *Bidder Returns in Interstate and Intrastate Bank Acquisitions*, 5 J. FIN. SERVICES RES. 261 (1992) (finding negative acquirer returns); Robert F. Bruner, *Does M&A Pay? A Survey of Evidence for the Decision-Maker*, 12 J. APPLIED FIN. 48 (2002) (finding zero returns for acquirers, positive for targets); David E. Bellamy & Walter M. Lewin, *Corporate Takeovers, Methods of Payment, and Bidding Firms' Shareholder Returns: Australian Evidence*, 9 ASIA PACIFIC J. MGMT. 137 (1992) (finding positive acquirer returns for cash deals, negative acquirer returns for others); Elias Raad & H.K. Wu, *Acquiring Firms' Stock Returns*, 18 J. ECON. & FIN. 13 (1994) (similar); Sylvia C. Hudgins & Bruce Seifert, *Stockholder Returns and International Acquisitions of Financial Firms: An Emphasis on Banking*, 10 J. FIN. SERVICES RES. 163 (1996) (finding zero returns for acquirers, positive for targets); Michael C. Jensen & Richard S. Ruback, *The Market for Corporate Control: The Scientific Evidence*, 11 J. FIN. ECON. 5 (1983) (same).

TABLE 1

	Takeover Attempt Fails	Takeover Attempt Succeeds
GiantCo Share Value	$16	$8
FirmCo Share Value	$6	$21
Combined Share Value	$22	$29

Consider an outcome in which: (1) Alice, Bob, and Carol each vote against the takeover; (2) GiantCo and FirmCo shares are priced at $16 and $6, respectively; and (3) no one buys or sells GiantCo or FirmCo shares. Alice, Bob, and Carol are all voting consistently with their self-interest;[164] each of Alice, Bob, and Carol will have greater wealth if the takeover fails ($533)[165] than if it succeeds ($267).[166] The prices of GiantCo and FirmCo accurately reflect their value, given how Alice, Bob, and Carol are exercising their control rights.[167] No one would profit from buying or selling a share of either stock at that price (possibly in conjunction with changing their votes), so no one wishes to do so. Thus, everyone is acting rationally in accordance with their self-interest and the market clears, making this outcome a competitive equilibrium.

However, it is easy to see that this outcome is inefficient. If the takeover attempt fails, GiantCo and FirmCo's combined value will be $2200.[168] On the other hand, if the takeover attempt succeeds, their combined value will be $2900.[169] Since $2900 is more than $2200, it would be efficient for the takeover to take place. The introduction of voting rights has resulted in competitive equilibria that are not efficient.

One might wonder if this result were caused by dividing control rights among Alice, Bob, and Carol. One might think that vesting control rights in a single actor would solve the problem. It

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[164] We assume Dan is as well, but his vote does not matter.
[165] Each would have one-third of the 100 GiantCo shares, worth $16 apiece.
[166] Each would have one-third of the 100 GiantCo shares, worth $8 apiece.
[167] Equivalently, given their voting behavior.
[168] *See* Table 1, *supra*.
[169] *Id.*

does not. In fact, unifying control rights can prevent competitive equilibria from existing at all.[170]

Consider a scenario in which there are two firms, FirmCo and GiantCo, and two people, Alice and Bob. Assume that FirmCo and GiantCo each has 100 shares of stock outstanding and that the aggregate value of each company's stock reflects the entire economic value of each company. Initially, Alice and Bob each own 50 shares of stock in FirmCo and GiantCo. In this example, we again consider a proposed takeover of FirmCo by GiantCo.[171] This decision affects the value of GiantCo as well as FirmCo, but only the approval of FirmCo is necessary. Assume that Alice has all of the FirmCo control rights, giving her complete control over FirmCo's decision, and that control rights are not transferable. If FirmCo accepts the takeover offer, each share of FirmCo stock will be worth $8, and each share of GiantCo stock will be worth $2. On the other hand, if FirmCo rejects the takeover offer, both FirmCo and GiantCo shares will be worth $4. Table 2 summarizes these outcomes.

TABLE 2

	FirmCo Accepts Takeover Offer	FirmCo Rejects Takeover Offer
FirmCo Share Value	$8	$4
GiantCo Share Value	$2	$4
Combined Share Value	$10	$8

No competitive equilibrium exists: Given any set of prices and proposed allocation of shares, it is always possible for Alice to make herself better off by trading in FirmCo and GiantCo shares, then changing FirmCo's behavior away from what was expected. We illustrate this by proof through contradiction.

The first key insight is that, at any competitive equilibrium, the market prices of FirmCo and GiantCo shares must reflect their expected values.[172] The benefit of owning shares is the shares'

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[170] *See also* APPENDIX, *supra* note 33, at 1.1.2 ex. 2.
[171] This example works equally well for any action requiring a shareholder vote.
[172] For simplicity, we assume that actors are risk-neutral.

expected value. The cost of acquiring shares is their prevailing market price. If shares' value exceeds their cost, buying shares increases the buyer's wealth.[173] Thus, if the price of a firm's shares is less than the expected value of those shares, Alice can make herself better off by buying the underpriced shares.[174] Similarly, if either company's shares are priced above their expected value, Alice can improve her well-being by selling that company's shares.[175] Recall that at a competitive equilibrium, no actor can make herself better off by buying or selling goods at their prevailing market prices. It therefore follows that, in any competitive equilibrium, the market prices of FirmCo and GiantCo shares must be their respective expected values.[176]

With this in mind, now suppose that there is a competitive equilibrium in which FirmCo rejects the takeover offer. The market prices of FirmCo and GiantCo shares must be $4, their value if FirmCo rejects the offer. Alice can therefore sell all of her shares of GiantCo, and purchase additional shares of FirmCo, for $4 a share.[177] Then, using her control rights over FirmCo, she can cause FirmCo to accept the takeover offer. This will cause all of her FirmCo shares to appreciate in value to $8, which will make her strictly better off than she is at the supposed competitive equilibrium.

For example, imagine that the proposed competitive equilibrium has Alice owning 50 shares of FirmCo and 50 shares of GiantCo. Each of Alice's 100 shares is worth $4, giving her a combined wealth of $400.[178] If Alice sells all of her GiantCo shares and buys all of the outstanding FirmCo shares, she will have

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[173] This would be equivalent to paying $10 for a stream of future payments worth $20 today.

[174] Bob, too, can employ this strategy.

[175] The logic is the same; the shares' price—the benefit of selling—exceeds their value—the cost of reducing ownership. Again, Bob could also do this.

[176] This follows from the risk-neutrality assumption. *See* note 172, *supra*.

[177] This is always possible if Alice can increase her interest in FirmCo and decrease her interest in GiantCo without bound—and as derivatives markets grow, this becomes ever closer to reality. But, even assuming that Alice can own, at most, 100 FirmCo shares and, at least, 0 GiantCo shares, she still profits by increasing her FirmCo ownership, reducing her GiantCo ownership, and changing FirmCo's response to the takeover offer. The only time she cannot do this is if she owns 100 shares of FirmCo and 0 shares of GiantCo. However, this is not a competitive equilibrium, because Alice can improve her utility by changing her vote.

[178] *See* Table 2, *supra*.

0 shares of GiantCo and 100 shares of FirmCo. If she then has FirmCo accept the takeover offer, each of her 100 FirmCo shares will appreciate in value to $8, giving her a total wealth of $800.[179] Since $800 is more than $400, this represents an improvement in Alice's well-being—but if the starting point is a competitive equilibrium, as we assumed it to be, Alice cannot improve her well-being.

Therefore, the starting point cannot be a competitive equilibrium. Since our only assumption about the starting point is that it is a competitive equilibrium in which FirmCo rejects the takeover offer, there can be no competitive equilibria in which FirmCo rejects the takeover offer.

Suppose instead that there is a competitive equilibrium in which FirmCo accepts the takeover offer. The market prices of FirmCo and GiantCo shares must be $8 and $2, respectively.[180] Alice can therefore sell all her FirmCo shares for $8 each and buy GiantCo shares for $2 each.[181] Then, using her control rights over FirmCo, Alice can cause FirmCo to reject the takeover offer, causing all of her GiantCo shares to double in value to $4 and making her strictly better off than she is at the supposed competitive equilibrium.

For example, suppose the proposed competitive equilibrium has Alice owning 50 FirmCo shares and 50 GiantCo shares. The values of her FirmCo and GiantCo holdings are $400 and $100, respectively,[182] making her total wealth $500. If Alice sells all of her FirmCo shares and buys all 100 outstanding GiantCo shares, she will have 0 FirmCo shares, 100 GiantCo shares, and $300 cash. If she then has FirmCo reject the takeover offer, her 100 GiantCo shares will appreciate to an aggregate value of $400. Combined with her $300 cash, Alice will have $700 total wealth. Since $700 is more than $500, this represents an improvement in Alice's well-being—but, again, if the starting

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[179] *See* Table 2, *supra*.

[180] *See* Table 2, *supra*.

