

CORPORATE AGENCY PROBLEMS AND HYBRID FINANCIAL INSTRUMENTS

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ABSTRACT

The design of legal and contractual mechanism to control agency problems between firms and investors, namely asset substitution (AS) and private benefits' extraction (PBE), has long represented a core issue of the corporate governance agenda. This Essay suggests that hybrid financial instruments (HFI) including options may provide more efficient solutions to such problems than corporate fiduciary law and standard financing contracts, the instruments conventionally used to this end.

More specifically, this Essay makes three claims. First, both corporate fiduciary law and standard financing contracts implement a constraint strategy against AS and PBE, which fails to respond to a welfare-maximization criterion. Second, HFI contracts provide a superior option-based incentive strategy against such problems. Third, because the mandatory nature of the current corporate fiduciary model may hamper the efficiency of HFI incentive scheme, existing law should be amended so as to implement a permissive fiduciary model.

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INTRODUCTION

Financial innovation has been credited with having worked a revolution in corporate finance.¹ Corporate law, however, has remained virtually impassible to such a revolution. In particular, little attention has been paid by legal scholars to hybrid financial instruments (hereinafter, HFI), that is, to financial instruments containing both equity-like and debt-like features.² This is rather striking if compared to the wide use that both American and European corporations make nowadays of these instruments.³ Convertible

¹ MERTON H. MILLER, MERTON MILLER ON DERIVATIVES 3 (1997) (speaking of the derivatives “revolution” of the 1990s). *See also* Merton H. Miller, *Financial Innovation: The Last Twenty Years and the Next*, 21 J. FIN. & QUANT. ANAL. 1986, 459 (stating that “the word revolution is entirely appropriate for describing the changes in financial institution and instruments that have occurred in the past twenty years.”) In similar terms, *see, e.g.*, John D. Finnerty, *Financial Engineering in Corporate Finance: an Overview*, FIN. MANAG., Winter 1988, 14; IAN H. GIDDY, UNDERSTANDING AND USING HYBRID FINANCIAL INSTRUMENTS, GLOBAL FINANCIAL MARKETS (1994); Henry T.C. Hu, *New Financial Products, The Modern Process of Financial Innovation, and the Puzzle of Shareholder Welfare*, 69 TEX. L. REV. 1273, 1274-75 (1991); Frank Partnoy, *Financial Innovation and Corporate Law* working paper, at [www.uiowa.edu/~lawjcl/Financial%20Innovation%20and%20Corporate %20Law.pdf](http://www.uiowa.edu/~lawjcl/Financial%20Innovation%20and%20Corporate%20Law.pdf), last visited on June 15, 2007, at 2.

² The legal literature on HFI has mostly concerned the effects of such instruments on corporate tax law. *See, e.g.*, Adam O. Emmerich, *Hybrid Instruments and the Debt-Equity Distinction in Corporate Taxation*, 52 U. CHI. L. REV. 118 (1985); Jeff Strand, *Taxing Convertible Debt*, Stanford Law and Economics Olin Working Paper No. 236, Stanford Law School (2002). In more recent years, scholars have furthered investigation to the use of HFI in the venture capital context. *See, e.g.*, George G. Triantis, *Financial Contract Design in the World of Venture Capital*, 68 U. CHI. L. REV. 305 (2001); Steven N. Kaplan & Per Stromberg, *Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital*, 2002 REV. ECON. STUD. Nevertheless, few scholars have investigated the impact of HFI on corporate law. Exceptions are represented by the work of Professor Partnoy and Professor Hu, which focus on the effects of HFI on managerial fiduciary duties, and by the work of Professors Alexander and George Triantis, which analyzes the legal features of HFI containing conversion rights. *See* Hu, *supra* note 1; Partnoy, *supra* note 1; Alexander J. Triantis & George G. Triantis, *Conversion Rights and the Design of Financial Contracts*, 72 WASH. U.L.Q. 1231 (1994). A general economic and legal overview of HFI is provided in RICHARD W. KOPCKE & ERIC S. ROSENGREN (Editors), ARE THE DISTINCTIONS BETWEEN DEBT AND EQUITY DISAPPEARING? (1989) and in BRIAN COYLE, HYBRID FINANCIAL INSTRUMENTS (eds. 2002).

³ For instance, at the end of July 2006, American Express Co. generated \$ 750 millions from the disposal of hybrid securities, outperforming the \$ 500 millions sale expected by the company. Moreover, American Express’ offering came a day after the successful \$ 650 millions hybrid sale by Capital One Financial Corp. *See American Express Hybrids Shine*, WALL ST. J. (US EDITION), July 28, 2006, available at 2006 WLNR 13042117. Commenting the widespread use of HFI by American companies, Professor Partnoy has recently observed that “hybrid securities have proliferated so that the right-hand sides of many

bonds, income bonds, preferred stock and puttable stock are just a few of the several hybrid financial instruments increasingly offered to investors.⁴ Interestingly, besides sharing an hybrid nature, a large majority of these instruments have an additional common feature: they attribute options to investors.⁵

This Essay constitutes an initial attempt to give a law and economics explanation to the increasingly large use of HFI including options. The basic idea it develops is that such instruments may provide efficient contractual solutions to agency problems between

public company balance sheets contain many more slices than merely equity and debt.” Partnoy, *supra* note 1, at 2. As to the use of hybrids by European companies, convertible bonds, in particular, have registered record sales in recent years. To report some numbers, in 2001, companies tracked a record \$160 billion in convertible bond issues. See “*A Convertibles Conversation – Focus Convertible Bonds*”, Bloomberg Markets, July 2001.

⁴ Convertible bonds are debt instruments that can be converted by the holder into common shares of the issuing corporation. Income bonds are a type of bonds in which only the face value of the bond is promised to be paid to the investor, with any coupon payments being paid only if the issuing firm has enough earnings to pay for the coupon. Preferred stock is capital stock that provides a fixed payment, and takes precedence over common stock in the event of liquidation. In their basic version, puttable stock consists in a unit of common stock and a put option giving the holder the right to put the stock back to the issuing corporation at a predetermined price. For a detailed description of these and other hybrid financial instruments, see, e.g., Finnerty, *supra* note 1, at 18-29. For a throughout analysis of convertible bonds and puttable stocks, see *infra* Part III.C.1-2.

⁵ In HFI contracts, investors commonly hold two types of options: (i) a conversion right to exchange an original security for another security of the issuer, and/or (ii) a right of forced redemption of an original security by the issuer. See *infra* Part III.A. In fact, in many HFI, it is the inclusion of these option features the element that makes the instrument an hybrid. Convertible bonds are, probably the clearest example. It is the holder’s call option to convert the bonds into common shares that, by giving debtholders the right to participate in the potential appreciation of the firm’s equity, makes these instruments hybrids. Similarly, in the case of puttable stocks, the option to put the shares back to the company at a predetermine price, by limiting equity investors’ downside risk, confers to these instruments an hybrid nature. It should be noted, however, that HFI may likewise include option rights in favor of the firm. This is the case of, for instance, callable convertible bonds, which constitute a common variation on the conventional convertible bonds’ structure. These are convertible bonds which include also a call provision allowing the issuer (i) to force early conversion if the bond is in the money or, (ii) to redeem it for its face value plus, usually, a call premium.

firms and investors, namely asset substitution (hereinafter, also AS)⁶ and private benefits' extraction (hereinafter, also PBE).⁷

As a normative matter, the overall objective of an efficient corporate governance system should be to advance the social welfare.⁸ Accordingly, the design of legal and contractual mechanism to control corporate agency problems has long represented a core issue of the corporate governance agenda. Indeed, AS and PBE not only exploit investors, but also lead to a higher cost of capital, thereby reducing investment value.⁹ However, the constraint strategy adopted by the instruments traditionally used by corporate actors to contain these problems, corporate fiduciary law and conventional financing contracts, fails to provide solutions that maximize the parties' aggregate welfare. The standards imposed by corporate fiduciary law are too vague in content, and therefore of uncertain application, to provide an effective deterrence against corporate opportunism. The prescriptive design of conventional financing contracts,¹⁰ instead, reduce some agency costs, but tend to raise opportunity costs.

HFI contracts attributing options to investors provide an incentive strategy¹¹ against the undertaking of AS and PBE that is superior to the constraint strategy adopted by conventional instruments, as it responds to a welfare-maximization criterion. In brief, the incentive scheme provided by HFI works as follows: (i) HFI contracts are so designed that the undertaking of AS and/or PBE puts the investor's option into the money; (ii) the option's exercise imposes a cost on the firm, which alters the firm's incentives so to

⁶ Simplistically, the asset substitution problem can be said to consist in the *ex-post* increase of investment risk to the detriment of corporate creditors. *See infra* note 27 and literature cited therein.

⁷ Simplistically, the problem of the extraction of private benefits arises when the corporate controller (i.e., managers or majority shareholders) exploit such a position to extract personal benefits rather than maximize firm value. *See also infra* notes 24-25, 31.

⁸ *See* Henry Hansmann & Reinier Kraakman, *Agency Problems and Legal Strategies*, in *THE ANATOMY OF CORPORATE LAW* 18 (Kraakman et al., eds. 2004). *See also* Alan Schwartz & Robert E. Scott, *Contract Theory and the Limits of Contract Law*, 113 *YALE L.J.* 541, 544 (2003). (arguing that "the state should choose the rules that regulate commercial transactions according to the criterion of welfare maximization.") Under this view, social welfare is measured by the number of contracts that maximize the *ex-ante* gains of the contracting parties.

⁹ Hansmann & Kraakman, *supra* note 8, at 22.

¹⁰ The reference, here, is, in particular, to rigid corporate contracts. *See infra* Part II.C.1.

¹¹ On optimal incentive schemes and agency problems, see generally Oliver Hart, *Financial Contracting*, 34 *J. ECON. LIT.* 1079, 1082, (2001).

ensure that a deviation from the contractual set of actions will take place only when the expected surplus it generates is higher than the option cost; (iii) because this incentive compatibility constraint¹² is satisfied only when the deviation from the contractual scheme is value-increasing, HFI ultimately promote the undertaking of optimal courses of actions. As opposed to corporate fiduciary law, by making AS and PBE costly, this contractual scheme effectively reduces firms' incentives to engage in these forms of opportunism. At the same time, as opposed to standard corporate contracts, it avoids opportunity costs by leaving the parties free to exploit the real options of the investment.

Under the current corporate governance system, however, economic and legal constraints exist that might undermine the potential of HFI to provide superior solutions to corporate agency problems. The costs arising out of these instruments' intrinsic complexity, and the higher risk of intra-corporate conflicts to which this complexity might lead,¹³ may induce parties to choose more simple, albeit suboptimal, conventional instruments to constrain AS and PBE. The mandatory nature of the current corporate fiduciary model might also compromise HFI efficiency. In particular, the shareholder primacy rule (hereinafter, SPR) may introduce distortions in directors' incentives, which may jeopardize the property of HFI contracts to promote the undertaking of optimal courses of actions.

This Essay addresses both these constraints and attempts to devise solutions that might help fostering HFI efficiency. As to the economic constraints, it argues that the increasingly sophisticated nature of many corporate actors, paired to a full exploitation of the potential arising from the inclusion of option rights in financial contracts, may help containing HFI complexity costs. As to the legal constraints, it proposes that existing corporate fiduciary law should be amended so to implement a permissive fiduciary model, in which the SPR should become a default rule applicable when equity investors

¹² In principal-agent models, the *incentive compatibility constraint* is a property of optimal agency contracts, which is satisfied when the contract induces the agent to choose actions which maximize the utility of both parties (i.e., actions that are optimal also for the principal). *See, generally, See* BERNARD SALANIE, *THE ECONOMICS OF CONTRACT* 22 (eds. 2005). *See also* JEAN TIROLE, *THE THEORY OF CORPORATE FINANCE* 116 (on incentive compatibility constraints in lender-borrowers models).

¹³ By intra-corporate conflicts, this Essay means both the conflicts arising between debt and equity investors and those arising among different classes of investors holding a common debt or equity position. *See infra* Part IV.A.1.a. and Part IV.B.1.

do not choose to regulate their interests in the corporation through HFI contracts or are not sophisticated enough to implement such contracts.

The discussion on HFI will proceed as following. Part I will introduce corporate agency problems and explains why these problems have a value-reducing effect on investment value. Part II will criticize the legal and contractual instruments traditionally used by corporate actors to contain the risk of AS and PBE. In particular, example models will be provided to exhibit more clearly the sub-optimality of standard financing contracts. Part III will illustrate how HFI can offer more efficient contractual solutions to corporate agency problems, by focusing, in particular, on convertible bonds and puttable stock. The considerations elaborated in relation to these two instruments, however, should be considered as illustrative of a more general theory applicable to most HFI instruments. Also this discussion will be supported by example models, which attempts to show analytically the mechanisms governing the optimal incentive scheme provided by HFI. Part III will also explain why HFI may likewise mitigate corporate adverse selection problems. Part IV will address the economic and legal constraints that might undermine HFI efficiency and suggests solutions that might help overcoming these obstacles. The Conclusive Remarks will summarize the ideas developed in the Essay and briefly justify why it omits to consider the effect of corporate insolvency on the optimal incentive scheme provided by HFI.