[181] The boundary issues discussed in note 177, *supra*, apply here. Again, they are not problematic; it is not a competitive equilibrium if Alice owns 100 shares of GiantCo (the maximum) and 0 shares of FirmCo (the minimum), because Alice can double her utility by changing her vote.

[182] *See* Table 2, *supra*.

point is a competitive equilibrium, as we assumed, Alice cannot improve her well-being.

Therefore, this starting point cannot be a competitive equilibrium, either. Since our only assumption about the starting point is that it is a competitive equilibrium in which FirmCo accepts the takeover offer, it therefore follows that there are no competitive equilibria in which FirmCo accepts the takeover offer.

But FirmCo can only respond to the outstanding takeover offer in one of two ways: it must either reject or accept the offer.[183] If neither of these choices is compatible with a competitive equilibrium, then no competitive equilibrium is possible. Introducing control rights renders competitive equilibrium an impossibility.[184]

Conceptually, the issue is that Alice can always use her control power to make herself better off by doing the following: First, she buys assets that will increase in value if the result of the shareholder vote is not what people expect.[185] This is essentially betting that the vote will not play out how other actors expect. Second, she uses her voting power to switch the result of the shareholder vote away from what others expect. This ensures that she wins her earlier bet. This strategy, which we refer to as "Bet and Switch," prevents any particular outcome from ever constituting a competitive equilibrium.

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[183] Theoretically, FirmCo could accept probabilistically. In other words, Alice could flip a coin, and cause FirmCo to accept the takeover offer only if it comes up heads. However, no equilibria fit this mold, either. The proof is essentially identical in format to the proofs that there are no equilibria in which FirmCo accepts the takeover offer and no equilibria in which FirmCo rejects it; Alice can make a profit by buying or selling FirmCo or GiantCo shares then increasing or decreasing the probability that FirmCo accepts.

[184] These results are broadly consistent with other works demonstrating how information asymmetries can cause markets to unravel. *See* George A. Akerlof, *"The Market for Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488 (1970) (showing how markets can unravel when parties have asymmetric information about values); Paul Milgrom & Nancy Stokey, *Information, Trade and Common Knowledge*, 26 J. ECON. THEORY 17 (1982) (presenting a result, known as the no-trade theorem, that says that under certain conditions, financial markets will produce no trades because any offer to buy or sell conveys information to counterparties that they would be foolish to accept the offer).

[185] She also sells assets that will decrease in value in the same circumstances.

C. *Competitive Equilibrium with Transferable Control Rights*

Thus far, our models have not allowed actors to transfer control rights. But, in the real world, control rights generally depend on share ownership. Since shares are transferable, so are control rights. One might hope that modifying the model to allow the transfer of control rights would solve these problems with competitive equilibrium analysis.

Unfortunately, the exact opposite is true; making control rights transferable makes competitive equilibrium analysis even more problematic.[186] If one assumes that control rights and economic rights trade together as a single package, with a single price—i.e., a world with small derivatives markets, in which firms have one class of stock—then competitive equilibria will not exist if there is at least one decision whose outcome has a substantial effect on at least one other firm.[187] Since a firm's actions often have significant implications for its competitors,[188] suppliers,[189] customers,[190] and producers of complementary products,[191] competitive equilibria will often not exist.

To see why competitive equilibria become so rare, observe that making control rights transferable for a specified price has the effect of fixing a price for control. For example, suppose that a share of FirmCo stock has a price of $10 and carries a 1% voting interest in FirmCo. If 51% of FirmCo votes are required to exert control over FirmCo, any actor can acquire control of FirmCo by acquiring 51 FirmCo shares—which she can do at a cost of $510.

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[186] *See also* APPENDIX, *supra* note 33, at 2.1.

[187] More specifically, any firm's decision must have a larger effect on the value of any bloc of shares with sufficient control rights to control that decision than on all other traded items combined. So, if a corporation has one class of stock, no debt, and control requires a majority of outstanding shares, this means that all of the corporation's decisions must have twice as large an effect on the value of the corporation's own shares than on all other traded items, combined. This is unlikely if any item whose value is affected by any of the corporation's decisions has a large derivatives market.

[188] *See* Hu & Black, *supra* note 8, at 844-45 (discussing the example of Ford and GM); Bankman & Ayres, *supra* note 84 (similar).

[189] *See* Bankman & Ayres, *supra* note 84 (discussing how investors can take advantage of such relationships).

[190] *Id.*

[191] *See* Barry, *supra* note 137 (discussing in intellectual property context).

Thus, for a fixed price ($510), an actor can acquire the power to control FirmCo's decisions. If FirmCo's decisions affect the value of other items, that actor can employ the Bet and Switch strategy discussed above.[192] That is, she can enter into transactions that become profitable if FirmCo acts in a way that others do not expect, then cause FirmCo to behave in precisely that unexpected way. So long as she can enter into enough such transactions, her profits will exceed the fixed cost of acquiring control over FirmCo.

Competitive equilibria are even less likely to exist when—as large derivatives markets allow—control rights and economic rights trade separately.[193] In such circumstances, competitive equilibria will not exist if any firm's decision affects the value of anything—including the value of the firm itself. The logic is the same as when control and economic rights trade as a single package: an actor can acquire control of a firm for a fixed price, then employ the Bet and Switch strategy. However, because one can now purchase a control right without also acquiring significant economic rights, the strategy becomes cheaper and can be profitably employed in more circumstances.

This is precisely what happened with respect to the bid for Henderson Investments discussed earlier.[194] The bid was expected to succeed, and Henderson Investments' stock price reflected this.[195] The hedge fund quietly acquired enough Henderson Investments votes to be able to prevent the takeover offer from succeeding.[196] The hedge fund then entered into short sale transactions with respect to Henderson Investments' stock.[197] These transactions would yield a profit if, counter to expectations, Henderson Investments rejected the takeover offer.[198] Finally, the hedge fund voted against the offer, which prevented the takeover, surprised market watchers, and yielded the hedge fund a tidy profit on its short sale transactions.[199]

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[192] *See* Part III.B.2, *supra*.

[193] *See also* APPENDIX, *supra* note 33, at 2.1 thm 5.

[194] *See* Part I, *supra*.

[195] Gimbel & Guerrera, *supra* note 2.

[196] McMillan, *supra* note 6.

[197] *Id.*

[198] *Id.*

[199] *Hong Kong Shares Fall 0.1 Percent, But China-Related Issues Continue To Do Well*, *supra* note 5.

In short, competitive equilibrium is ill-suited to analyzing markets with control rights. When derivatives markets are sizable, competitive equilibria will not exist if control rights have any meaningful economic consequences. Another economic framework is necessary.

IV. THE CORE OUTCOME

We propose a new equilibrium concept for markets with control rights:[200] the core outcome.[201] For an outcome to constitute a core outcome, it cannot be possible for any *group* of actors to change their behavior in a way that makes the group as a whole better off.[202] For this purpose, a group can consist of a single actor.[203]

It is helpful to illustrate the core outcome concept with a simple example. Suppose that, initially, all actors have the same portfolio of assets and control rights. Suppose that there are no trades and every actor votes in her own best interest (which is also the group's best interest because each actor has the same portfolio). This is a core outcome.

To see this, first observe that intra-group sales and purchases leave the group's collective assets unchanged; the only way to make the group better off as a whole[204] is to change one or more firms' decisions. Recall that every actor holds the same portfolio. Therefore, if changing a firm's decision improves the value of the group's portfolio, it must also improve the value of all actors' portfolios. But if there is a way to improve the value of everyone's portfolio by changing some actors' votes, that means that some actors are not voting according to their self-interests.

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[200] In doing so, we adapt from a concept in cooperative game theory known as the core. *See* MYERSON, *supra* note 27, at 417-482.

[201] The Appendix addresses this issue with more formality and mathematical rigor. It also uses slightly different terminology. The description adopted here is intended to facilitate an understanding of the concepts. The interested reader looking for a more formal discussion should refer to the Appendix.

[202] This is equivalent to showing that there is no way to make every group member better off. *See* APPENDIX, *supra* note 33, at 1.2. Essentially, if the group's winners gain more than its losers lose, they could (over-)compensate the losers for their losses and remain winners.

[203] *See* APPENDIX, *supra* note 33, at 1.2. However, as discussed below, all that a single actor can change alone is her vote; buying or selling requires a counterparty.

[204] Or worse.

However, this creates a contradiction, because we assumed that every actor was voting in her own best interest. Thus, there cannot be any group that can defect and make its members better off, making this a core outcome.

The core outcome has some very desirable properties that make core outcome analysis attractive. Many of these are qualities that make competitive equilibrium analysis so useful in other contexts. Chief among them are existence, efficiency, voluntariness, stability, reasonableness, and predictive power. All of these properties hold regardless of whether control rights are non-transferable, tradable in a package with ownership interests, or separately transferable.[205]

A. *Existence*

Core outcomes always exist.[206] The touchstone of both competitive equilibria and core outcomes is that, in each instance, actors are maximizing their well-being. Yet, in markets with control rights, core outcomes always exist but competitive equilibria often do not. It is helpful to explore the intuition behind this difference.