I. AGENCY PROBLEMS IN FIRMS-INVESTORS RELATIONSHIPS

A. Corporate Agency Problems: An Overview

From an economic viewpoint, any contractual relationship in which a party, termed the agent, promises performance to another, termed the principal, can be re-qualified as an agency relationship.¹⁴ Accordingly, three main agency relationships can be identified in the corporate context.¹⁵ The first is that between the firm's (controlling) shareholders, as principals, and managers, as agents. The second is that between the firm's minority shareholders, as principals, and the controlling shareholders, as agents.

¹⁴ See Hasmann & Kraakman, *supra* note 8, at 21.

¹⁵ See *id.* at 22.

The third is that between the firm itself, as agent, and the third parties with whom the firm contracts—including, in particular, corporate creditors—as principals. As such, any of these agency relationship involves peculiar agency problems.

Generally, the common problem characterizing agency relationships lies in ensuring that the agent behaves in the principal’s interest rather than simply in her own.¹⁶ Because of the natural tendency of parties to behave opportunistically,¹⁷ there is, indeed, an intrinsic conflict between the interests of the principal and the agent. Unlike the principal, the agent is intrinsically able to exploit this conflict because she has superior information¹⁸ on the relevant facts.¹⁹ In particular, the agent can (i) rely on *hidden information*²⁰ to defy the principal as to her type in order to be hired (for instance, pretending to be more skilled than she actually is), and/or (ii) undertake *hidden actions*²¹ to expropriate the principal of her expected contractual benefits.²² The two problems are

¹⁶ *See id.* at 21.

¹⁷ By saying that parties naturally tend to behave opportunistically, this Essay means that they naturally tend to engage in self-interested conduct to the detriment of their counterparties. This basic contract-theory assumption is due to Oliver Williamson, who defines opportunism as “self-interested seeking with guile”, which involves the incomplete or distorted disclosure of information, especially calculated efforts to mislead, distort, disguise, obfuscate or otherwise confuse.” OLIVER E. WILLIAMSON, *THE ECONOMICS INSTITUTIONS OF CAPITALISM* 134 (ed. 1985).

¹⁸ The existence of asymmetric information is a necessary condition to allow the agent to exploit the conflict of interest with the principal. *See* Alan Schwartz, *Incomplete Contracts*, 2 *THE NEW PALGRAVE DICTIONARY OF LAW AND ECONOMICS* 278-79 (1998).

¹⁹ *See* Hasmann & Kraakman, *supra* note 8, at 21. In the corporate context the informational advantage of managers-agents

[g]oes beyond having more facts than investors do. Managers also know better what those facts mean for the firm. They have an insider’s view of their organization and what it can and cannot do. This organizational knowledge is part of managers’ human capital [A]n outside investors who tried to match an equally intelligent manager on this dimension would probably fail.

Stewart C. Myers & Natalia S. Majluf, *Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have*, 13 *JOURNAL OF FINANCIAL ECONOMICS* 187, 196 (1984).

²⁰ Private information bearing on who the agent is, i.e., on the characteristics that make her a good or bad type, are referred to as “hidden information.” *See* SALANIE, *supra* note 12, at 4.

²¹ Whereas the term hidden information defines the agent’s private information before the contract’s conclusion, the term “hidden actions” is used to indicate private information bearing on what the agent does after the contract’s conclusion. *See id.*

²² By expected contractual benefits, this Essay means the expected economic surplus without which a rational actor would not have concluded the contract (at least, not at the same economic

respectively known as *adverse selection* (or *ex-ante* opportunism) and *moral hazard* (or *ex-post* opportunism); they tend, however, to be closely interrelated, insofar as the agent's proclivity to engage in *ex-post* opportunism can be considered among the most important determinants of the agent's (bad) type.²³

In the corporate context, moral hazard and adverse selection problems take different forms depending on the underlying agency relationship. In the relationship between managers and shareholders, moral hazard takes place when managers act in their own personal interests rather than in that of shareholders, as when they exert insufficient effort to maximize the firm's profits.²⁴ In the minority-controlling shareholders relationship, the latter engage in *ex-post* opportunism when they seek to maximize their private benefits from control²⁵ rather than firm value.²⁶ Finally, in the firm-creditors

conditions). Cf. Timothy J. Muris, *Opportunistic Behavior and the Law of Contract*, 65 MINN. L. REV. 521 (1981) (considering opportunism as the transfer of wealth from one party to the other contrary to the parties' understanding).

²³ Agents who are likely to engage in *ex-post* opportunism are by definition bad-type agents. Hence, adverse selection takes place not only when agents pretend to be more skilled than they actually are, but also when they pretend to be more *honest* than they actually are. Thus, in this Essay the term *bad-type agent* will be used to identify both agents that are less skilled than they pretend to be and agents that behave opportunistically while pretending to be honest. By analogy, the term *bad-type firm*, saved when otherwise specified, will be used to identify both firms with poor-quality projects and firms that behave opportunistically, i.e., engage in asset substitution and private benefits extraction. The term *good-type firm*, instead, saved when otherwise specified, will be used to identify firms with high-quality project and that do not engage in either asset substitution or private benefits' extraction. See *infra* Part III.D.

²⁴ This particular form of managerial moral hazard is commonly termed *shirking*. To the extent that they do not participate in the upside potential of corporate projects, managers have, in fact, little or no incentives in being fully and intensely focused on maximizing the firm's profits. However, there is also a second type of shirking that matters. Managers fail to maximize firm's value also when they avoid doing things that are personally difficult, but economically efficient. This is the case of, for instance, managers that avoid firing people with whom they have formed personal relationships, notwithstanding these people do not perform adequately. A different form of managerial moral hazard is *entrenchment*. This occurs when managers choose projects that make them difficult to replace rather than value-maximizing projects. Finally, managers behave opportunistically when they profit from the consumption of on-the-job perquisites to the detriment of shareholders, like, for instance, when they spend corporate money to hire private jets for leisure travels.

²⁵ Private benefits from control can be generally defined as any benefit that controlling shareholders can extract at the expenses of minority shareholders. They may have either a dissipative or non-dissipative nature. Dissipative private benefits (DPB) include, for instance, perquisites and other amenities enjoyed by the controller, the diversion of corporate opportunities, cost-sharing arrangements

relationship, moral hazard takes the form of asset substitution, which consists in the *ex-post* increase of the investment's risk to the detriment of corporate creditors.²⁷

In each of these cases, then, a correspondent adverse selection problem arises because principals cannot say *ex-ante* whether an agent is likely to engage in *ex-post* opportunism.²⁸ To this extent, then, corporate adverse selection problems can be considered somehow subordinated to moral hazard problems. If the agent's ability to engage in moral hazard is constrained, it is, in fact, less likely that adverse selection

that overpay the controller for the services she furnishes to the company, unfair transfer pricing and other forms of self-dealing. Examples of non-dissipative private benefits (NDPB) comprise, instead, the increase in the controller's reputational capital deriving from the ownership of the controlling interest, or the controller's ability to explore business opportunities that the company cannot or does not want to undertake. Only DPB are value expropriating. Hence, a moral hazard problem arises solely in the case of the extraction of DPB. For this reason, in the following of this Essay, any reference to private benefits' extraction is to be intended as concerning exclusively DPB. See Simone M. Sepe, *Private Sale of Corporate Control: Why the European Mandatory Bid Rule is Inefficient*, EU. J. L. & ECON., (forthcoming 2008). For a very exhaustive discussion of private benefits from control, see Alexander Dyck & Luigi Zingales, *Private Benefits of Control: An International Comparison*, 59 J. FIN. 537 (2004). See also, e.g., Michael J. Barclay & Clifford G. Holderness, *The Law and Large-Block Trades*, 35 J. L. & ECON. 265 (1992); Clifford G. Holderness, *A Survey of Blockholders and Corporate Control*, ECON. POLICY REV. 51, 54 (2003).

²⁶ However, looking at things from a different perspective, it could be argued that the presence of a controlling shareholder might mitigate the problem of managerial opportunism. In fact, monitoring the management proves easier when the ownership of the firm is concentrated in the hand of a controlling, rather than dispersed, shareholder(s). See Ronald J. Gilson & Jeffrey N. Gordon, *Controlling Controlling Shareholders*, 152 U. PENN. L. REV. 785, 785-6 (2000). The problem with this view is that it presupposes that the controlling shareholder herself does not have incentives to behave opportunistically, which is in contrast with the contract theory assumption about the economic agents' natural inclination to behave opportunistically. See *supra* note 17.

²⁷ The firm's increased preference for risky projects arises out of shareholders' limited liability for corporate obligations, which has the effect of translating on debtholders a disproportionate share of the downside risk of such projects. For this reason, asset substitution decreases the value of creditors' claims. Among the pioneering work on the asset substitution (or overinvestment) problem, see, for example, Michael C. Jensen & William Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure*, 3 J. FIN. ECON. 305, 308 (1976); Stewart C. Myers, *Determinants of Corporate Borrowing*, 5 J. FIN. ECON. 147 (1977); Clifford W. Smith, Jr. & Jerold B. Warner, *On Financial Contracting: An Analysis of Bond Covenants*, 7 J. FIN. ECON. 117 (1979).

²⁸ Recall that the agent's tendency toward behaving opportunistically *ex-post* is among the most important determinants of the agent's bad type. See *supra* text accompanying note 23.

problems may arise.²⁹ In addition, the agent's willingness to sign a contract that constrains her ability to engage in moral hazard can well serve as a signal of the agent's (good) type and therefore help mitigating adverse selection problems.³⁰ For such reasons, this Essay will focus mainly on corporate moral hazard problems (hereinafter, also, generally, corporate opportunism problems) and only subsequently turn on adverse-selection problems.

Moreover, the Essay will refer generally to two basic forms of corporate opportunism: the risk of private benefits' extraction (hereinafter, PBE) and that of asset substitution (hereinafter, AS). There are two justifications for this choice. First, in the actuality, the line between corporate opportunism by managers or controlling shareholders is not always clear cut. Because controlling shareholders express the firm's management, it might be difficult to say whether managers are acting opportunistically in their own interest or in that of controlling shareholders. That is, being control in the public corporation delegated to managers, managerial opportunism can also be said to consist in the extraction of private benefits from control.³¹ Second, regardless of whether it takes place to the ultimate benefit of managers or controlling shareholders, PBE tends to have a dissipative nature.³² This means that the increase in the beneficiary's wealth

²⁹ When the agent's ability to engage in moral hazard is constrained, it is less likely that a bad-type agent (that is, a "dishonest" agent) will be selected because contracting could be no longer convenient for such a type. *See infra* Part III.D.

³⁰ *See infra id.*

³¹ Being managers delegated control over the firm, PBE is always materially operated by these corporate actors. For this reason, it is difficult to say whether private benefits are extracted to the managers' exclusive interest or also in that of, or on input of, controlling shareholders. Think for instance, to the second type of shirking described above. Managers' reluctance to fire a non-performing employee can well be due to pressure of the controller, who may have her own reasons to want to keep the employee in place (like, for instance, when the latter is a relative of the controller). Similarly, it might be very difficult to say whether the diversion of a corporate opportunity takes place to the controller's benefit or in the exclusive interest of managers. There are, however, two types of private benefits which are undisputedly extracted to the exclusive benefit of managers: shirking in its classical form (i.e., the failure to make optimum effort to maximize firm's profits) and entrenchment. Saved for these exceptions, the distinction between managerial and controlling shareholders' PBE can be operated only on a case-by-case basis. Nevertheless, what matters to the purposes of this Essay is that HFI can be an useful tool to constrain both forms of PBE. *See infra* Part III.C.2.

³² *See supra* note 25.

obtained through PBE is commonly accompanied by a correspondent loss in the counterparty's wealth.³³ Then, because this Essay focuses on the relationship between firms and investors, what matters to its purposes is that PBE decreases the value of equity investors³⁴ claims.³⁵ This happens independently from whether PBE is carried out by managers in their exclusive interest or in that of controlling shareholders. For these reasons, saved when otherwise specified, the discussion that follows will centre on two forms of corporate opportunism carried out by "firms"³⁶ to the detriment of "investors":³⁷ the risk of AS to the detriment of debt investors,³⁸ and that of PBE to the detriment of equity investors.

B. Corporate Opportunism, Investment Risk, and Social Welfare

Rational principals anticipate that agents may act opportunistically. This reduces the price they are willing to pay for the agent's performance³⁹ both directly, because principals discount the likelihood of opportunism, and indirectly, because they translate

³³ That is, there tends to be correspondence in the gains of either managers or controlling shareholders and the loss of, respectively, the firm's shareholders as a whole or the minority. *See* Sepe, *supra* note 25.