Competitive equilibrium focuses on whether each individual actor is maximizing her well-being. It assumes that each actor can always buy or sell goods at their market prices; a counterparty is always available. If control rights are tradable, then any actor can acquire control power for a fixed price.[207] It also generally enables an actor with control power to employ the Bet and Switch strategy: If there is a "Bet" available—that is, an asset she can buy that will increase in value if a firm makes an unexpected decision—there are always (assumed) counterparties to take the other side of the "Bet." The actor can then use her control power to win the Bet, making herself better off and preventing the initial outcome from being a competitive equilibrium.[208]

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[205] *See* APPENDIX, *supra* note 33, at 1.2, 2.2.
[206] *See* APPENDIX, *supra* note 33, at 1.2.2 thm 2, 2.2.2 thm 7.
[207] *See* Part III.C, *supra*. The cost drops significantly if control rights trade separately from economic rights. *Id.*
[208] *See* Part III.B, *supra*. If control rights trade separately from economic rights, it is even rarer for competitive equilibrium to exist. *See* Part III.C, *supra*.

The core outcome, in contrast, looks to deviations by coalitions.[209] It does not assume that actors can automatically buy or sell at prevailing market prices; to buy or sell, there must be a counterparty in the deviating coalition to transact with the defecting individual. Thus, in contrast to competitive equilibrium, defecting must benefit the defectors as a group, not just one of them.[210]

Intuitively, the Bet and Switch strategy allows a party with control to earn profits by confounding other parties' expectations. However, these profits are often less than the losses she inflicts on her counterparties.[211] Put another way, if the profiting party's counterparties had known what she was doing, they would not have agreed to transact with her. The strategy requires the party with control to conceal what she is doing from the other parties—essentially, to trick them.

The core outcome framework severely restricts the Bet and Switch strategy because it considers all the defectors in its calculus. Only deviations that benefit the transacting parties as a group are possible. Thus, this strategy often is not viable in the core outcome context when it would move the market to a less socially efficient outcome.

To illustrate this, let us reconsider our example from Part III.B.2 in which we showed that no competitive equilibrium exists: There are two firms, FirmCo and GiantCo, each with 100 shares of stock outstanding, and two people, Alice and Bob. Alice and Bob each own 50 shares of stock in FirmCo and GiantCo. FirmCo is considering whether to accept a takeover offer,[212] a decision that affects the value of GiantCo as well as FirmCo.[213] Assume that Alice has all of the FirmCo control rights, so that she has complete control over FirmCo's decision, and that control rights are not transferable. Suppose that if FirmCo accepts the takeover offer, each share of FirmCo stock will be worth $8, and each share of GiantCo stock will be worth $2. On the other hand, if FirmCo

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[209] *See* APPENDIX, *supra* note 33, at 1.2, 2.2.
[210] *Compare* APPENDIX, *supra* note 33, at 1.2, 2.2 *with* APPENDIX, *supra* note 33, at 1.1, 2.1.
[211] *See* text accompanying notes 172179, *supra*.
[212] This example works equally well for any action requiring a shareholder vote.
[213] Perhaps GiantCo makes competitive or complementary products, for example.

rejects the takeover offer, a share of its stock will be worth $4, as will each share of GiantCo stock. Table 3, below, summarizes these results.

TABLE 3

	FirmCo Accepts Takeover Offer	FirmCo Rejects Takeover Offer
FirmCo Share Value	$8	$4
GiantCo Share Value	$2	$4
Combined Share Value	$10	$8

We previously established that no competitive equilibrium exists.[214] However, core outcomes do exist. For example, suppose that Alice and Bob initially own 50 shares of stock in FirmCo and GiantCo. If there are no trades;[215] and Alice has FirmCo accept the takeover offer, the result is a core outcome.[216]

Recall that to constitute a core outcome, there must not be any way for any group of actors to change their behavior and make themselves better off as a whole. There are three possible deviating coalitions: either Alice or Bob could act alone, or both could act together.

If either acts alone, her final portfolio must match her initial portfolio; purchasing or selling FirmCo or GiantCo stock requires a counterparty with which to transact. All that a single defector can do is change her vote. However, Alice and Bob's initial portfolios each contain an equal amount of FirmCo and GiantCo stock. Since accepting the takeover bid maximizes FirmCo and GiantCo's combined value, it also maximizes the value of Alice and Bob's respective portfolios. Therefore, neither

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[214] *See* Part III.B, *supra.*

[215] This example assumes no trades for simplicity, there are many other initial endowments that can support to reach this same core outcome. To take one example, suppose Alice begins with all of the economic interest in GiantCo and Bob begins with all of the economic interest in FirmCo. *See* Part IV.E, *infra.*

[216] Note that this example is essentially identical to the example core outcome provided at the beginning of this Part. *See* notes 203-205, *supra*, and accompanying text.

party can make herself better off by keeping her initial portfolio and changing her vote.[217]

The only other possible coalition involves Alice and Bob deviating together. Between them, Alice and Bob own all of the economic interests in FirmCo and GiantCo. Thus, their aggregate well-being is just the two companies' combined value. Since the current outcome maximizes that sum; no deviation can raise it further. Thus, there is no coalition of actors that can improve their well-being relative to this outcome. Accordingly, this outcome is a core outcome.

B. *Efficiency*

Once one has proven that core outcomes always exist, it is straightforward to show that they are also efficient.[218] If an outcome is inefficient, that means a more efficient outcome is possible. All of the actors in the market could then form a deviating coalition and, by changing their behavior, shift the market to that more efficient outcome. This would, by definition, raise the well-being of the group as a whole.[219] However, if the initial outcome was a core outcome, it should not be possible for any group of actors to increase its overall well-being by changing its behavior. Thus, if the initial outcome was not efficient, it cannot have been a core outcome; no inefficient core outcomes may exist.

C. *Voluntariness and Stability*

The mere fact that a core outcome exists does not, *a priori*, mean that the market will reach a core outcome. However, core outcomes have two additional features that make this result far more likely. The first is that, for any initial allocation of securities and control rights, there is at least one core outcome that leaves every actor at least as well off as she started. This means that it is always possible for the market to achieve a core outcome through voluntary trades: No matter what the condition of the market is at

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[217] Note that Bob does not even have any votes in this example.

[218] APPENDIX, *supra* note 33, at 1.2.1 thm 1, 2.2.1 thm 6.

[219] An improvement in the aggregate utility of the group can be translated into an improvement in the utility of each of the members through transfers. See Appendix.

any moment, there is always a core outcome that all of the parties would happily accept. We term this feature voluntariness.

To illustrate this, suppose that each actor starts with an initial endowment of assets and some plan for how she will exercise her control rights.[220] Actors then trade among themselves so that each actor holds what is known as the market portfolio—that is, each actor's portfolio contains the same mix of securities as the market as a whole.[221] The parties trade each security at the value it is expected to have assuming all actors vote as planned.[222]

For example, suppose Alice initially held 100 FirmCo shares and 50 GiantCo shares, and Bob initially held 50 GiantCo shares. The parties would trade shares between them until each portfolio contains the same blend of securities. If GiantCo and FirmCo have the same expected value, Alice's final portfolio will be 75 FirmCo shares and 75 GiantCo shares, while Bob's would be 25 FirmCo shares and 25 GiantCo shares.[223] Both initially and ultimately, Alice holds 75% of all assets and Bob holds 25%. All that changes is which assets make up their portfolios.

After the trading is done, actors vote in their self-interest—and, since everyone has the same mix of securities in their portfolio, this causes firms to make the decisions that maximize total social welfare. This produces a core outcome in which all actors are at least as well off as they started.

To see why this is a core outcome, we apply the same logic as in our very first core outcome example.[224] The only way for a deviating group to make itself better off as a whole is to change one or more firms' decisions. Because every actor holds the market portfolio, any change in firms' decisions that increases the value of the group's portfolio also increases the value of all actors'

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[220] *See also* APPENDIX, *supra* note 33, at 1.2, 2.2.

[221] *See* WELCH, *supra* note 149 (discussing the market portfolio).

[222] *See* APPENDIX, *supra* note 33, at 1.2 thm 2, 2.2 thm 7. The total amount of securities that each actor ultimately holds will vary based on the differing values of the parties' initial endowments.

[223] The exact mix would depend on the relative values of FirmCo and GiantCo shares. If FirmCo is more valuable than GiantCo, Alice will ultimately have more than 75% of outstanding shares; if GiantCo is more valuable than FirmCo, Alice will have less than 75% of outstanding shares, though not less than 50%. *See* APPENDIX, *supra* note 33, at 1.2 thm 2, 2.2 thm 7.

[224] See text accompanying notes 203205, *supra*.

portfolios. But since every actor was already voting in her best interest, this is impossible. Thus, no group can defect and make its members better off, making this a core outcome.