³⁴ Hereinafter in this Essay, the term *equity investors*, *equityholders*, or *shareholders* will identify generally all the firm's residual claimants. The term *controlling shareholders* or *corporate controller*, will identify those equity investors that have control power over the firm. The term *minority shareholders*, or *outside equity investors*, will identify those equity investors that do not have control power over the firm.

³⁵ However, when PBE is carried out by managers in their exclusive interest, it decreases the wealth of all shareholders; when it is carried out in the interest of (or also in the interest of) controlling shareholders, it damages minority shareholders only.

³⁶ Hereinafter in this Essay, the term *firm* will be used, saved when otherwise specified, to identify, generally, the party who acts as agent in the relationship with the investors-principals. However, it should be noted that in the relationship between the debt investors and the *firm*, the latter term refers to the corporate entity as a whole. In the relationship between the equity investors and the *firm*, instead, depending on whether the focus is on the majority or the minority shareholders, this term can refer either to the firm's managers or to the controlling shareholders.

³⁷ Hereinafter in this Essay, the term *investors* will identify generally both equity investors and debt investors as defined, respectively, *supra* at note 34 and at the note that follows.

³⁸ Hereinafter in this Essay, the term *debt investors*, or *debtholders*, or *creditors* will identify investors holding only a fixed claim toward the corporate income stream.

³⁹ *See* Hansmann & Kraakman, *supra* note 8, at 21 (arguing that opportunism reduces the value of the agent's performance to the principal).

on the agent the costs incurred to control agency problems (i.e., the agency costs).⁴⁰ Applied to the corporate context, this means that investors externalize on the firm the expected (direct and indirect) costs of PBE and AS by correspondently discounting the price of equity and debt securities.⁴¹ From a financial viewpoint, in fact, PBE and AS introduce uncertainty as to the expected returns from corporate assets.⁴² This, in turn, leads investors to demand higher discount rates. That is, by increasing investment risk,⁴³ corporate opportunism raises the firm's cost of capital.

Corporate opportunism, however, is only one of the several risks to which corporate assets are potentially subject. Commonly, such risks are grouped under two

⁴⁰ The expression *agency costs* was coined by Michael C. Jensen and William Meckling, who defined such costs as those borne by the principal to assure that the agent's performance will be precisely what was promised. In particular, Jensen and Meckling identify three different types of agency costs: (i) *monitoring costs*, arising from the principal's attempt "to limit divergences from his interest ... [and] the aberrant activities of the agent;" (ii) *bonding costs*, incurred to pay the agents "to expend resources to guarantee that he will not take certain actions which would harm the principal or to ensure that the principal will be compensated if he does take such actions;" (iii) the *residual loss*, defined as "the dollar equivalent of the reduction in welfare experienced by the principal due to the divergence between the agent's decisions and those decisions which would maximize the welfare of the principal." See Jensen & Meckling, *supra* note 27, at 308.

⁴¹ Investors are not able to distinguish firms that are likely to engage in PBE and/or AS from those that are not. As a result, they tend to pool firms in risk categories and price corporate securities on the basis of the average risk of each category. That is, because investors take into account the existence of bad-type firms when pricing securities, a good-type firm's pledgeable income is discounted by the presence of bad types. See generally SALANIE, *supra* note 12, at 102-06; TIROLE, *supra* note 12, at 252. Cf. also Charles B. Cadsby, Murray Frank & Vojislav Maksimovic, *Pooling, Separating, and Semiseparating Equilibria in Financial Markets: Some Experimental Evidence*, THE REVIEW OF FINANCIAL STUDIES, Vol. 3, n. 3, 315, 318 (1990) (claiming that, when managers have better information than potential investors on the value of corporate assets and of corporate projects' likely payoffs, investors will decide "how much to offer for newly issued securities" taking into account the presence of less valuable firms.)

⁴² The agent's incentive to behave opportunistically makes the principal unsure that "the agent's performance is precisely what was promised." See Hansmann & Kraakman, *supra* note 8, at 21. In this sense, the risk of opportunism makes the contractual performance *uncertain*. Because in corporate financing relationships, the agent's contractual performance consists in paying investors some expected returns from the corporate assets they have bought, we can say that PBE and AS make these returns uncertain.

⁴³ In finance theory, risk is, in fact, generally defined as "the extent of uncertainty associated with an asset's return." See RONALD J. GILSON & BERNARD S. BLACK, (SOME OF) THE ESSENTIALS OF FINANCE AND INVESTMENT, 85 (eds. 1993)

qualitatively different categories: systematic and specific risk.⁴⁴ The first is the risk determined by factors that affect the overall market (or the relevant market segment).⁴⁵ The second is the risk determined by events peculiar to a single firm (or to the relevant industry).⁴⁶ This classification of corporate risks, however, omits to consider that the factors that determine uncertainty (i.e., risk) can have either an exogenous or endogenous nature, depending on whether they are within or outside the firm's control. More specifically, while systematic risk is exclusively determined by exogenous uncertainty, specific risk might depend on both exogenous and endogenous uncertainty. In particular, as opposed to other forms of specific risk, corporate opportunism is a specific risk that depends entirely on factors under the firm's control. To the purpose of this Essay, then, risks which might affect corporate assets will be grouped into three categories: (i) systematic risk; (ii) exogenous specific risk, which is the specific risk due to factors outside the firm's control;⁴⁷ and (iii) endogenous specific risk, which is, basically, the risk of corporate opportunism.

Yet, the real concern with corporate opportunism is not that it raises distributive problems, but that it reduces social welfare. Potentially, higher discount rates demanded by investors to be *ex-ante* compensated for this risk may lead to a market breakdown on both the side of firms and investors. As to the former, such rates may, at the extreme, induce potential issuers to "refrain altogether from going to the capital market or, less drastically, limit their recourse to that market."⁴⁸ Increases in the cost of capital may,

⁴⁴ See, e.g., GILSON & BLACK, *id.* at 96; See also Burton G. Malkiel, *Theory of Capital Markets*, in THE FOUNDATION OF CORPORATE LAW 30 (Roberta Romano, eds. 1993).

⁴⁵ Such factors include, for instance, the risk of economic depression, recession, inflation, sudden fall or increase in interest rates, war, breakdowns in the financial or banking system, and so on.

⁴⁶ These events can be the most disparate, such as the success or failure of a particular investment, a fire in the firm's plant, a strike, the discovery of new technology, and also, as it will be shortly explained, the fact that the firm's managers do or do not engage in corporate opportunism.

⁴⁷ For instance, the risk of an unexpected fire in the firm's venues is a specific risk which depends on exogenous uncertainty, insofar as the firm cannot control it. However, if the risk of fire was due to the firm's negligence in setting up an adequate fire control system, it could be re-qualified as endogenous specific risk. Indeed, in the latter case, uncertainty can be said to depend on factors under the firm's control.

⁴⁸ TIROLE, *supra* note 12, at 237. See also SALANIE, *supra* note 12, at 11-42; PATRICK BOLTON & MATHIAS DEWATRIPOINT, CONTRACT THEORY 15, 31, 47-96 (eds. 2004); Myers & Majluf, *supra* note 19,

indeed, reduce the utility of good-type firms from contracting to the point of driving them out of the market.⁴⁹ As to investors, they anticipate that the demand of higher discount rates is not a perfect compensatory mechanism. In fact, such a mechanism may make corporate agency problems even more severe. First, it tends to make it more likely that bad-type firms will be selected, for firms that are more keen to engage in corporate opportunism are less affected by the reduction in their contractual utility determined by the demand of higher discount rates.⁵⁰ Second, it may encourage even good-type firms to behave opportunistically to regain *ex-post* what they lost at the bargaining stage.⁵¹ From the firm's viewpoint, in fact, the gains from opportunism would be compensatory of the discount on her pledgeable income operated by investors at the contract's signing.⁵² As a result of these problems, investors might prefer not to contract even when firms are willing to pay higher discount rates. This is, indeed, the rational behind credit rationing.⁵³

at 196; Cadsby et al., *supra* note 41, at 318. For an experimental study, see Robert Forsythe, Russel Lundholm & Thomas Rietz, *Cheap Talk, Fraud, and Adverse Selection in Financial Markets: Some Experimental Evidence*, THE REVIEW OF FINANCIAL STUDIES, Vol. 12, n.3, 481, 486 (1999).

⁴⁹ This will occur when the security price offered by investors is low enough to make contracting no longer convenient for good-type firms. See generally TIROLE, *supra* note 12, at 242-44.

⁵⁰ Firms that engage in AS are more likely to default on their loans and, therefore, less affected by a rise in interest rates. A rise in interest rates has, indeed, no effect on the borrower in the event of bankruptcy as long as she is protected by limited liability. See TIROLE, *supra* note 12, at 113 (speaking, more generally, of firms with low-quality projects). See also, George G. Triantis, *Financial Contract Design in the World of Venture Capital*, 68 U. CHI. L. REV. 305, 318 (2001) (arguing that “high interest rates exacerbate an adverse selection problem”, because the borrowers who are most likely to agree to pay high interest are the most risky ones). By analogy, lower equity prices are more likely to be accepted by firms in which there is significant PBE. Whereas the firm can count on gains from PBE, it will, indeed, be relatively indifferent to the reduction in its contractual utility determined by lower equity prices.

⁵¹ Cf. Triantis, *supra* note 50, *id.* (arguing that “high interest rates also increase agency problems by intensifying the incentive of borrowers to choose more over less risky projects.”)

⁵² Moreover, there might well be cases in which the expected risk of opportunism and the demand of higher discount rates are not exchangeable goods. That is, when the risk of opportunism is very high, the increase in the discount rate investors should demand to be *ex-ante* compensated would be so high as to make the exchange between the parties impossible.

⁵³ See, e.g., Tirole, *supra* note 12, at 113-16; Joseph E. Stiglitz & Andrew Weiss, *Credit Rationing in Markets with Imperfect Information*, 71 AM. ECON. REV. 393 (1981); BOLTON & DEWATRIPPOINT, *supra* note 48, at 57.

It follows from the above that reducing corporate opportunism is in the interest of both firms and investors.⁵⁴ Hence, an efficient corporate governance system should focus on designing contractual and legal mechanisms that provide optimal solutions to corporate agency problems, that is, solutions that maximize the aggregate welfare of the above corporate actors.⁵⁵ As opposed to the conventional instruments adopted by the governance system to constrain such problems, HFI have the potential to provide these solutions. Such instruments achieve this goal through the contractual attribution to investors of option rights, which alter firms' incentives so to ensure that a deviation from the contractually agreed set of actions will take place only when the deviating action is value-increasing.

II. SUBOPTIMALITY OF THE INSTRUMENTS CONVENTIONALLY USED TO CONSTRAIN CORPORATE AGENCY PROBLEMS

Corporate fiduciary law and standard financing contracts⁵⁶ are the instruments conventionally used to constrain AS and PBE problems. Both these instruments implement a constraint strategy, which prohibits opportunistic behaviors and sanctions firms who infringe this prohibition.⁵⁷ This common constraint strategy, however, fails to respond to a welfare maximization criterion, although the reasons of this failure differ in the case of corporate fiduciary law and standard financing contracts. Uncertainty surrounding the content and interpretation of corporate fiduciary law weakens its deterrent effects against corporate agency problems. The conventional design of corporate contracts, instead, reduces some direct and indirect costs arising out of

⁵⁴ See Hansmann & Kraakman, *supra* note 8, at 22.

⁵⁵ See *id.*

⁵⁶ The term *standard financing contracts* refers to straight debt and equity contracts, i.e. to financing contracts that do not contain any hybrid element.

⁵⁷ Cf. Hansmann & Kraakman, *supra* note 8, at 23 (speaking generally of legal constraints as “the most familiar” among the regulatory strategies that the law adopts against the agent’s opportunism and clarifying that such a strategy “constrains agents by commanding them not to make decisions, or undertake transactions, that would harm the interests of their principals.”)

corporate opportunism (hereinafter, also the *corporate opportunism costs*),⁵⁸ but increases opportunity costs.

A. Investments' Diversification: An Alternative Solution?

Before examining why the instruments conventionally used provide suboptimal solutions to corporate agency problems, it is worthy to take a step back. As long as corporate opportunism can be regarded as a particular type of specific risk,⁵⁹ one could, in fact, argue that such risk can be reduced simply by holding a diversified portfolio. Pursuant to modern portfolio theory,⁶⁰ in a diversified portfolio, investments' negative performance due to factors peculiar to single firms tend to be offset by other investments' positive performance. This makes the portfolio as a whole less risky and, therefore, more valuable. Thus, investors are willing to pay more for the securities therein included.⁶¹ Accordingly, in a diversified portfolio, the reduction in an investment value due to corporate opportunism would not decrease investors' expected returns from the portfolio as a whole, because this negative performance would be offset by the positive performance of other investments. Hence, diversified investors would not need to demand higher discount rates to be *ex-ante* compensated for the risk of corporate opportunism,⁶² which, in turn, would avoid the allocative problems originated by the demand of such rates.⁶³

This Essay, however, maintains that investments' diversification offers a sub-optimal solution to corporate agency problems. Although it may avoid the inefficiencies

⁵⁸ The term *corporate opportunism costs* refer to both (i) direct costs arising out of the risk of the firm's opportunism, such as the demand of higher discount rates, and (ii) indirect agency costs, with the exclusion, however, of opportunity costs (which are defined by Jensen and Meckling as residual loss). In corporate financing relationships, these are the costs arising out of the reduction in corporate value due to the side effects of contractual restrictions on managers' ability to pursue optimal investment decisions.

⁵⁹ See *supra* Part I.B.

⁶⁰ Modern portfolio theory was elaborated in the 1950s by Harry Markowitz, who was the first to discover that portfolios of risky stocks could be put together so that the portfolio as a whole would be less risky than any of the individual stocks held therein. See Harry M. Markowitz, *Portfolio Selection*, 7 JOURNAL OF FINANCE 77 (1952).

⁶¹ See GILSON & BLACK, *supra* note 43, at 95.

⁶² Cf. *id.*, at 97 (arguing that "if diversification is easy, the market price--the value--of a stock, bond, or other capital asset should depend only on systematic risk.").

⁶³ See *supra* Part I.B.

arising out of the demand of higher discount rates, diversification does not reduce firms' incentives to engage in corporate opportunism. Diversification merely counterbalances the negative effects of corporate opportunism on investors' expected returns. This does not decrease the likelihood that the firm will behave opportunistically. However, it may lessen investors' incentives to devise optimal contractual solutions to corporate agency problems. Being relatively insensitive to the increase in investment risk due to corporate opportunism, diversified investors have little reason to expend resources to design more efficient investment contracts. Yet, if agency costs were reduced, there would be more positive investment performances, which would increase investors' expected returns and, ultimately, lower the cost of financing for firms. In fact, diversification may prompt even greater opportunism. Diversified investors have both a reduced ability to monitor firms' behavior⁶⁴ and less incentives to engage in active and careful monitoring. This might make it easier for bad-type firms to mislead investors, both before and after the conclusion of the investment contract.

B. Corporate Fiduciary Law

Investigating the several legal strategies provided by the law to constrain corporate opportunism is well beyond the scope of this Essay. The discussion that follows will be confined to the American body of rules that most prominently addresses the PBE problem affecting equity investors.⁶⁵ corporate fiduciary law. As to the AS problem affecting debt investors, instead, the analysis is necessarily postponed to the next paragraph, which will analyze the shortcomings of the conventional contractual design in containing agency costs.⁶⁶ Pursuant to the general principle commanding legal

⁶⁴ See GILSON & BLACK, *supra* note 43, at 97.

⁶⁵ Other legal strategies addressing the PBE problem include, for example, mandatory disclosure rules, such as those provided by federal security law. This body of law obliges, for instance, American corporations to disclose top managers' compensation as well as all managerial transactions with the corporation exceeding U.S. \$60,000 in value. See Gerard Hertig & Hideki Kanda, *Related Party Transactions*, in THE ANATOMY OF CORPORATE LAW 103 (Kraakman et al., eds. 2004).

⁶⁶ Corporate law also provides legal strategies against corporate adverse selection problems. Think for instance, to federal disclosure rules. However, both because of space constraints and of being this Essay primarily focused on corporate moral hazard problems, no analysis of these legal strategies is hereinafter provided. A very thoughtful discussion of the various legal strategies provided by the law against both

intervention only when the law can protect the parties' interests better than private contracting, the U.S. jurisdiction has, indeed, generally omitted to intervene in firm-creditors relationships.⁶⁷ Albeit indirectly, however, the discussion on corporate fiduciary law will also touch on the AS problem, as this Essay⁶⁸ suggests that the shareholder primacy rule,⁶⁹ the basic tenet of directors' fiduciary obligations in solvent states,⁷⁰ may exacerbate such problem.

Corporate fiduciary law refers generally to the body of legal rules that regulates the fiduciary obligations of, respectively, corporate directors to shareholders and controlling shareholders to minority shareholders. As above-explained,⁷¹ these relationships are, in fact, subject to a common agency problem: the risk of PBE.⁷² Thus, it should come as no surprise that fiduciary duties owed by directors and controlling shareholders are quite similar in content. For this reason, although the following discussion focuses on directors' fiduciary duties to shareholders, the considerations therein expressed can be largely extended to the duties of the controlling to the minority shareholders.

corporate moral hazard and adverse selection problems is provided in Hansmann & Kraakman, *supra* note 8.

⁶⁷ See Gerard Hertig & Hideki Kanda, *Creditor Protection*, in THE ANATOMY OF CORPORATE LAW 72 (Kraakman et al., eds. 2004).

⁶⁸ In fact, this part of the discussion is drawn from a prior article I wrote on the matter. See Simone Sepe, *Directors' Duty to Creditors and the Debt Contract*, 1 J. BUS. TECH. L. 553 (2007). This idea, however, is not entirely new in finance theory. See, e.g., Clifford W. Smith, Jr. & Jerold B. Warner, *On Financial Contracting: An Analysis of Bond Covenants*, 7 J. FIN. ECON. 117, 118 (1979) (arguing that managers might behave opportunistically "acting in the stockholders' interest"); and TIROLE, *supra* note 12, at 84 (stating that "[m]anagers and shareholders often have incentives to take actions that ... redistribute wealth from lenders to managers and mainly shareholders.').

⁶⁹ The *shareholder primacy rule* is the expression used to identify the dominant view in both the American scholarship and case law pursuant to which the duty of directors to pursue the corporation's interest should be interpreted as an exclusive obligation to maximize shareholder wealth. See Sepe, *supra* note 68, at 1, fn.1.

⁷⁰ See *infra* Part III.B.

⁷¹ See *supra* Part I.A.

⁷² See also Hertig & Kanda, *supra* note 65, at 118 (arguing that "[c]onflicted transactions by controlling shareholders raise many of the same concerns that attend interested transactions by corporate managers. In both cases the danger is that an insider will misuse power on the firm's decision to extract private gains unavailable to shareholders in general.")

Corporate directors are commonly said to owe shareholders two basic fiduciary duties: a duty of care⁷³ and a duty of loyalty.⁷⁴ This pair of duties⁷⁵ address the problem of managerial opportunism through the imposition of direct constraints on managers' ability to undertake actions that may harm shareholders. In practice, however, the efficacy of such constraints in containing PBE is questionable. For their very nature, both the duty of care and the duty of loyalty qualify as open standards, which "leave discretion for adjudicators to determine *ex-post* whether violations have occurred."⁷⁶ This produces uncertainty and might, ultimately, compromise investors' ability to enforce such duties.

In particular, the business judgment rule⁷⁷ has generally kept American courts from reviewing the substantive merits of corporate decisions, which has made the enforcement of the duty of care particularly difficult.⁷⁸ Because of the absence of a

⁷³ The duty of care imposes on directors to exercise reasonable care in managing the corporation and, in particular, to inform themselves, prior to making a business decision, of all material information reasonably available. *See* *Smith v. Van Gorkom*, 488 A. 2d, 872 (Del. 1985). This is also the formulation preferred by most American states which have codified the duty of care.

⁷⁴ The duty of loyalty requires directors to subordinate their interests to that of the corporation—that is, to the interest of shareholders, and to refrain from any self-interested action.

⁷⁵ Even though many corporate law textbooks still make exclusive reference to this pair of duties, in recent years the existence of an additional fiduciary duty of disclosure has been increasingly acknowledged both by corporate law scholars and judicial decisions. The duty of disclosure imposes on directors to disclose all material information in seeking shareholder approval, or when a conflict of interests exists. *See, e.g.*, Bernard S. Black, *The Principal Fiduciary Duties of Boards of Directors*, Presentation at Third Asian Roundtable on Corporate Governance, Singapore, 4 April 2001, at 9-10. For a judicial statement of the duty of disclosure, *see, e.g.*, *Malone v. Brincat*, 722 A.2d 5, 9 (1998).

⁷⁶ Hansmann & Kraakman, *supra* note 8, at 24 (referring to legal standards in general).

⁷⁷ The business judgement rule blocks shareholders' actions, unless they can show strong evidence that the directors failed to act on "an informed basis, in good faith, and in the honest belief that the action was in the best interest of the company", which is a rather difficult presumption to rebut. *See, e.g.*, *Aronson v. Lewis*, 473 A.2d 805, 812 (1984).

⁷⁸ *See, e.g.*, STEPHEN M. BAINBRIDGE, *CORPORATION LAW AND ECONOMICS* 242, 286 (2002 ed.) (arguing that "[because the business judgment rule is so pervasive, the underlying duty of care remains poorly developed.]); Margaret M. Blair & Lynn A. Stout, *A Team Production Theory of Corporate Law*, 85 VA. L. REV. 247, 298. (1999) (affirming that the duty of care is more a theoretical, than an actual constraint because "in practice, [it] is all but eviscerated by a legal doctrine known as the "business judgment rule.", which "seriously undermines directors' accountability to shareholders by virtually insulating directors from claims of lack of care.") The effectiveness of the constraint imposed by the duty of care has been further reduced after the enactment by most American states of statutes limiting directors' liability for negligence conduct. *See, e.g.*, Ind. Code Ann. § 23-1-35-1(e), 23-1-37-8, -13, 23-1-37-15, 23-1-35-1(d) (1988); Del.

doctrine of noninterference equivalent to the business judgment rule,⁷⁹ U.S. courts have, instead, been more interventionist in holding directors liable for breach of the duty of loyalty.⁸⁰ Nevertheless, the progressive expansion of the means of validating *per se* conflicted transactions (through approval by disinterested directors, shareholders' ratification, or proof of the transaction's fairness)⁸¹ has significantly reduced the scope for the duty's enforcement, practically limiting its application to just two situations:⁸² undeniable self-dealing and stolen corporate opportunities.⁸³

Besides a problem of effectiveness, corporate fiduciary law may also raise an efficiency problem, since its basic tenet, the shareholder primacy rule, associated to the practice of most public corporations of compensating managers through equity-based

Code Ann. tit. 8, § 102(b)(7); N.Y. Bus. Corp. Law § 402(b), 722 (c), 721, 717 (b) (1988). The statutes have basically left corporations free to contract around the personal liability of directors, except where directors have acted in bad faith or received an improper benefit as a result of the transaction.

⁷⁹ See, e.g., BAINBRIDGE, *supra* note 78, at 306 (specifying that "it is well-settled that, ..., the business judgment rule does not preclude judicial review of self-dealing transactions.")

⁸⁰ Generally, then, the duty of loyalty has proved a more effective means than the duty of care to deter managerial opportunism. See, e.g., Jonathan C. Lipson, *Directors' Duties to Creditors: Power Imbalance and the Financially Distressed Corporation*, 50 UCLA L. REV. 1189, 1197 (stating that "[u]nlike the duty of care, the duty of loyalty has had a fairly robust career"); Blair & Stout, *supra* note 78, at 298 (affirming that "the duty of loyalty has teeth, and sets important substantive limits on directors' behavior.")

⁸¹ See, e.g., Del. Code Ann. tit. 8, § 144, which provides that

"a contract between a corporation and one or more of its directors or officers, albeit apparently conflicting, is not void or voidable if:

(i) The material facts ... are disclosed or are known to the board of directors or the committee, and the board or committee in good faith authorizes the contract or transaction by the affirmative votes of a majority of the disinterested directors, even though the disinterested directors be less than a quorum; or

(2) The material facts ... are disclosed or are known to the shareholders entitled to vote thereon, and the contract or transaction is specifically approved in good faith by vote of the shareholders; or

(3) The contract or transaction is fair as to the corporation as of the time it is authorized, approved or ratified, by the board of directors, a committee or the shareholders."

⁸² See Blair and Stout, *supra* note 78, at 298. The authors underline, in particular, how the duty of loyalty, as formulated nowadays, is not applicable to constrain directors from taking "corporate action with mixed motives": i.e., business decisions that provide non-monetary benefits to managers at the shareholders' expenses. *Id.* at 299.

⁸³ The narrower focus of the duty of loyalty could explain its larger effectiveness as a constraint against PBE. From this perspective, in fact, the duty of loyalty would more closely resemble a rule of law, than a legal standard. As such, it could be mechanically, and therefore more easily, enforced than the duty of care.

compensation schemes, may potentially extend to the managers the incentives of shareholders to engage in AS. Theoretically, managers are more risk averse than the firm's equity holders since they typically make specific investments in one firm and do not participate in the upside potential of corporate projects. As a matter of fact, however, the shareholder primacy rule, by making managers personally and exclusively liable to shareholders, tends to align the managers' interests with those of the latter. Whereas managers might risk being held liable to shareholders for not pursuing a potentially successful (albeit more risky) project, they can never be held liable to creditors if the undertaking of such a project results in a breach of the debt contract, as they are not part of this contract.⁸⁴ On the other hand, if the project succeeds, not only will managers please the shareholders, but, being often compensated through equity compensation plans, they will also advance their own interests.