To see why each actor is at least as well off as she was initially, recall the trades that each actor made: she made even-valued trades to convert her initial portfolio into the market portfolio with the same value. Therefore, each actor's initial and final portfolios both contain the same fraction of the value of all assets in the market. In other words, each actor's initial and final portfolios represent the same fraction of the total economic pie. Since the final outcome is a core outcome, it must be efficient,[225] meaning that the total value of all assets in the market is maximized. Sticking with the pie analogy, the core outcome must produce at least as large an economic pie as the initial endowment and voting plan did. Each actor ends with the same-proportioned slice of a pie that is at least as large as the initial pie. Accordingly, each actor is at least as well off as she was initially.

A second property, which we call stability, complements voluntariness. Recall that, at a core outcome, no individual, pair, or larger group of actors can coordinate their behavior and make themselves better off. That means no one has any incentive to change the status quo. This makes core outcomes stable; once a market reaches a core outcome, it should be expected to stay there.

On the other hand, if the market is not at a core outcome, then there *is* a group of actors that would all be better off if they were to jointly deviate from the status quo. Thus, a non-core outcome is subject to instability and potentially rapid change—including to another non-core outcome that itself may rapidly change.

Together, voluntariness and stability paint an encouraging picture: No matter what happens, there will always be a core outcome to which all actors would agree. Non-core outcomes are unstable and likely to be temporary, but once a core outcome is achieved, it should endure. These insights give a mechanism by which markets will gravitate toward core outcomes.

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[225] *See* Part IV.B, *supra*.

D. *Reasonableness*

Core outcomes have another feature that, while less formally defined than those discussed so far, is just as important for real-world applications: Core outcomes are not bizarre and pathological; they resemble many real-world outcomes. Nor are they so-called "knife-edge" portfolios, vulnerable to small changes in actors' portfolios or voting behavior.[226]

Consider the core outcome described in the previous section, in which actors traded amongst themselves until each actor's portfolio mirrored the entire market.[227] This scenario is consistent with what traditional theories of portfolio selection would recommend: all investors should diversify their holdings and limit their risk by acquiring the market portfolio. In the real world, this prediction does not play out precisely, presumably due to various frictions in financial and other markets.[228] Nonetheless, the observed behavior of financial market participants substantially conforms to this model in many cases.[229]

Such real-world scenarios will generally constitute core outcomes.[230] The fact that core outcomes are largely consistent with accepted portfolio theory and long-running real-world behavior strongly bolsters the core outcome framework.

E. *Predictive Power*

All of the core outcomes associated with a particular market share a number of features. This makes the core outcome framework a powerful analytical tool for predicting markets' behavior.

One key feature is that all core outcomes associated with a particular market produce the same total social utility.[231] This follows from our previous result that all core outcomes are

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[226] *Cf.* Marco Pagano, *Trading Volume and Asset Liquidity*, 104 Q.J. ECON. 255, 265 (1989) (discussing knife-edge conditions).

[227] *See* Part IV.C, *supra*.

[228] For example, there are transaction costs, taxes, and agency costs with respect to public company management that can be reduced through incentive compensation arrangements. *See* Coase, *supra* note 116; POSNER, *supra* note 136, at 402.

[229] *See* Goetzmann & Kumar, *supra* note 30.

[230] *See* APPENDIX, *supra* note 33, at 1.2, 2.2.

[231] *See also* APPENDIX, *supra* note 33, at 1.2, 2.2.

efficient:[232]   A core outcome would not be efficient if it provided less social utility than another core outcome.   Thus, all core outcomes must create the same amount of total social utility.

This insight produces another one: Since different decisions by firms generally produce varying amounts of total social utility, and all core outcomes create the same amount of social utility, firms' decisions must generally be the same across all core outcomes.   In other words, firms should make the same decisions in every core outcome.[233]   Thus, the core outcome framework offers exact predictions of firms' decisions.

Core outcomes are not unique, so one cannot predict the precise portfolio that each actor will hold.   However, the core outcome gives a range of predictions as to what the actors' final portfolios will be.

To illustrate this, we revisit a previous example.[234] Consider two firms, FirmCo and GiantCo, each with 100 shares outstanding, and two people, Alice and Bob.   Alice owns all the FirmCo shares and Bob owns all the GiantCo shares.   Alice has all of the control rights over FirmCo, Bob has all of the control rights over GiantCo, and control rights are not transferable.   GiantCo is considering acquiring FirmCo, a transaction that must be approved by both firms' shareholders.[235]   If shareholders approve the takeover, each FirmCo share will be worth $8, and each GiantCo share will be worth $2.   On the other hand, if shareholders reject the takeover, each FirmCo and GiantCo share will be worth $4. Table 4 summarizes these results.

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[232] *See* Part IV.B, *supra*.

[233] It is possible to construct examples in which different combinations of decisions provide the exact same (efficient) level of social welfare.   For example, suppose that there are two decisions, and the combined value of all companies is maximized if both decisions are yes or both are no.   In the real world, however, it is unlikely that any two different decisions will produce exactly the same values.

[234] *See* Parts III.B.2, IV.A, *supra*.

[235] This example works equally well for any action requiring a shareholder vote.

TABLE 4

	Shareholders Approve Takeover	Shareholders Reject Takeover
FirmCo Share Value	$8	$4
GiantCo Share Value	$2	$4
Combined Share Value	$10	$8

If Alice and Bob engage in voluntary transactions—either share-for-share trades or sales of shares for cash—until they reach a core outcome, what possible portfolios might each ultimately hold?

First, recall that all core outcomes are efficient.[236] This corresponds to FirmCo accepting the takeover offer, which maximizes the combined value of both companies.[237] If both parties keep their initial portfolios, the takeover offer will fail. This is because, initially, Bob only owns GiantCo stock, and rejecting the takeover offer maximizes GiantCo's value.[238] In such a scenario, Alice and Bob's respective portfolios would each be worth $400. Thus, if both Alice and Bob only engage in trades that further their self-interest, each party's final portfolio must be worth at least $400.

Next, recall that, to be a core outcome, there must not be a way for any group of actors to change their behavior and make themselves better off. As noted previously, the only possible deviating coalitions entail Alice or Bob acting alone or both of them acting together. For any outcome in which FirmCo accepts the offer, Alice and Bob cannot change their behavior and make themselves both better off.[239] If Alice or Bob deviates alone, all either can do is change how she votes. Thus, each party's final portfolio must make it in her interest to approve the takeover.


[236] *See* Part IV.B, *supra*.

[237] Alice and Bob's combined well-being is the aggregate value of FirmCo and GiantCo. That amount is $1000 if the takeover happens, but only $800 if it does not. *See* Table 4, *supra*.

[238] *See* Table 4, *supra*.

[239] Again, Alice and Bob's combined well-being is just the sum of the companies' values, and that sum is maximized when the takeover happens.

There are a number of possible outcomes that satisfy these criteria and therefore constitute core outcomes.[240] Because Alice and Bob must own all the outstanding shares of FirmCo and GiantCo between them, knowing one party's holdings specifies all parties' holdings.[241] It is therefore possible to represent the entire distribution of shares by showing Alice's final portfolio.[242] Figure 1, below, shows the possible share distributions between Alice and Bob graphically.[243] Point A, in the lower right hand corner, represents Alice's initial portfolio. The shaded regions represent all of the final portfolios that are consistent with a core outcome and that satisfy the voluntariness condition. The darker shaded region shows the portfolios achievable through share-for-share trades alone, and the lighter shaded region includes those realizable with cash transfers. The dotted diagonal line represents the outcomes in which Alice and Bob hold the market portfolio.

FIGURE 1: ALICE'S FINAL PORTFOLIO
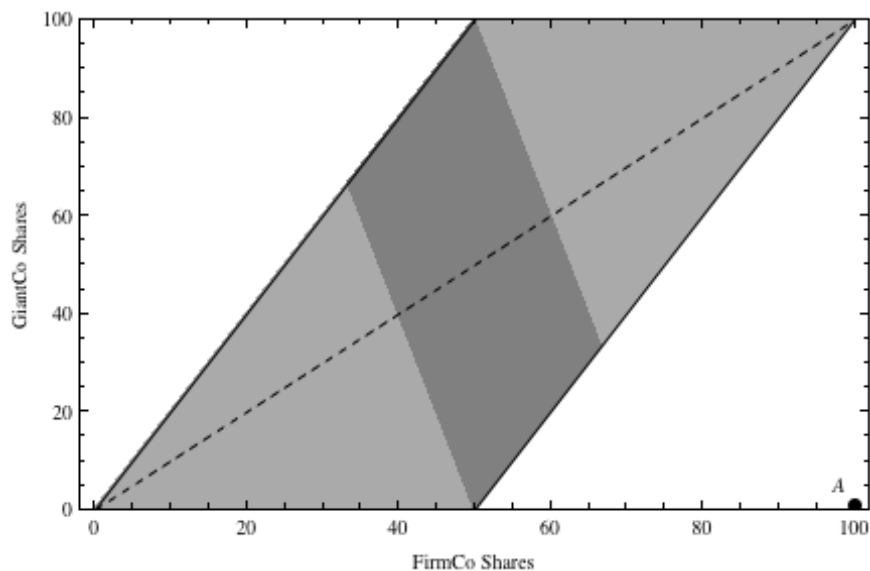
Thus, while the core outcome framework does not allow us to predict the exact portfolios that actors will hold, it does give us a range of possibilities. Combined with the unique predictions that it

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[240] If portfolios must include whole numbers of shares, and cash transfers are not possible, there are 10,201 possible portfolios, 1,701 of which are core outcomes.