C. Standard Financing Contracts

1. Rigid versus Flexible Contracts

From a contractual perspective, agency costs arise because contracts are inherently incomplete. If parties could write complete contracts there would be no room for opportunism, because they could prescribe “pay-off relevant actions for every possible state of the world and the payoffs for these actions.”⁸⁵ In the actuality, however, parties are not able to contract for all possible variables affecting the production of the exchange surplus because of the existence of informational asymmetry⁸⁶ and transaction costs.⁸⁷ As a result, unforeseen contingencies might materialize which make opportunism

⁸⁴ The cost of the contract's breach by managers is externalized on the corporation. To this extent, then, one could argue that, being the parties who ultimately bear this cost, shareholders should oppose managerial actions of the kind described. However, as long as the expected gain from the risky project is higher than the expected liability cost shareholders bear for the contract's breach, they will always favor this kind of actions. *See Sepe, supra* note 68, at 570, fn. 63.

⁸⁵ Schwartz, *supra* note 18, at 277.

⁸⁶ When information asymmetry exists either between the parties or between parties and arbiters (such as courts), a contract is said to be “endogenously incomplete”, because information is either not observable or verifiable. *See id.*, at 278. *See also generally* SALANIE, *supra* note 12, at 193.

⁸⁷ Pursuant to transaction-cost analysis, parties fail to write fully complete contracts because (i) specification costs may be too high to contract on all foreseeable contingencies, (ii) future states may not be fully foreseeable, and (iii) actors are rationally bounded. *See* Schwartz, *supra* note 18, at 278. In the

possible. This, in turn, renders the parties expected benefits from the contract uncertain, especially in agency relationships where there is an intrinsic risk of opportunism by the agent.⁸⁸

In the attempt to govern the uncertainty arising out of the risk of opportunism, parties write *rigid contracts*,⁸⁹ which condition on a limited set of pay-off relevant actions⁹⁰ and constrain the agent's ability to undertake different actions by limiting the agent's discretion. This type of contractual design shapes both debt and equity agreements, although its application is more apparent in the former set of contracts.⁹¹ Because they provide specific constraints against corporate agency problems,⁹² rigid contracts constitute a more effective means to contain such problems than corporate

corporate context, however, bounded rationality seems to be less relevant than the other two sources of contractual incompleteness, because corporate actors are mostly sophisticated parties.

⁸⁸ See *supra* Part I.A.

⁸⁹ On the concept, and the costs, of rigidity in contractual design, see Pierpaolo Battigalli & Giovanni Maggi, *Rigidity, Discretion, and the Cost of Writing Contracts*, 92 AM. ECON. REV. 798, 802 (2002).

⁹⁰ Cf. SALANIE, *supra* note 12, at 193-94 (arguing that because of transaction costs and informational asymmetry, "contracts typically take into account a limited number of variables that are believed to be the most relevant ones, or simply those most verifiable by a court of law.")

⁹¹ In accordance with the dominant scholarly opinion, the open-ended nature of shareholders' claims, as opposed to creditors' entitlement to fixed claims, makes almost impossible to constrain corporate opportunism exclusively by contract. This justifies the need for legal intervention. Because of the gap-filling role played by corporate law rules, one could, then, think that contracts between firms and equity investors do not need to be as rigid as contracts between firms and debt investors. In the actuality, however, both the act of incorporation, which governs the firm's relationship with outside equity investors, and the managers' employment contract, which regulates (together with the act of the incorporation) the shareholders' relationships with managers, are rigid contracts. Like debt contracts with the AS risk, these contracts seek to reduce the PBE risk by constraining the agents' discretion to undertake courses of action that are different from the limited set of actions specified in the contract. Nevertheless, it should be noted that rigid contracts are not equally effective against all the several forms of private benefits a corporate controller might extract. If such a contract might be effective in preventing, for instance, the consumption of on-the-job perquisites, or the diversion of corporate opportunities, it might be not as effective, for example, against shirking. On the contrary, the option strategy provided by HFI may help containing PBE in general. See *infra* note 203.

⁹² Because of the more effective constraints rigid contracts provide against corporate opportunism, the firm's acceptance of such a contract also proves a credible signal on the firm's (good) type, which, in turn, helps containing adverse selection problems.

fiduciary law.⁹³ Consequently, investors are willing to pay more for the firm's performance when the underlying contract is rigid. This, in turn, mitigates the allocative problems originated by the demand of high discount rates.⁹⁴ Nevertheless, this Essay argues that rigid contracts are a suboptimal means to solve corporate agency problems. Indeed, when agreements specify a limited number of actions (i.e., contingencies), and provide no (or very limited) discretion to undertake different actions, the original allocation of parties' entitlements may not reflect the external state adequately over time.⁹⁵ In uncertain economic environments, such as the corporate context, this risk increases. As a result, rigid contracts might impose significant opportunity costs on both firms and investors.

Put differently, rigid contractual design reduces the downside risk of (endogenous) uncertainty⁹⁶ at the expenses of its upside potential. As well known to finance theorists and management specialists, uncertainty involves not only dangers, but also hidden opportunities.⁹⁷ In the financial jargon, these opportunities are technically defined as the investment's *real options*.⁹⁸ Principally, such options include the ability to begin, expand, delay, accelerate, or abandon a project.⁹⁹ These options add value to the parties' exchange by enabling parties to costlessly adjust an original contractual agreement to changing external states as new information arises.¹⁰⁰ More simply, it can

⁹³ See *supra* Part II.B.

⁹⁴ See *supra* Part I.B.

⁹⁵ See Battigalli & Maggi, *supra* note 89, at 799.

⁹⁶ See *supra* Part I.B.

⁹⁷ See, e.g., Peter H. Huang, *Teaching Corporate Law From an Option Perspective*, 34 GA. L. REV. 571, 594(1999-2000) (arguing that "risks involves not only dangers, but also opportunities.")

⁹⁸ More specifically, a real option is defined as the right but not the obligation to acquire the present value of the expected cash flows by making an investment when the opportunity is available. See RICHARD A. BREALEY & STEWART C. MYERS, *PRINCIPLES OF CORPORATE FINANCE* 616 (eds. 2003). On the corporate law application of real options, see, e.g., Huang, *id.*, 593-96; Ellen Roemer, *Real Options and the Theory of the Firm*, in SATISH, *REAL OPTIONS - CONCEPTS AND APPLICATIONS* 56 (2005).

⁹⁹ See Roemer, *supra* note 98.

¹⁰⁰ Put differently, these options add value to the parties' exchange by giving parties the flexibility needed to react efficiently to different types of environmental uncertainty, including time uncertainty, price uncertainty, demand uncertainty or technological uncertainty. See, e.g., Roemer, *id.*, at 60; BREALEY & MYERS, *supra* note 98, at 617. In fact, any sequential investment process involves a whole series of real options. For example, the ability to expand an investment is a valuable asset in the event of a sudden

be said that the real option value of an investment project lies in that project's flexibility.¹⁰¹

Hence, from a real option perspective, agency contracts maximize the value of the parties' exchange when they give the most informed party, the agent, discretion (i.e., flexibility) over the implementation of the contractual agreement.¹⁰² Applied to the corporate context, this means that in order to maximize investment value, corporate contracts should leave the firm discretion over the implementation of investment projects.¹⁰³ On the contrary, rigid corporate contracts lock parties into irreversible courses of actions, which not only may decrease firm value, but also depreciate investors' claims. In the firm-equityholders relationship, the limits imposed on managerial (or controlling shareholders') discretion to the end of constraining PBE may prevent the undertaking of valuable investment projects,¹⁰⁴ which would increase firm value and, therefore, the investors' wealth.¹⁰⁵ Similarly, in the firm's relationship with debtholders, valuable investment projects might be foregone because of contractual restrictions designed to

increase in consumers' demand. To delay a project, instead, might prove valuable when the project's success depends on the improvement of new, but still underdeveloped, technology.

¹⁰¹ Roemer, *supra* note 98. For a thorough discussion on the importance of flexibility in contractual design, see Battigalli & Maggi, *supra* note 89. See also Triantis, *supra* note 50, at 307 (underlying the importance of flexibility in the venture capital context).

¹⁰² The agent, in fact, as the most informed party, is more likely to have access to new information that may make the original allocation of contractual entitlements no longer efficient. This, in turn, makes the agent the party in the best position to adapt contractual arrangements to changing external states. In similar terms, see Triantis, *supra* note 50, at 308.

¹⁰³ Indeed, the firm is the party who is most likely to know when it is worthy to pursue, delay or abandon a specific corporate project. See *id.*

¹⁰⁴ Contractual restrictions on managers' (or controlling shareholders') discretion over the firm's investment policy can, in fact, prevent a whole range of real options. For instance, contractual provisions designed to contain the risk of diversion of corporate opportunities can prevent the undertaking of new profitable projects. Similarly, provisions focused on containing the risk of perquisites' consumption may make the agent unable to delay the development of a project, as this could be interpreted as a means managers (or controlling shareholders) use to continue perquisites' consumption rather than as a real option of the investment.

¹⁰⁵ Such constraints may also reduce managerial wealth insofar as, most of the times, managers' compensation is linked to the firm's performance through equity based compensation schemes.

prevent AS.¹⁰⁶ This not only reduces firm value, but also harms creditors, since increases in cash-flow production reduce the risk of debtor's default on payment.

Under this view of corporate relationships, *flexible contracts*¹⁰⁷ would, thus, seem to serve the parties' interests better than rigid contracts. In the foregoing examples, if the parties' exchange were regulated by a flexible contract, managers would not be prevented from pursuing valuable investment projects. Yet, flexible contracts preserve the real options value of the exchange, but do not reduce corporate opportunism costs. In fact, they tend to increase such costs. Because of the natural tendency of agents to behave opportunistically, leaving agents discretion means to increase the likelihood that they will so behave. This is equivalent to say that the more firms are given discretion in the management of investment projects, the more they are likely to engage in PBE and AS. Thus, if the benefits of rigid contracts are offset by opportunity costs, "the gains from flexibility are offset by agency costs."¹⁰⁸ (i.e., corporate opportunism costs). Rational investors, however, anticipates that flexible contracts tend to increase such costs. As a result, they are willing to leave firms discretion over investment policy only as long as they are compensated by higher interest rates. This, however, takes us back to the above-described allocative problems to which the demand of such rates leads.¹⁰⁹ Finally, then, neither rigid nor flexible contracts are optimal instruments to solve corporate opportunism problems.¹¹⁰

a. An Example Model

An example model may be useful to exhibit more clearly the shortcomings of both rigid and flexible contracts in addressing corporate opportunism problems. More specifically, the following paragraphs will develop two analogous example models¹¹¹ to

¹⁰⁶ For a more detailed discussion of debt covenants' inefficiency, see Sepe, *supra* note 68, at 570-72.

¹⁰⁷ By *flexible contract*, this Essay means a contract that leaves discretion to the agent (i.e., the firm) to adapt contractual arrangements to changes in the external state.

¹⁰⁸ Triantis, *supra* note 50, at 308.

¹⁰⁹ See *supra* Part I.B.

¹¹⁰ For sake of simplicity, the discussion dichotomizes the contractual types at investors' disposal under the conventional contractual design. However, it should be noted that, in the actuality, corporate contracts include a continuum of rigid and flexible provisions.

¹¹¹ This part of the model borrows from Tirole, *supra* note 12, at 114.

show why either of the above contract types fails to provide efficient solutions to, respectively, the AS and the PBE problem.

i. The AS Problem

For sake of simplicity, the example model at hand eliminates the dichotomy between managers and shareholders by considering a wholly-owned firm managed by M , a single owner-manager. M has a project (*Type G*), which requires an investment K . However, she has assets $A < K$ and, therefore, must borrow $K - A$ from an outside investor, I , to implement the project. The model rests on four general assumptions:

- (A1): both M and I are risk neutral;
- (A2): the equilibrium interest rate is zero;
- (A3): M is protected by limited liability;
- (A4): a firm is the project it pursues.

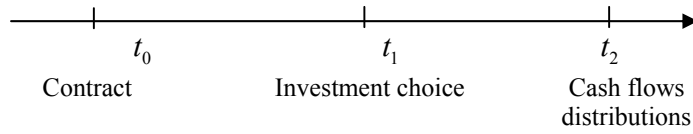
A1 is a domain assumption based on the consideration that the model deals with sophisticated parties, whose utility functions are, therefore, linear. A2 is a structural assumption. A3 means that both sides will receive zero in the case of failure of the project. Finally, A4 is made for convenience.¹¹²

The model has three periods. The sequence of actions and events, described in Fig. 1 below, is as follows. At t_0 the contract between M and I is signed and M sells I a security S , which for simplicity is assumed to be a zero coupon security. At t_1 , the investment choice is made by M . At t_2 , income from the project $\rho_G \in \{R_G, 0\}$ is generated. This means that the project can either succeed and generate income R_G with probability p_G , or fail and generate income zero with probability $(1 - p_G)$. Hence, the project's expected value is equal to: $E(\text{Type } G) = p_G R_G$.

¹¹² As it will be discussed hereinafter in this Essay, in the actuality a firm undertakes a continuum of projects during its lifetime. *See infra* Part IV.B.2. To the purpose of the model, however, it is irrelevant whether the firm pursues a sole or a continuum of projects during its existence.

Under these circumstances, at t_0 , to be *ex ante* compensated for the risk of failure of the project, I will demand an interest rate π_G , which reflects the default premium $(1 - p_G)$.¹¹³

Fig. 1. Sequence of actions and events



In the actuality, however, new information may arise between the signing of the contract and the distribution of payoffs. This means that, at t_1 , the opportunity for a new project (*Type B₁*) might materialize giving M the opportunity to choose an investment strategy over the set $\Theta := \{\textit{Type G}, \textit{Type B}_1\}$ of projects. If *Type B₁* is undertaken, it generates income $\rho_{B_1} \in \{R_{B_1}, 0\}$, where R_{B_1} occurs with probability p_{B_1} . Hence, the expected value of the project is equal to: $E(\textit{Type B}_1) = p_{B_1} R_{B_1}$. Furthermore, *Type B₁* allows the development of new technology so that $R_{B_1} > R_G$. However, *Type B₁* is riskier than *Type G* and therefore $p_{B_1} < p_G$.

To understand whether, at t_1 , M will choose *Type G* or *Type B₁*, one must consider the expected payoff functions of M under each project. For sake of simplicity, let:

$$(1) \quad R_{B_1} > R_G > S$$

¹¹³ The value of S , then, is $S = (K - A)(1 + \pi_G)$.

Recall that, under A3, M receives 0 if the project fails. Thus, under *Type G*, her payoffs are $\rho_M^G \in \{R_G - S, 0\}$, while under *Type B₁* her payoffs are $\rho_M^{B_1} \in \{R_{B_1} - S, 0\}$. Hence, the expected payoff functions of M are equal to $U_M^i = p_i(R_i - S)$, where $i = G, B_1$. This means that a necessary condition for M to undertake either *Type G* or *Type B₁* (i.e., M 's participation constraint)¹¹⁴ is that $p_i(R_i - S) \geq A$.

It follows from the above that M will undertake *Type B₁* when $U_M^{B_1} > U_M^G$. Thus, it is apparent that, when $E(\textit{Type B}_1) > E(\textit{Type G})$, M will choose *Type B₁*. Note that, under these circumstances, the undertaking of *Type B₁* is socially desirable because it maximizes investment value. M , however, can find profitable to undertake *Type B₁* even when $E(\textit{Type G}) > E(\textit{Type B}_1)$ (i.e., when *Type B₁* constitutes an AS strategy). Indeed, given A3, when the following condition holds:

$$(2) \quad S(p_G - p_{B_1}) > E(\textit{Type G}) - E(\textit{Type B}_1)$$

M will *always* choose *Type B₁*, even though it generates a social loss equal to: $E(\textit{Type G}) - E(\textit{Type B}_1)$.

Regardless of whether the undertaking of *Type B₁* could be socially efficient, I , however, will never want M to undertake this project. Indeed, given $p_{B_1} < p_G$ and having I a fixed return from the project (π_G), the undertaking of *Type B₁* always depreciates S .¹¹⁵ Things would be different if I had perfect information on the probabilities and the supports of the alternative project at disposal of M . In this case, I could, in fact, require an interest rate π_{B_1} , which reflects the higher risk of *Type B₁*, so to avoid that the

¹¹⁴ In principal-agent models, the *participation constraint* (or *individual rationality constraint*) is a property of optimal agency contracts, which is satisfied when the contract leaves all participants at least as well off as they would have been if they hadn't participated. See, generally, SALANIE, *supra* note 12, at 22, 76. See also TIROLE, *supra* note 12, at 117 (on participation constraints in lender-borrowers models).

¹¹⁵ This is equivalent to say that $p_{B_1}S < p_GS$ holds.

undertaking of this project depreciate S .¹¹⁶ In the actuality, however, asymmetric information exists between M and I . Moreover, while, at t_0 , I has information on *Type G* (because M needs to disclose such information to induce I to sign the contract), she has no information on *Type B₁*. Consider also that, at t_1 , I cannot observe the investment choice made by M . She is only able to observe the payoffs of the project at t_2 . For these reasons, at t_0 , the parties are not able to write a state contingent contract, i.e., a contract providing for the payment to I of a different premium (i.e., π_G , π_{B_1}) depending on which project M undertakes at t_1 .

Anticipating that M could undertake *Type B₁* rather than *Type G*, under the conventional contractual design, two contractual solutions¹¹⁷ exist to prevent that the undertaking of *Type B₁* depreciate S , that is, to ensure the respect of the investor's participation constraint. First, I can bargain for a rigid contract, which mandates M to undertake *Type G* and bans any discretion of M to undertake a different project. This contract, however, constitutes a suboptimal solution, because it prevents M from undertaking *Type B₁* also when $E(\textit{Type B}_1) > E(\textit{Type G})$, thereby generating a social loss (i.e., an opportunity cost) equal to $E(\textit{Type B}_1) - E(\textit{Type G})$.¹¹⁸

Alternatively, I can bargain for a flexible contract that leaves M discretion to undertake either *Type G* or *Type B₁* as long as M is willing to pay an interest premium, π^* such that $\pi_G < \pi^* < \pi_{B_1}$, which satisfies I 's participation constraint.¹¹⁹ This

¹¹⁶ The interest rate π_{B_1} would be such that in equilibrium the following equality would hold: $U_i^j = p_G[(K - A)(1 + \pi_G)] = p_{B_1}[(K - A)(1 + \pi_{B_1})]$.

¹¹⁷ For sake of simplicity, the model, like the above discussion, dichotomizes the means at investors' disposal to avoid that the undertaking of projects like *Type B₁* can depreciate the value of S . In the actuality, however, these solution are usually cumulative, rather than alternative. *See supra* note 110.

¹¹⁸ That is, by preventing the undertaking of projects like *Type B₁* even when they are socially desirable (i.e., when such projects constitute real options of the investment), rigid contracts depreciate the *ex-ante* value of the parties' exchange.

¹¹⁹ The participation constraint which defines π^* is determined by the probability that M will choose *Type B₁*. Because, at t_0 , I has incomplete information on *Type B₁* and she is not able to fully

solution, however, is likewise suboptimal because it allows M to undertake *Type B₁* also when $E(\textit{Type B}_1) < E(\textit{Type G})$, thereby generating a social loss (i.e., a corporate opportunism cost) equal to $E(\textit{Type G}) - E(\textit{Type B}_1)$. In fact, given $\pi_G < \pi^* < \pi_{B_1}$, a contract demanding an interest rate π^* , by increasing the amount of debt due to I (i.e., the value of S), tends to make it more likely that Condition (2) will hold, which raises the likelihood that M will engage in AS.

ii. The PBE Problem

The above example model can be adapted to show why the conventional contractual design is likewise inefficient in solving the PBE problem. Hence, the setting and the assumptions underlying the above model still hold here. In this case, however, I contributes to the financing of the investment project of M (i.e., *Type G*) by purchasing equity.

The periods of the model are also analogous to those described above. At t_0 , the contract is signed and I buys equity for an amount equal to $K - A$. At t_1 , when M makes the investment choice, the possibility for her to undertake a different investment project (*Type B₂*) arises. This new project is such that it enables M to extract an amount, B , of private benefits.¹²⁰ At t_2 , income from the project is realized. *Type G* generates income $\rho_G \in \{0, R_G\}$; *Type B₂* generates income $\rho_{B_2} \in \{0, R_{B_2} + B\}$, where $B = R_G - R_{B_2}$ but $R_{B_2} > \frac{K - A}{K} R_G$. When private benefits are extracted, however, the project's probabilities of success are lower, so that $p_{B_2} < p_G$. Hence, I will never want M to undertake *Type B₂*.

observe the state of the world existing at t_1 , the probability I assigns to the likelihood that M will choose *Type B₁* is a Bayesian probability; i.e., a conditional probability upon (i) the set of information at disposal of I at t_0 , and (ii) the gearing of the firm.

¹²⁰ This implies that the amount of private benefits M can extract in the model is given. In the actuality, however, the amount of private benefits M can extract mainly depends on the quality of the legal system in which the firm operates. See Dyck & Zingales, *supra* note 25, *passim*.

To understand which project M will choose at t_1 , one must, again, consider the expected payoffs functions of M under each project. Under *Type G*, the payoffs of M are $\rho_M^G \in \left\{ \frac{A}{K} R_G, 0 \right\}$, while under *Type B₂* her payoffs are $\rho_M^{B_2} \in \left\{ B + \frac{A}{K} R_{B_2}, 0 \right\}$. Hence, the expected payoff functions of M are equal to, respectively: $U_M^G = p_G \frac{A}{K} R_G$ and $U_M^{B_2} = p_{B_2} \left[B + \frac{A}{K} R_{B_2} \right]$.¹²¹

It follows from the above that when $B > \frac{A}{K} \left[\frac{p_G R_G - p_{B_2} R_{B_2}}{p_{B_2}} \right]$, M will *always* choose *Type B₂*, thereby procuring a social loss equal to $R_G(p_G - p_{B_2})$.

Similar to what happens with the AS problem, under the conventional contractual design, I has at disposal two solutions to prevent that M might choose *Type B₂*. First, I can bargain for a rigid contract, which mandates M to undertake *Type G* and bans any discretion of M to undertake different projects. This, however, is a suboptimal solution, because it may prevent M from undertaking projects that are different from *Type G* even when they do not constitute a *Type B₂*-like project, i.e., even when the deviation from the contractual set could be socially efficient. Second, I could potentially bargain for a flexible contract that leaves M discretion over the investment choice in exchange for a reduction of the contract's price.¹²² Also this solution, however, is suboptimal because it leads to less available funds to finance investment projects and, therefore, decreases the likelihood that profitable projects are undertaken.

2. Renegotiation

The above discussion on the conventional design of corporate contracts is incomplete in the respect that it omits to consider renegotiation. Because renegotiation is

¹²¹ This means that a necessary condition for M to undertake either project (i.e., M 's participation constraint) is that $U_M^i \geq A$, where $i = \{G, B_2\}$.

¹²² That is, in order that I agree to a flexible contract, M should give her the same share of equity for a price lower than $K-A$.

a means to adequate original allocations of entitlements to changes in the external state,¹²³ one could argue that, as long as rigid contracts include renegotiation clauses, such contracts may provide optimal solutions to corporate agency problems.¹²⁴ The inclusion of these clauses would allow parties to introduce flexibility in rigid agreements (i.e., to preserve the real option value of the exchange), without risking that it might be abused by the firm to engage in corporate opportunism. Because renegotiation allows deviations from the original contractual set only after uncertainty is resolved and on agreement of both parties, it intrinsically excludes that the firm may exploit flexibility to the investors' detriment.

This Essay, however, takes issue with the proposition that rigid contracts including renegotiation clauses might provide value-maximizing solutions to corporate agency problems. There are two basic reasons for this. First, in the public corporation context, renegotiation of corporate contracts tends to be costly, which might prevent parties from being able to achieve the efficient outcome *ex-post*. Second, where renegotiation is an available opportunity, the benefits of rigid contracts including a renegotiation clause must be weighted against the costs arising out of the reduced efficiency of such contracts to constrain corporate opportunism.

As negotiating a contract implies various transaction costs, so does renegotiating it. Such costs include, for instance, the costs of gathering and processing (new) information, attending (re-)negotiation meetings, hiring legal counseling, drafting new contractual provisions (or amending previous ones), etc. In the public corporation context, such costs might significantly increase because of the existence of coordination

¹²³ See, e.g., Salanie, *supra* note 12, at 194 (arguing that “renegotiation allows the parties to react efficiently to unforeseen contingencies”); Klaus M. Schmidt, *Contract Renegotiation and Option Contracts*, 1 THE NEW PALGRAVE DICTIONARY OF LAW AND ECONOMICS 432 (1998) (claiming that “[r]enegotiation is beneficial and necessary to achieve “an *ex-post* efficient outcomes in every state of the world.”)