[241] Bob's portfolio must be whatever shares Alice does not own. In other words, for any company, the number of shares that Bob holds must be 100 minus the number of shares that Alice holds.

[242] If our model also included Carol, producing a comparable graph would be much more difficult.

[243] Note that Figure 1 does not show how much cash Alice or Bob hold.

provides about asset values and firms' decisions, the core outcome framework provides a clear picture of the outcome a market will reach.

V. IMPLICATIONS OF THE CORE OUTCOME FRAMEWORK

We now turn to the social welfare implications of the core outcome framework. We begin by considering the implications of growing derivatives markets and the concomitant expansion of decoupling. We then explore various potential regulatory responses. Finally, we examine how sensitive these predictions are to certain assumptions underlying the model.

A. *Implications of the Growth of Derivatives Markets and Decoupling*

Some have argued that derivatives markets simply enable the market for the underlying securities to respond to new information better and faster.[244] Thus, the only effect of derivatives market growth is an improvement in the efficiency of the market for the underlying security.

Some commentators and pundits have rejected this view, particularly in the wake of the recent financial crisis.[245] They have argued that the growth of derivatives markets could have other, and potentially negative, consequences for the market for the underlying security.[246] However, this group has had difficulty articulating a rigorous explanation of the negative consequences that flow from a larger derivatives market and identifying the precise mechanism through which these consequences take place.

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[244] Scholars in this camp contend that, at worst, derivatives may increase volatility in the underlying market. *See, e.g.*, Myron S. Scholes, *Global Financial Markets, Derivative Securities, and Systemic Risks*, 12 J. RISK & UNCERTAINTY 271 (1996) (arguing that derivatives increase efficiency and do not pose systemic risks); Sung C. Bae et al., *Futures Trading, Spot Market Volatility, and Market Efficiency: The Case of the Korean Index Futures Markets*, 24 J. FUTURES MARKETS 1195 (2004); René M. Stulz, *Demystifying Financial Derivatives*, 2005 MILKEN INSTITUTE REVIEW 20, 25-26.

[245] *See, e.g.*, Lynn A. Stout, Betting the Bank: How Derivatives Trading Under Conditions of Uncertainty Can Increase Risks and Erode Returns in Financial Markets, 21 J. Corp. L. 53 (1995); PARTNOY, *supra* note 81, at 402.

[246] Other critics have focused more on derivatives' effects on systemic risk. *See, e.g.*, Colleen M. Baker, Regulating the Invisible: The Case of Over-the-Counter Derivatives, 85 Notre Dame L. Rev. 1287, 1308 (2010); Testimony of Richard Bookstaber Submitted to S. Comm. Agriculture, Nutrition, and Forestry 4 (June 4, 2009).

Similarly, this group has lacked a generalized formal economic model that supported its position.

Our analysis fills all of these gaps. It provides the first generalized formal support for the notion that the size of the derivative markets for a security can have major and, potentially (but not exclusively), negative consequences for the operation of capital markets. It also illustrates the mechanism through which these negative consequences are generated.

Before the growth of large derivatives markets, ownership and control generally tended to align; actors with large voting interests in firms usually had comparably large economic interests.[247] Thus, it seemed likely that those with control rights would generally exercise them in the best interests of the corporation. So long as public and private regulatory forces aligned firms' incentives with the general public's, almost any allocation of shares would typically constitute a core outcome.[248] It was not necessary to consider the allocation of economic or voting rights, and there was no concern about decoupling; it was generally sufficient to focus on share prices. This state of affairs worked well with competitive equilibrium analysis.

But this view of the financial markets is becoming increasingly untenable. Modern derivatives markets are large, which allows investors to have control rights over a corporation without a corresponding economic interest. Ownership and control need not be correlated, let alone identical. In the absence of disclosure, this can lead to many non-core outcomes. As derivatives markets continue to grow, ownership and control should only be expected to diverge further. The theory predicts that there will be empty voting, as well as hidden and morphable ownership,[249] and this has been borne out in practice.[250] Focusing

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[247] Of course, there have always been exceptions, such as corporations with classes of stock that differ in their voting and economic rights.

[248] Without large derivatives markets, any actor with enough voting power over a firm to implement Bet and Switch strategy would generally have a large positive in that firm. If firms' incentives align with society's, there will be few assets that significantly increase in value when a firm makes a decision that does not maximize its value. Combined, that means making the "Switch" will be costly and the actor will not be able to place enough "Bets" to reap a profit.

[249] *See* APPENDIX, *supra* note 33, at 1.2, 2.2.

[250] *See* Hu & Black, *supra* note 1, at 661 tbl.1 (collecting many examples).

on securities prices will no longer be enough; market participants, regulators, and observers must keep track of how economic interests and control rights are allocated among actors.

This increase in empty voting makes it more likely that votes by a firm's shareholders will not produce decisions that maximize the firm's value. If regulation effectively aligns firms' incentives with society's, this result is troubling; empty voting would promote socially inefficient decisions. Thus, one might be concerned about large or growing and unregulated derivatives markets.[251]

However, there are a number of instances in which public and private regulation may fall short: Antitrust regulators could erroneously allow two duopolists to merge into a single monopoly firm.[252] Environmental regulations might be too lax, so that a firm is not forced to take into account the full amount of the externalities that its actions will impose.[253] Corporate governance arrangements might give managers too much power.[254] Even perfect legal rules will be inadequate if agencies or counterparties lack the resources to enforce them with sufficient vigor. Other examples abound.[255]

In such situations, large derivatives markets can increase efficiency by making it easier for the actors who would be hurt by the firm's actions to steer the company toward a more socially beneficial decision. In other words, a large derivatives market may serve as a private backstop to regulation: It can increase private actors' ability to block socially inefficient actions that regulation would allow.

For example, suppose that FirmCo plans to build a new factory, but doing so requires a shareholder vote.[256] Building the

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[251] Large derivatives markets provide other benefits, such as improved liquidity in underlying markets, that may offset these effects. *See* PARTNOY, *supra* note 81, at 4-5; Fleischer, *supra* note 86, at 229-30.

[252] POSNER, *supra* note 136, at 387-89.

[253] *Id.* at 506.

[254] *See* Ribstein, *supra* note 145.

[255] *See* Part II.E, *supra*.

[256] Such actions generally do not require shareholder votes. A scenario more likely to require such a vote would be if there were a board of directors election in which different slates of directors had opposing views on the expansion plan,

factory will raise FirmCo's profits by $1 million, but it will also pollute a nearby lake, leading to $2 million in lost profits to GiantCo.[257] Building the factory is socially detrimental, since the costs to GiantCo outweigh the benefits to FirmCo. Nonetheless, in the absence of regulation to align FirmCo's interests with society's, building the factory is profitable for FirmCo and its self-interested shareholders will therefore approve it. In this scenario, empty voting, which makes it more likely that the shareholder vote will not reflect FirmCo's interests, would be a good thing. Empty voting offers GiantCo a path to block the transaction—essentially, a mechanism for it to correct a regulatory failure.

Empty voting may also improve social welfare indirectly by facilitating more efficient allocations of control and information rights.[258] When shareholders exercise their control rights over a firm, they do so from a place of uncertainty. They do not know what will happen in the future, either within the firm or the economy as a whole. Shareholders have some information, however; they receive signals about the current state of the world and how it is likely to progress in the future, and they make decisions based on their interpretations of these signals. The quantity and quality of signals that shareholders receive, their ability to interpret them, and their ability to influence management all vary. By separating voting and ownership, large derivative markets allow shareholders to allocate decision rights to the shareholders best-equipped to wield them. This allows the shareholders to maximize expected social value.

To take a simple example, suppose there are two shareholders in a corporation: Alice and Paul. Both shareholders want to maximize the corporation's value. Alice is an active shareholder who knows a lot about the firm's line of business and carefully follows its activities. Paul is a passive shareholder who does neither of these things. The uninformed Paul might want to

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or if the company were acquiring an existing enterprise that it planned to expand. The distinction is not important for this discussion.

[257] GiantCo could be in the fishing or tourism industries, for example. Note that this example would work the same way if the factory produced psychic loss to recreational users of the lake or environmentalists.

[258] *See* Ribstein, *supra* note 145.

give his control rights to the informed Alice, on the logic that she shares his interests and will presumably make better decisions.[259]

A similar dynamic has played out several times in securities markets.[260] Consider the hedge fund Laxey Partners. After Laxey invests in a company, it frequently agitates for measures that it believes will benefit shareholders.[261] To increase its leverage over corporate management, Laxey sometimes increases its control well beyond its economic ownership; in other words, it becomes an empty voter. For example, in one instance, Laxey increased its voting interest to a whopping nine times its economic interest.[262]

Similarly, hidden ownership can encourage shareholders to better monitor managers and to make better decisions. Acquiring and processing information about a company takes time and effort. If many investors each own a small share of a corporation, each will be tempted not to spend his own resources acquiring information and to instead free-ride off other investors' efforts.[263] The larger a shareholder's economic interest, the more likely he will be to expend resources acquiring and processing information.[264] Derivatives markets make it easier for existing shareholders to increase their economic interest.[265] Thus, hidden ownership can encourage information gathering and combat the free-rider problem.

Neither empty voting nor hidden ownership is strictly necessary to achieve these benefits. In theory, they can all be

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[259] This mirrors the corporation's separation of ownership and control, in which shareholders give managers the right and obligation to run the corporation on a day-to-day basis. BAINBRIDGE, *supra* note 35, at 197-207; *see also* WELCH, *supra* note 149 (discussing the efficient capital market hypothesis, which predicts that, on average, carefully observing corporations' actions will not let investors earn higher returns).

[260] For other examples, see Hu & Black, *supra* note 1, at 661 tbl.1.

[261] We take no position as to whether Laxey's views are correct, or whether they are good for society as a whole.

[262] *See* Algernon Craig Hall, *Laxey Turns up the Heat on British Land*, CITYWIRE MONEY, Feb. 27, 2003, *available at* citywre.co.uk/money/.

[263] *See* BAINBRIDGE, *supra* note 35, at 35-38.

[264] *Id.* Alternatively, one can attack the free-rider problem more directly. *See* Jordan M. Barry, Political Free Riding, papers.ssrn.com/.

[265] For example, if shareholders engage in derivatives transactions that significantly increase their economic ownership in the corporation, there could be multiple shareholders that each possess an economic interest equivalent to holding a majority of the company's outstanding shares. *See* Part II.C, *supra*.

achieved without decoupling. For example, in the factory example discussed above, GiantCo could pay FirmCo not to open the factory. In the Alice and Paul example above, Alice could simply tell Paul what she thinks is best, and Paul can vote accordingly.

Nonetheless, decoupling may offer significant efficiency benefits in practice. A number of real-world frictions can constrain the actors' ability to enter into arrangements like those discussed above. Actors may have limitations on the size of the portfolios they can hold, such as from regulatory restrictions[266] or takeover defenses such as poison pills.[267] They may face credit constraints.[268] There may simply be high transaction costs.[269] Decoupling offers another mechanism for actors to pursue their goals. And, since trades executed on an exchange are generally extremely low-transaction-cost transactions, there is particular reason to think that decoupling may increase the parties' ability to reach more efficient outcomes.

B. *Implications for Securities Regulation Policy*

The core outcome framework has significant implications for securities regulation. We consider two types of regulation: disclosure rules, which merely require actors to report their activities, and substantive rules, which impose limitations on conduct.

1. Disclosure Rules

The core outcome framework has important implications for several major disclosure design questions. We focus our analysis on three chief insights: First, the core outcome framework

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[266] *Cf.* PARTNOY, *supra* note 8181 at 87 (discussing regulatory restrictions on the types of investments certain actors can make).

[267] The poison pill is the most important takeover defense. It discourages a would-be acquirer by threatening her acquirer with dilution (the poison) if she reaches a certain threshold of ownership (i.e., swallows the pill). *See generally* Barry & Hatfield, *supra* note 144 (providing background). In some circumstances, a pill can be triggered by a share ownership threshold as low as 5%. Selectica, Inc. v. Versata Enterprises, Inc., 2010 WL 703062 at *8 (Del. Ch. Ct. 2010) (upholding such a poison pill).

[268] Credit constraints refer to an actor's inability to borrow money. *See* Francois Ortalo-Magné & Sven Rady, *Housing Market Dynamics: On the Contribution of Income Shocks and Credit Constraints*, 73 REV. ECON. STUD. 459 (2005) (exploring the effects of credit constraints).

[269] *See* Coase, *supra* note 116 (highlighting the importance of transaction costs).

gives a previously unrecognized reason for disclosure. Second, it indicates what type of disclosure is necessary. Third, it suggests that voluntary disclosure by private actors is unlikely to be sufficient.[270] These insights strongly support a mandatory disclosure regime.

To understand what an appropriate disclosure regime should look like, it is first necessary to understand why disclosure is valuable at all. Recall that the key intuitive difference between core outcomes and competitive equilibria is that, in a competitive equilibrium, anyone can always buy or sell an asset[271] at its market price.[272] This price is based on actors' expectations as to the decisions firms will make. Competitive equilibria frequently do not exist because of the Bet and Switch strategy; a person with control power can profit by making counter-expectation investments and then changing firms' decisions. The greater the extent to which control rights are transferable, the easier it is for an actor to acquire control power and execute this strategy.

The Bet and Switch strategy generates profits for the actor with control, but when this strategy shifts the market away from an efficient result, those profits come at her counterparties' expense.[273] If those counterparties had realized what the actor acquiring control was doing, they would not have agreed to transact. However, the competitive equilibrium framework, which allows unlimited purchases and sales at market prices, does not account for this. The core outcome framework restricts the Bet and Switch strategy because the would-be Bet-and-Switcher must induce other actors to join her coalition (to be her counterparties)—and they will not be willing to do so if the Bet and Switch will leave them worse off. Bet and Switch is only viable in the core outcome context if it makes all the defectors

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[270] We do not discuss the important practical question of how best to design a well-functioning disclosure system. We note that other commentators have carefully considered this issue and have put forth detailed proposals. *See, e.g.*, Hu & Black, *supra* note 1; Hu & Black, *supra* note 8.

[271] Or a control right, to the extent that they are transferable.

[272] *See* Part IV.A, *supra*.

[273] This is a slight simplification; in some instances, her counterparties could profit as well, but others would suffer larger losses. Those others would then have an incentive to co-opt the counterparties and shift the market outcome.

better off, which generally entails moving the market to a more efficient outcome.[274]

This insight—that socially inefficient decoupling behavior generally requires some actors (counterparties) to voluntarily engage in transactions that are not in their interest—strongly supports disclosure. Presumably, these actors are only acting against their interests because they do not realize what the holder of control rights is doing.[275] If the holder of control rights must publicly disclose her actions, potential counterparties will no longer be ignorant of what is happening and their role in it. Thus, it will be very difficult for the holder of control rights to find willing counterparties and, without them, she cannot execute the Bet and Switch.[276] In that case, we can be confident that the market will reach and remain at a stable and efficient outcome.[277]

In addition, for actors to move a market to a core outcome, or even to know that a core outcome has been reached, they must have substantial information about each others' economic interests and control rights.[278] In short, actors must know who holds control rights and anticipate how those rights will be exercised. To do that, they must know the economic interests of those actors holding control rights. They must also know the economic interests of other actors who might be able to induce control rights holders to change their votes. For example, suppose Alice has a large negative economic interest in a firm and Bob holds control rights.

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[274] This is a slight simplification; if the market is not at a core outcome, it is sometimes possible to assemble a group that can profitably implement the Bet and Switch strategy while moving the market to a less efficient result. However, another Bet and Switch will then be possible that moves the market to a core outcome. Once a core outcome is reached, it is no longer possible to assemble a coalition that can profitably implement a further Bet and Switch.

[275] POSNER, *supra* note 136, at 23 (discussing the pervasive classical economic assumption that actors are self-interested).

[276] *Cf.* George A. Akerlof, *"The Market for Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488 (1970) (showing how markets can unravel when parties have asymmetric information about values); Paul Milgrom & Nancy Stokey, *Information, Trade and Common Knowledge*, 26 J. ECON. THEORY 17 (1982) (presenting a result, known as the no-trade theorem, that says that under certain conditions, financial markets will produce no trades because any offer to buy or sell conveys information to counterparties that they would be foolish to accept the offer).

[277] *See supra* Parts IV.B-C.

[278] More precisely, it must be common knowledge. *See* DREW FUDENBERG & JEAN TIROLE, GAME THEORY 541-46 (3d ed. 1993) ("'[C]ommon knowledge' . . . describe[s] the infinite regress of 'I know that you know' . . . .").

Alice could induce Bob to vote against the firm's interests by entering into a derivatives contract with Bob that gives him a net negative economic interest in the firm.[279] To anticipate such potential maneuvers and counter-maneuvers, all significant economic interests and control rights must be disclosed.[280]

To be clear, it is not necessary to account for every outstanding share of stock. So long as those who are not subject to disclosure requirements do not have economic interests or control rights large enough to disrupt firms' decisions, the core outcome framework should hold up well.[281] Thus, there is no need to burden small shareholders with potentially onerous disclosure rules.[282]

This raises the question of whether it is necessary to impose disclosure rules on anyone:[283] If disclosure leads to efficient results, can market participants, left to their own devices, be expected to make sufficient voluntary disclosures, obviating the need for a mandatory regime?

Although our models do not speak to this directly, we do not believe that private disclosure will generally be sufficient. An actor who can disguise what she is doing and deceive her

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[279] This essentially allows Alice to share with Bob the gains she receives if the firm does not make decisions that maximize its value.