¹²⁴ To the extent that rigid contracts including renegotiation clauses provide optimal solutions to corporate opportunism problems (i.e., moral hazard problems between firms and investors), they also help reducing corporate adverse selection problems. See *supra* text at notes 29-30.

problems.¹²⁵ These are the problems (i.e., the costs) implied by the coordination of the action of multiple parties.¹²⁶ Indeed, not only is the modern public corporation characterized by diffuse shareholder ownership,¹²⁷ but also by disperse debt investors.¹²⁸ Because of these various costs, the real option value of the exchange is reduced when such options are pursued through renegotiation. Hence, the benefits obtained from flexible contracts are not equivalent to those obtained from introducing flexibility in rigid agreements through renegotiation clauses.¹²⁹ More relevantly, in the public corporation context, coordination costs may so increase renegotiation costs as to offset the parties' expected gains from the pursuing of real options.¹³⁰ In particular, "the practice of firms to incur debt over time and from multiple creditors"¹³¹ may seriously hamper renegotiation,¹³² as it poses not just a problem of coordinating the action of multiple

¹²⁵ Cf. Alan Schwartz, *A Normative Theory of Business Bankruptcy*, 91 VA. L. REV. 1199, 1201, 1239 (2005) (speaking of the obstacles that coordination problems can raise as to the implementation of efficient bankruptcy procedures.)

¹²⁶ From this perspective, renegotiation is less costly where the firm raises capital through bank financing, because coordination problems are commonly excluded in this case. Hence, in the bank financing context, renegotiation might be a feasible solution to achieve *ex-post* efficiency. Cf. Triantis, *supra* note 50, at 315 (arguing that "renegotiation lies at the heart of financing flexibility in ... bank lending").

¹²⁷ As to debt investors, coordination problems are always present; as to equity investors, instead, they arise (only) when a shareholder majority vote is required to undertake a new project that imposes the renegotiation of an original agreement.

¹²⁸ Think, for instance, to renegotiation costs such as the costs of processing information. In the public corporation context, these costs multiplies in reason of the number of parties to which information must be disclosed and made verifiable before they agree to renegotiation of an original agreement (i.e., to the pursuing of a real option of the investment). Analogous considerations, however, can be put out in relation to any of the renegotiation costs mentioned above.

¹²⁹ For instance, investors would not bear information-processing costs if the underlying contract was flexible, because discretion on whether undertaking a real option would be left to the unilateral decision of the most informed party, the firm. Hence, only flexible contracts truly preserve the real-option value of the investment.

¹³⁰ In option terms, this means that, under a renegotiation regime, the real options' exercise price might be so high as to outweigh the parties' expected gains from the undertaking of such options.

¹³¹ Schwartz, *supra* note 125, at 1239.

¹³² *But cf.* Schwartz, *id.* (arguing that the obstacles to the implementation of efficient bankruptcy procedures created by coordination costs among different classes of creditors "likely could be overcome.") On the contrary, this Essay argues that absent a self-enforcing power, such as the attribution of an option right, coordination problems may seriously hamper the achievement of consensus from multiple parties.

parties, but that of achieving consensus among multiple parties with potentially conflicting interests.¹³³

When renegotiation costs are sufficiently low to make renegotiation an available opportunity, the likelihood that the contract will be renegotiated might, instead, undermine the constraint strategy implemented by rigid contracts against corporate agency problems. As previously explained,¹³⁴ rigid contracts reduce the room for opportunism by conditioning on a limited set of pay-off relevant actions and constraining the agent's discretion to undertake different actions. This constraint scheme works by threatening firms with dire consequences should they deviate from the set of pay-off actions contractually agreed with investors. Acceleration clauses in debt contracts are an example of how this scheme is implemented in practice. Acts of incorporations, instead, may provide for indemnification provisions to the benefit of minority shareholders when the majority undertakes actions that deviate from the contractually agreed set.¹³⁵ Still, managers' employment contract may prescribe several punishment measures (including, the termination at will of the contract) if managers fail to respect contractual provisions.

The possibility of renegotiation interferes with these contractual schemes,¹³⁶ because the agent forecasts that the unfavorable consequences, which should follow deviation from the contractual set of actions, can ultimately be renegotiated. For example, the deterrence effect of acceleration clauses on AS might be significantly jeopardized if the firm anticipates that such clauses are likely to be renegotiated. Analogous considerations can be made as to the constraints imposed by rigid contracts against PBE.

¹³³ See also *infra* Part IV.A.1.b. and Part IV.B.1.

¹³⁴ See *supra* Part II.C.1.

¹³⁵ Indemnification provisions to the benefit of minority shareholders, in the form of an appraisal right, are sometime provided by law upon the undertaking of major transactions from which the minority shareholders dissent. See Hansmann & Kraakman, *supra* note 8, at 25 (discussing the right of appraisal as an example of a legal strategy used to mitigate agency problems in firms-investors relationship). See also Hertig & Kanda, *supra* note 65, at 124-26 (analyzing the use of indemnification provisions in various jurisdictions as a shield against the undertaking of self-serving transactions by the controlling shareholder.)

¹³⁶ To this extent, then, parties to a rigid contract could, in fact, prefer high renegotiation costs. Cf. Alan Schwartz & Joel Watson, *The Law and Economics of Costly Contracting*, 20 J. L. ECON. & ORG. 2 (arguing that parties to complex contracts prefer high renegotiation costs because renegotiation might interfere with the efficient incentives these contracts provide, while parties to simple contracts prefer low renegotiation costs because simple contracts are often suboptimal *ex-post*).

Hence, rigid contracts including renegotiation clauses imply higher expected corporate opportunism costs than rigid contracts banning renegotiation. Under this profile, rigid contracts including renegotiation clauses can, in fact, be assimilated to flexible contracts, as both these contract types tend to increase corporate opportunism costs. The latter do so by leaving agents (more) opportunities to behave opportunistically, the former by failing to constrain effectively such opportunities.

III. THE OPTIMAL INCENTIVE SCHEME PROVIDED BY HFI

HFI implement an option-based incentive strategy against corporate opportunism, which is superior to the constraint strategy adopted by both corporate fiduciary law and standard financing contracts. There are two reasons for this. First, by making it costly for firms to deviate from the contractual set of action agreed with investors, HFI contracts including options, as opposed to corporate fiduciary law, reduce firms' incentives to engage in AS and PBE. This, in turn, decreases agency costs and, ultimately, the firm's cost of capital. Second, the wealth constraint imposed by HFI contracts on actions that deviate from the contractual set does not prevent the firm from pursuing such actions when they are value-increasing. That is, as opposed to standard financing contracts, HFI contracts preserve the real option value of the investment and, therefore, maximize the parties' *ex-ante* gains from the exchange.

A. HFI as Risk-Management Vehicles

HFI contracts commonly attribute investors two basic types of options: (i) a right of downstream or upstream conversion;¹³⁷ and (ii) a right of forced redemption by the issuer (hereinafter, also the investor's redemption option).¹³⁸ In option terms, these rights

¹³⁷ The distinction between downstream and upstream conversion bears on whether the security into which the original one can be converted has higher or lower priority. *See* Triantis & Triantis, *supra* note 2, at 1233. Convertible bonds are an example of HFI attributing a right of downstream conversion. Certain types of puttable stock convertible into notes, instead, are an example of HFI attributing a right of upstream conversion. *See infra* Part III.C.1–2.

¹³⁸ These options can be singularly or cumulatively present in HFI. For example, conventional convertibles contain only a conversion option; while, puttable convertibles include both a conversion and a redemption option. *See also infra* note 250. Similarly, puttable stock can contain both redemption and conversion options or only one of these option features. *See infra* Part III.C.2.

are differently characterized. The conversion option is, usually, a European call option¹³⁹ to purchase another security of the issuer by surrendering the original security. The strike is the conversion price, i.e., the price at which the original security, taken at its face value, can be converted into another security of the issuer. The conversion option goes in the money when the conversion price is lower than the current market price of the security into which the original one can be converted. The redemption option, instead, is a European put option¹⁴⁰ to sell the security back to the issuer. In this case, the strike is the par value of the security, often increased by a premium. The redemption option goes in the money when the current market value of the security is lower than its nominal value. Both in the case of the conversion and the redemption option, then, the option price is commonly embedded in the security price. A simplistic way to isolate it, however, is to calculate the difference between the price of a security including an option right and that of an equivalent security having no option features.¹⁴¹

Notwithstanding these structural differences, both the redemption and the conversion option can be characterized as outside options.¹⁴² By giving the holder the right to sell a security back to the issuer, the redemption option attribute investors a right to exit a contractual relationship with the firm. The conversion option, instead, gives investors two alternative outside options.¹⁴³ Indeed, two contractual relationships are

¹³⁹ An European option is an option which can be exercised only at the expiry date of the option, i.e. at a single pre-defined point in time. Sometimes, however, conversion options can be American options, which can be exercised at any time between the purchase date and the expiration date. *See* COYLE, *supra* note 2, at 11.

¹⁴⁰ Unlike conversion options, forced redemption options cannot be American options, because such options would be too costly for the firm. Investor could indeed ask for redemption as soon as things start going bad, even immediately after the instrument issuance.

¹⁴¹ In the case of convertible bonds, for instance, the difference between the market value of a straight bond bearing an interest coupon x and a convertible bond bearing a coupon $y < x$ is the price paid by convertible bondholders for the conversion option. *See* William W. Bratton, Jr., *The Economics and Jurisprudence of Convertible Bonds*, WIS. L. REV. 667, 673.

¹⁴² An outside option is the option to exit from a contractual relationship. In thick markets, investors always have a *given outside option*, which they can exercise by selling the security to a third party purchaser. *See, generally*, ALBERT O. HIRSCHMAN, EXIT, VOICE, AND LOYALTY: RESPONSES TO DECLINE IN FIRMS, ORGANIZATIONS, AND STATES (1970).

¹⁴³ By alternative options, this Essay means that the investor can exercise either one or the other of the options attributed by the right of conversion.

potentially involved when HFI include a conversion right. There is the actual relationship where the firm sells and the investors buy an original security. Still, there is also a potential, future relationship, where the firm has the obligation to buy back, and the investors the right to put back, the original security in exchange for another security of the issuer. Hence, on the one hand, the conversion option enables investors to exit from a current relationship with the firm to enter into a new one; on the other, it gives investors the right not to conclude a relationship with the firm.¹⁴⁴ However, what matters to the purpose of this Essay is that both these options give investors a way out from a contractual relationship with the firm, whether actual or potential, at a given price, i.e., the option exercise price.

Under this view, HFI options can be considered equivalent to contractual termination provisions,¹⁴⁵ which attribute investors the right either to terminate a contract (i.e., a termination right) or not to conclude a contract (i.e., a cancellation right). The option's holder agrees to pay *ex-ante* a termination fee (i.e., the option price) to reserve the right to walk away from the contractual relationship at the option exercise price should the value to her of the contractual performance diminish due to unforeseen contingences.¹⁴⁶ The termination-right account of HFI options is consistent with the established view of financial options as *risk-management vehicles*.¹⁴⁷ In fact, the option

¹⁴⁴ To this regard, while the redemption option can be likened to a withdrawal right, the conversion option more closely resembles a right of transfer. As opposed to the former, the conversion option allows, in fact, the investor not only to withdraw the value of an investment she has made, but also to reinvest this value in another investment. *Cf.* Hansmann & Kraakman, *supra* note 8, at 25 (speaking, generally, of *the right to withdraw* and of *the right of transfer* as two different types of exit strategies provided by the law against corporate agency problems).

¹⁴⁵ *Cf.* Robert E. Scott & George G. Triantis, *Embedded Options and the Case Against Compensation in Contract Law*, 104 COLUM. L. REV. 1428, at 1429-30, 1456-76 (arguing, conversely, that contractual termination provisions can be seen as embedded options, which give the holder the right to walk away from the exchange.)

¹⁴⁶ *Cf. id.*, at 1460-61 (arguing that in buyer-seller relationships, termination rights can be seen as options, which give the buyer the right to walk away from the contemplated exchange in case of (i) increase in the seller's costs that may lead the seller not to perform; (ii) change in the value to the buyer of the seller's performance; and (iii) fluctuation in the seller's profit that may increase the buyer's liability for breach damages.)

¹⁴⁷ Commonly the reference to options as insurance contract is to put options. *See, e.g.*, Robert C. Merton, *Applications of Option-Pricing Theory: Twenty-Five Years Later*, 88 AM. ECON. REV. 323, 336-37

price can be considered as the price the holder pays to shift to the writer the risk of fluctuations in the valuation of the contractual performance (hereinafter, also the *valuation risk*).¹⁴⁸ In public markets context, where HFI transactions take place, this risk is, basically, the risk of a decrease in the expected returns from the investment (i.e., from corporate assets). Hence, the risk-management function served by HFI options, acting as termination provisions, consists in shifting from investors to firms the risk of a decline in the market value of corporate assets due to unforeseen contingencies.