[280] More generally, making actors aware of each others' holdings makes it less likely that they will experience an inefficient outcome they could have avoided.

[281] *See* APPENDIX, *supra* note 33, at 1.2, 2.2.

[282] We note that disclosure need not necessarily come from shareholders. If transactions must be conducted through an exchange, the exchange would be a party to all transactions. Accordingly, it could potentially keep an automated, publicly available, up-to-the-minute account of all parties' positions.

[283] There is a longstanding debate about when mandated disclosure is preferable to relying on private parties' self-interest inducing them to make disclosures. *See, e.g.*, John C. Coffee, Jr., *Market Failure and the Economic Case for a Mandatory Disclosure System*, 70 VA. L. REV. 717 (1984); G.J. Stigler, *Public Regulation of the Securities Markets*, 37 J. BUS. 117 (1964); G. BENSTON, CORPORATE FINANCIAL DISCLOSURE IN THE UK AND THE USA (1976); G. Benston, *The Costs and Benefits of Government-Required Disclosure: SEC and FTC Requirements*, *in* CORPORATIONS AT THE CROSSROADS: GOVERNANCE AND REFORM 37-69 (D. DeMott ed. 1980); G. Benston, *Required Disclosure and the Stock Market: An Evaluation of the Securities Exchange Act of 1934*, 63 AM. ECON. REV. 132 (1973); G. Benston, *The Value of the SEC's Accounting Disclosure Requirements*, 44 ACCT. REV. 515 (1969) See H. Manne, Insider Trading and the Stock Market (1966); H. MANNE & E. SOLOMON, WALL STREET IN TRANSITION: THE EMERGING SYSTEM AND ITS IMPACT ON THE ECONOMY (1974). Schotland, *Unsafe at any Price: A Reply to Manne, Insider Trading and the Stock Market*, 53 VA. L. REV. 1425 (1967).

counterparties into transacting with her may be able to reap very large profits through the Bet and Switch strategy. Thus, she will not want other market participants to be aware of her overall position, and will conceal it as best she can.

Of course, her counterparties, and potentially other market actors, will have incentives to uncover what she is doing, or to require her to disclose it to them. Thus, the market should produce some degree of private disclosure.

However, there are several problems with relying on the market in this instance. First, disclosure to counterparties generally is not sufficient. For example, a party with a negative economic interest may be able to co-opt counterparties and employ the Bet and Switch strategy, to the detriment of other actors with larger positive economic interests.[284] Second, investigating counterparties' holdings may be costly. This could produce a free-rider problem that would prevent private disclosure from working well.[285] This is particularly likely to occur if a single actor has a concentrated economic interest while the opposite economic interest is dispersed across multiple actors.[286] Finally, it is worth noting that there have been instances in which traders successfully deployed and profited from deceptive tactics, even when counterparties were primed to expect them.[287] Thus, we believe that mandatory public disclosure will augment available information and may produce benefits.

Finally, one might be concerned that a comprehensive disclosure regime will discourage actors from gathering information,[288] and that this will outweigh the benefits of disclosure. An alternative approach would be to pair retroactive disclosure requirements with a legal rule that penalizes actors who employ the Bet and Switch strategy unless they can establish that it

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[284] See the text accompanying note 279 for an example.

[285] *See* BAINBRIDGE, *supra* note 35, at 35-38 (discussing free-rider problems among shareholders).

[286] *See generally* MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION; PUBLIC GOODS AND THE THEORY OF GROUPS (1971) (analyzing this dynamic).

[287] *See* PARTNOY, *supra* note 81, at 21-23 (discussing examples of successful misdirection in unregulated markets).

[288] See note 146, *supra*, and accompanying text.

was socially beneficial.[289] This could potentially discourage socially inefficient market manipulations without diminishing parties' incentives to gather information about securities' values. However, a court or agency might have difficulty evaluating whether particular behaviors were good for society.[290]

2. Substantive Intervention

Some commentators have called for substantive regulations to respond to decoupling. The core outcome framework could also support substantive regulations, especially if it is not possible to implement a sufficiently comprehensive disclosure regime at a reasonable cost.

For example, other commentators have previously proposed barring actors with a negative economic interest in a firm from exercising control rights over that firm.[291] The core outcome framework could potentially support such restrictions, at least in certain instances. Such prohibitions make sense if one believes that the decisions that maximize the firm's value also maximize social utility. However, this approach would encourage inefficient outcomes when the decisions that are best for the firm are not socially optimal. Thus, under the core outcome framework, the merits of this approach depend on the degree to which other regulations are efficient.

The same issue arises with respect to commentators' suggestion that companies can manage decoupling through corporate charter provisions.[292] For example, a charter that barred shareholders with negative economic interests from voting in corporate elections would promote shareholder voting that maximized the corporation's value. However, if the corporation's

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[289] *Cf.* Partnoy, *supra* note 115, at 254 (suggesting that ex post discipline by courts can improve ex ante incentives with respect to derivatives).

[290] It is also possible that an agency might be co-opted by those seeking to engage in socially detrimental but privately profitable decoupling transactions. This situation is known as regulatory capture. *See* Michael E. Levine & Jennifer L. Forrence, *Regulatory Capture, Public Interest, and the Public Agenda: Toward a Synthesis*, 6 J.L. ECON. & ORG. 167 (1990) (discussing the phenomenon of regulatory capture).

[291] *See, e.g.*, Martin & Partnoy, *supra* note 8, at 793.

[292] *See* Hu & Black, *supra* note 1, at 697-701.

interests conflict with society's, such a provision would be likely to lower social welfare.[293]

Our analysis also has important implications for the design of other legal rules. There are times in corporate law when a small group of shareholders can block an action. These low thresholds make the Bet and Switch strategy more attractive.[294] Allowing a small percentage of outstanding shares to block a transaction also puts more pressure on disclosure rules: Uncertainty with respect to the identity and incentives of relatively few small shareholders can create uncertainty about the firm's decision. Thus, more disclosure is necessary to ensure a core outcome.

For example, in some jurisdictions, if an acquirer purchases a sufficient percentage of outstanding shares, she can force the remaining shareholders to sell. In Australia, the necessary ownership is 90%.[295] In 2005, Cleveland Cliffs attempted to acquire Portman Mining, an Australian company.[296] Seneca Capital, a hedge fund, moved to surreptitiously acquire a blocking interest.[297] Ultimately, the two parties struck a deal.[298] While this illustrates how actors can voluntarily agree to move from a non-core outcome to a core outcome, this negotiation might not have been necessary if the minimum ownership threshold were lower.

To take another example, some jurisdictions require minority shareholders to overwhelmingly approve a takeover offer from a majority shareholder.[299] In the Henderson Investments

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[293] It could even lower shareholders' utility as a class if shareholders' non-shareholder interests dominate. For example, this could happen if a firm had numerous shareholders, each of which held few shares, and the firm's inefficient action significantly affected the shareholders as employees or consumers.

[294] To be clear, the Bet and Switch strategy will only be possible in this context if the market expects the transaction to take place.

[295] *See* Bryan Frith, *Broker Goes For Broke on Portman Bid*, AUSTRALIAN, Apr. 8, 2005, at 18.

[296] *Id.* at 19*;* Bryan Frith, *Cliffhanger As Clock Ticks in Portman Bid*, AUSTRALIAN, Mar. 17, 2005, at 24.

[297] Frith, *supra* note 295, at 19.

[298] Bryan Frith, *Hauling Equity Swap Disclosure Over Coals*, AUSTRALIAN, June 8, 2005, at 36.

[299] Several U.S. states have enacted anti-takeover statutes that prevent an acquirer from taking certain actions for a period of time without a supermajority vote of minority shareholders. See Harry DeAngelo & Edward M. Rice, Antitakeover Charter Amendments and Stockholder Wealth, 11 J. Fin. Econ. 329, 348 (1983).

transaction discussed previously,[300] 90% of the outstanding minority shares were needed to approve the transaction. Since Henderson Land owned over 70% of Henderson Investments' shares, an actor could acquire the power to prevent the transaction by amassing less than 3% of the outstanding shares.

Such circumstances seem ripe for mischief. In theory, the core outcome framework predicts that disclosure is sufficient to correct this problem. But, since any disclosure regime will always fall short of the ideal, the wisest course of action may be to eschew rules that enable such a small percentage of outstanding shares to change outcomes.[301] We further explore differences between our idealized model and real-world markets below.

C. *Relaxing Simplifying Assumptions*

Our formal models make several simplifying assumptions that are not strictly true in the real world. Chief among these are assumptions regarding transaction costs and information.

1. Transaction Costs

Our competitive equilibrium and core outcome models assume that there are no transaction costs. This is a common modeling assumption, but is never strictly true in reality.[302] While public markets are generally considered to have very low transaction costs, there are two types of transaction costs that we believe may have significant real-world effects.[303]

First, buying and selling shares can entail commissions, fees, taxes, and other monetary costs.[304] As transactions get large enough, counterparties become more difficult to come by, further

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[300] *See* McMillan, *supra* note 6 (discussing same).

[301] To be clear, the same is true of rules that allow a very small percentage of shares to approve an action. Such rules are simply less common.

[302] *Cf.* Coase, *supra* note 116 (exploring the results that would flow if this assumption were literally true in reality).

[303] We note that the number of outstanding votes at any given time is fixed, but there is no theoretical limit on the economic interest an investor could take on through cash-settled derivatives, assuming that she can find enough counterparties. Thus, in practice, there may be larger transaction costs in the market for economic interests than for control rights.

[304] *See* Burton G. Malkiel, *The Efficient Market Hypothesis and Its Critics*, 17 J. ECON. PERSP. 59, 62 (2003) (discussing how such transaction costs can prevent investors from profiting from small-scale market inefficiencies).

raising costs. The real-world effect of these costs is reduced trading. This makes the Bet and Switch strategy less appealing and generally makes the market more stable. In practice, this means that these transaction costs render competitive equilibrium analysis somewhat more meaningful.[305]

Similarly, by making trading more difficult, these transaction costs undermine the core outcome framework's guarantee of efficiency. They also weaken its predictive power. Intuitively, because transaction costs make it less likely that the parties will trade their way to an efficient outcome, they increase the likelihood that the market will remain "stuck" at an inefficient result.

In short, these transaction costs help explain why decoupling is not even more common than it currently is. However, these costs have been dropping for a long period of time. The growth of computerization and derivatives markets is a tale of ever-falling transaction costs.[306] This trend is expected to continue, and decoupling to increase with it.[307] Accordingly, we do not believe it wise to place much reliance on these costs when formulating policy.

Second, and in our view more troubling, there are transaction costs for actors to coordinate their behaviors.[308] Consider two outcomes, one more efficient than the other. Compared to the efficient outcome, the inefficient outcome lowers many actors' well-being by a small amount but raises one actor's well-being by a large amount.[309] Without transaction costs, the many hurt actors should be able to band together and correct the inefficiency. In practice, however, the costs of organizing a large group of actors may be prohibitive and the market may remain

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[305] This is a somewhat surprising conclusion, since transaction costs generally impede markets from reaching competitive equilibria. *See* Coase, *supra* note 116.

[306] *See* Hu & Black, supra note 8, at 3.

[307] *See* Part II.C, *supra*.

[308] This problem is related to the free-rider phenomenon discussed earlier. *See* Part V.A, *supra*.

[309] Such a scenario also raises fairness concerns if the winners are likely to be large and sophisticated while the losers are smaller and unsophisticated. *See* Part II.D, *supra*.

stuck at an inefficient outcome.[310] Recall the prior example of the new factory that benefitted its owner but whose pollution imposed large costs on a rival business.[311] If those costs were spread among many smaller businesses or individuals, it might be quite difficult for them to jointly orchestrate an empty voting campaign.[312] Thus, if policymakers decide to impose substantive regulatory measures, they may wish to tailor them to address such instances.[313]

However, we note that while many envision public markets as full of relatively small shareholders, this view is incomplete in a key respect. Most small securities investors invest through institutional intermediaries such as mutual funds, pension funds, and other financial services providers.[314] Thus, forming coalitions may not be a matter of organizing thousands of small investors, but merely organizing a much smaller group of sophisticated intermediaries—a far less daunting task.[315]

2. Information

Our models make two key assumptions with respect to information. The first is that all parties know and agree upon each asset's value under every firm's potential decision. In reality, actors' value estimates are likely to diverge to some degree.

Variation among actors' value estimates is not a fundamental problem for our approach. In the Appendix, we show that, when parties have a range of beliefs about values, the model's predictions remain intact with only slight modifications.[316] More specifically, the market reaches the outcome expected to be

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[310] The market may also be shifted to an inefficient outcome in a similar manner; the Bet and Switch strategy resembles this process in reverse.

[311] See Part V.A, supra.

[312] It is worth noting that some investors do take a similar approach, and that there have been instances in which similar approaches have been successful. *See* Katherina Glac, *The Influence of Shareholders on Corporate Social Responsibility*, History of Corporate Responsibility Project Working Paper No. 2 at 4-14, *available at* cebcglobal.org/ (giving brief history of shareholder activism); *id.* at 13 (discussing how environmentalists used shareholder voting mechanisms to effect policy changes at Amoco in the 1990s).

[313] We note that this is broadly consistent with the SEC's investor protection mandate.

[314] *Cf.* Global Macro Monitor, *Who Owns the U.S. Equity Market?*, THE BIG PICTURE, *available at* ritholtz.com/blog/ (showing the relative U.S. equities ownership of different types of investors in 2011).

[315] *See* OLSON, *supra* note 286.

[316] *See* APPENDIX, *supra* note 33, at 1.3.

efficient, given the parties' various beliefs.[317] Assuming that the parties' beliefs about values are correct on average,[318] the model's predictions are largely unaffected.[319]

The second information assumption that our model makes is that every actor's securities holdings and incentives are common knowledge.[320] This assumption is more problematic. Any real-world disclosure system is likely to be imperfect. Even if disclosures are perfect, some actors may not stay abreast of them.

Moreover, public disclosure of financial holdings does not necessarily provide clarity with respect to every actor's incentives. For example, an employee holding stock in her employer may be inclined to vote against a takeover offer that is in her interest as an investor out of concern that the takeover could lead to layoffs.[321] Similarly, an investor who has a client relationship with a firm may vote with management to protect that relationship, even if it cuts against her interests as an investor.[322] Disclosure regimes often do not capture these types of interests.[323]

More generally, issues of uncertainty compound each other: For example, consider an investor who owns stock in a corporation and its largest customer, but who has a negative economic interest in its largest supplier. It may be difficult for other actors to anticipate how such an investor will vote in a particular instance. It will be especially difficult if some of these interests are not disclosed or if opinions differ as to how a decision will affect these various firms. Meanwhile, some investors may not have to make any disclosures at all.

Uncertainty about separate blocs of voters magnifies uncertainty about the ultimate outcome of the shareholder vote.

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[317] *See* APPENDIX, *supra* note 33, at 1.3 thm 3.

[318] Alternatively, the model holds up if actors' beliefs are inefficient, but are the best predictors of value available.

[319] *See* APPENDIX, *supra* note 33, at 1.3.

[320] *See* FUDENBERG & TIROLE, *supra* note 278, at 541-46.

[321] Acquisitions often involve consolidating two companies and reducing the number of personnel. Acquirers often replace many of target's managers and employees. JOEL M. STERN & DONALD H. CHEW, THE REVOLUTION IN CORPORATE FINANCE 563 (2003).

[322] *See* BNS Post Says U.S. *Hedge Fund Looks to Block Sears Deal*, *supra* note 104.

[323] *See* Hu & Black, *supra* note 8, at 866 tbl.3 (illustrating how U.S. disclosure laws do not require complete disclosure of all potentially relevant interests).

For example, if the interests of voters holding 5% of control rights are uncertain, to know whether a measure will receive a majority of votes, one must be confident that slightly more than 50% of the remaining voters will vote a particular way.[324] But, if 25% of voters' interests are unclear, one must have confidence that the remaining voters favor a particular outcome by a two-to-one margin—a much higher threshold.[325]

Thus, these factors multiply the uncertainty that actors face in the marketplace, undermining the conclusions of the core outcome framework. Yet, as long as disclosure is good enough—meaning that it conveys enough parties' interests with sufficient certainty in a large enough percentage of cases—and many actors pay a reasonable amount of attention to them, the model's predictions will endure. Those instances in which disclosure is not likely to meet this threshold may be most suitable for substantive regulatory intervention.

VI. CONCLUSION

The core outcome framework espoused in this Article gives significant insight into the thorny and increasingly prevalent issue of decoupling. Shifting away from the concept of competitive equilibrium and toward the core outcome framework offers policymakers and scholars a number of benefits. Competitive equilibria lose most of their desirable properties when control rights are introduced, and generally cease to exist at all when derivative markets grow large. Core outcomes, on the other hand, always exist, are always efficient, are stable, offer significant predictive power, and resemble observed real-world behavior.

Moreover, we show that, in the absence of transaction costs, knowledge of all major market participants' economic and

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[324] To be confident that shareholders will choose a particular option, one must be confident that more than 50% of outstanding votes will be cast in favor of that option. If 5% of votes cannot be predicted, then the requisite support must come from the other 95% of votes outstanding. Thus, one must have confidence that 52.6% of this latter pool of voters favors a particular outcome, a relatively slight increase above 50%.

[325] Again, one must be confident that more than 50% of outstanding votes will be cast in favor of the relevant option. If 25% of votes cannot be predicted, then the requisite support must come from the other 75% of votes outstanding. Thus, one must have confidence that 66.7% of this latter pool of voters favors a particular outcome.

control rights is both sufficient and essential for achieving a core outcome. This strongly supports a comprehensive and effective mandatory disclosure regime. Such a regime allows for decoupling in those situations in which it is socially beneficial, and only in those situations. Since private parties left to their own devices would generally not engage in such disclosures, the core outcome framework provides a strong justification for a fulsome mandatory disclosure regime for securities and derivatives markets.