This is straightforward in the case of the redemption option. By giving investors the right to put a corporate security back to the issuer at its par value, such option acts a termination right, which guarantees investors against losses in returns materializing when the market value of the security falls below the par.¹⁴⁹ When HFI attribute a conversion option, instead, the investor's valuation risk depends on two variables: (i) the market value of the original security, and (ii) that of the security into which the original one can be converted. Accordingly, the conversion option serves a two-folded risk-management function. First, by attributing investors the right to convert an original security into another security of the issuer upon appreciation of the latter,¹⁵⁰ the conversion option acts as a termination right, which gives investors the power to exit a contractual relationship to enter into a more valuable one. This insures investors against losses in returns that materialize when the original security depreciates or fails to appreciate as much as the

(1998) (arguing that “[w]hen [a put option is] purchased in conjunction with ownership of the underlying asset, it is functionally equivalent to an insurance policy that protects its owner against economic loss from a decline in the asset’s value below the exercise price for any reason”). Following the put-call parity principle, however, the discourse on the insurance function served by put options can be extended also to call options. The put-call parity principle teaches that is always possible to express equalities among various sets of contingent claims, including put and call options. See Hans R. Stoll, *The Relationship Between Put and Call Option Prices*, 23 J. FIN. 801 (1969). In fact, a call option is equivalent to the combination of holding the underlying asset and a put option on the same asset and borrowing the exercise price.

¹⁴⁸ That is, the option's holder ultimately buys an insurance policy from the writer against the valuation risk. See Scott & Triantis, *supra* note 145, at 1460-61.

¹⁴⁹ As explained above, redemption options go in the money when the market value of the underlying security falls below its par value.

¹⁵⁰ As explained above, conversion options go in the money when the conversion price is lower than the current market price of the security into which the original can be converted.

other security of the issuer.¹⁵¹ Second, by giving investors the right not to purchase the other issuer's security if this fails to appreciate (or depreciates), the conversion option acts as a cancellation right,¹⁵² which allows investors not to conclude a contract when doing so is not profitable. This insulates investors against the losses in returns they would bear had they directly the other security of the issuer in the first place.¹⁵³

B. HFI as Incentive Mechanisms

That HFI serve to hedge investors against possible losses in returns is, in fact, common knowledge among both financial scholars and market traders.¹⁵⁴ This Essay, however, argues that such instruments do not simply act as insurance vehicles against possible investments' depreciations, but have the potential to maximize investment value by putting firms on an optimal incentive scheme.

In accordance with the above re-qualification of HFI options as termination provisions, we can say that such options go in the money when an unforeseen investment risk materializes depreciating the value of corporate assets (i.e., securities).¹⁵⁵ Now, this Essay has previously distinguished investment risk into three different types: (i)

¹⁵¹ Unlike redemption options, conversion options not only have an insurance function, but might also have a speculative function. Thus, for instance, while the upstream conversion option provided by puttable stock serves exclusively to protect investors against the risk of stock value depreciation; the downstream conversion option provided by convertible bonds also allows investors to profit from a raise in share value independently from whether bond value has depreciated.

¹⁵² Cf. Scott & Triantis, *supra* note 145, 1456-58.

¹⁵³ To make an example, convertible bonds are a safer investment than buying common stock, because the debt value provides a floor against share depreciation value. See Bratton, *supra* note 141, at 677. See also *infra* Part III.C.1.

¹⁵⁴ See, e.g., Finnerty, *supra* note 1, at 16 (claiming that the opportunity to reduce risk or to reallocate it from a market participant to another is one of the main factors responsible for financial innovation); Andrew H. Chen & John W. Kensinger, *Puttable Stock: A New Innovation in Equity Financing*, 17 FIN. MANAG. 27, 33 (1988) (arguing that puttable stock shifts investment risk from uninformed investors to the founding shareholders); Humberto Cruz, *No predictions necessary: Sure things for 2007*, CHIC. TRIB., JANUARY 5, 2007, available at 2007 WL 199367 (underlining that hybrids are advised as "the proverbial free lunch—the possibility of gains without the risk of loss"); Thomas Kostigen, *Explosion in Hybrid Securities Answers Call for Returns*, THOMSON FIN., April 5, 2006, available at 2006 WL (stating that hybrid securities offer lower-risk products with higher returns). See also the literature cited below at note 168 on the hedging function on convertible bonds.

¹⁵⁵ That is, when an unforeseen investment risk materializes, it becomes profitable for the investor to exercise the termination right embedded in the HFI option.

systematic risk, (ii) exogenous specific risk, and (iii) endogenous specific risk, which is basically the risk of corporate opportunism.¹⁵⁶ While firms cannot control the first two types of risk, they willingly determine endogenous (specific) risk by engaging in PBE and/or AS.¹⁵⁷ Under this categorization of investment risk, we can, thus, say that firms can willingly determine whether an HFI option goes in the money by engaging in corporate opportunism. Of course, an HFI option can go in the money due to other risks than endogenous risk. However, when an HFI option goes in the money because of endogenous risk, it is actually the firm itself, by behaving opportunistically, that decides to turn the HFI option into an option in the money.

When an option goes in the money, the holder exercises it. In turn, the option's writer bears a cost; in fact, the option's cost. In the case of HFI options, then, the option cost can be seen as a side payment obligation (hereinafter, also SPO) owed to investors when the firm engages in corporate opportunism. As such, the SPO not only compensates investors for the depreciation of their investment determined by the firm's opportunistic actions, but also decreases the firm's expected gains from such actions. Hence, when a firm signs an HFI contract, its expected gains from undertaking opportunistic actions must be discounted by the SPO cost. For this reason, HFI contracts, as opposed to corporate fiduciary law,¹⁵⁸ reduce firms' incentives to behave opportunistically, which, in turn, decreases agency costs and, ultimately, the firm's cost of capital.

Even more significantly, as opposed to the rigid financing agreements,¹⁵⁹ HFI contracts reduce agency costs without depriving the firm of the flexibility it needs to pursue the investment's real options. As long as the firm can sustain the SPO cost, HFI gives it discretion over corporate strategies. At the same time, however, as opposed to conventional flexible contracts,¹⁶⁰ the option-mechanism design that governs firms' discretion in HFI contracts intrinsically prevents that discretion might be abused to expropriate the value of investors' claims. Because the SPO cost imposes a wealth constraint on the undertaking of actions that deviate from the set contractually agreed

¹⁵⁶ *See supra* Part I.B.

¹⁵⁷ *See id.*

¹⁵⁸ *See supra* Part II.B.

¹⁵⁹ *See supra* Part II.C.

¹⁶⁰ *See id.*

with investors,¹⁶¹ rational firms will deviate from the contract only when the expected surplus generated by such actions is higher than the SPO cost. In turn, because this incentive compatibility constraint is satisfied only by value-increasing projects, under an HFI contract firms will use discretion only to pursue real options. Indeed, under this incentive compatibility constraint, it would be irrational for the firm to undertake value-expropriating projects¹⁶² because the gains from such projects would be offset by the SPO cost.¹⁶³ Finally, then, from a contractual viewpoint, HFI enable parties to write flexible contracts in which the gains from flexibility are not offset by agency costs,¹⁶⁴ which maximizes the *ex-ante* value of the parties' exchange.

C. Convertible Bonds and Puttable Stock

The following paragraphs will illustrate how convertible bonds and puttable stock can be useful to solve different agency problems between firms and investors. Nevertheless, the considerations elaborated in relation to these two instruments should be considered as illustrative of a more general theory, which is applicable, with the due adjustments, to most HFI instruments including conversion and/or redemption options.

1. Convertible Bonds and the AS Problem

Convertible bonds (hereinafter, also CB) are bonds convertible into common shares of the issuer at a predetermined (conversion) price.¹⁶⁵ This makes CB investors relative insensitive to the volatility of corporate assets.¹⁶⁶ By giving investors the right to participate in the firm's upside potential, the call option on the firm's equity insulates

¹⁶¹ This is equivalent to say that the SPO cost imposes a wealth constraint on the use of discretion by the firm.

¹⁶² By value-expropriating projects, I mean projects like either *Type B₁* or *Type B₂* when, respectively, $E(\text{Type } G) > E(\text{Type } B_1)$ or $E(\text{Type } G) > E(\text{Type } B_2)$ holds. See *supra* Part II.C.1.a.i.–ii.

¹⁶³ For this to hold, however, it is necessary that the firm's capital structure is construed so as to make the SPO cost significant enough. See *infra* text accompanying note 171. For an analytical explanation of this relation, see the example model provided below at Part III.C.1.a.

¹⁶⁴ See *supra* text at note 108.

¹⁶⁵ This is the basic convertible bond structure. Variation on this structure include callable convertibles and puttable convertibles, described *supra* at note 5. On convertible bonds, see, generally, Bratton, *supra* note 141.

¹⁶⁶ See Triantis & Triantis, *supra* note 2, at 1239. See also David Mayers, *Why Firms Issue Convertible Bonds: The Matching of Financial and Real Investment Options*, 47 J. FIN. ECON. 83 (1998).

them from possible depreciations (or non-appreciations) of the bonds. Contextually, the original debt position held by convertible bondholders limits the investment's downside risk, by providing a floor should share value decline. This Essay, however, argues that CB contracts do not just "remove the significance of uncertainty concerning the risk of the firm",¹⁶⁷ but have the potential to promote value-maximizing courses of actions.

A commonly acknowledged explanation to the use of CB is that such instruments provide a bonding mechanism against the AS risk.¹⁶⁸ This explanation is consistent with the termination-right account of conversion options proposed in this Essay. When the firm undertakes corporate projects whose investment risk is higher than that agreed upon in the contract, share value increases to the detriment of bond value. Yet, when share price raises, also the value of the conversion option raises. As soon as the conversion option goes in the money, the bondholders will, thus, exercise their right to convert their depreciated bond position into more valuable equity. By increasing the total number of issued shares, however, the conversion option's exercise dilutes earning per shares¹⁶⁹ and, therefore, the value of existing shareholders' claims. This reduction in value (hereinafter, also *the dilution cost*) can be viewed as an SPO owed to bondholders for the undertaking of AS strategies, which decreases the firm's expected gains from such strategies.¹⁷⁰ Hence, provided that the firm's capital structure is so construed as to make the dilution

¹⁶⁷ Michael J. Brennan & Eduardo Schwartz, *The Case for Convertibles*, J. APPLIED CORP. FIN. 56 (1988).

¹⁶⁸ See, e.g., Triantis & Triantis, *supra* note 2, at 1239; Triantis, *supra* note 50, at 318-19 (analyzing the bonding mechanism function of convertibles in the venture capital context); Richard C. Green, *Investment Incentives, Debt, Warrants*, 13 J. FIN. ECON. 115 (1984) (analyzing the use of conversion features and warrants to control managers' distortionary incentives); David Mayers, *supra* note 166, at 83 (arguing that "convertible bonds' conversion option reduces issues costs while helping to control the overinvestment incentives"); Nobuyuki Isagawa, *Convertible Debt: An Effective Financial Instrument to Control Managerial Opportunism*, 9 REV. FIN. ECON. 15 (2000) (discussing the superiority of convertible debt to common debt and equity in controlling managerial opportunism); Shao-Chi Chang et al., *Why Firms Use Convertibles: A Further Test of the Sequential-Financing Hypothesis*, 28 J. BANK. FIN. 1163 (2004) (providing further support to Mayers' hypothesis that convertible debt financing is motivated by a desire to minimize security issue costs and agency costs of overinvestment).

¹⁶⁹ In fact, the conversion option's exercise dilutes not just earning per share, but also voting powers attached to each share.

¹⁷⁰ Looking at this from the investors' perspective, the *payment* of the dilution cost hedges them against the risk of bonds' depreciation due to the undertaking of AS courses of action.

cost significant enough,¹⁷¹ CB imposes a wealth constraint on the undertaking of AS that reduces the firm's incentives to behave opportunistically. This lowers related agency costs of debt and, ultimately, the firm's cost of capital,¹⁷² which leads to more corporate projects being funded.

As compared to the existing academic literature on CB, however, the proposed re-qualification of HFI options as termination provisions further shows that CB contracts can be used by the parties to implement contractual schemes responding to a welfare maximization criterion.¹⁷³ Because the dilution cost reduces the firm's (i.e., the existing shareholders') expected gains from undertaking more risky corporate projects, rational firms will undertake such projects only when the expected surplus of such projects is higher than the dilution cost.¹⁷⁴ In turn, because this incentive compatibility constraint is satisfied only by the undertaking of value-increasing projects (i.e., by projects having a higher expected value than those agreed with investors), CB contracts promote the undertaking of optimal courses of actions.¹⁷⁵

¹⁷¹ This will depend on a series of variables, including, *in primis*, the incidence of the conversion option exercise on the percentage of equity claims held by, respectively, the existing shareholders and the convertible bondholders. Other relevant variables include the conversion ratio, the conversion price, etc.

¹⁷² A system that reduces the cost of debt capital also reduces the cost of equity capital. In fact, by applying option theory, the firm's shareholders can be seen as having bought a call option on a leveraged firm, which they can exercise by paying back the outstanding debt. It follows that a system that reduces the cost of debt also increases the value of the leveraged firm's stock, which, in turn, decreases the cost of raising equity capital. *See* Schwartz, *supra* note 125, at 1203-04.

¹⁷³ An exception is represented by the work of David Mayers, who argues that (callable) convertible bonds, by lowering the issuance costs of sequential financing and, contextually, helping to control the overinvestment problem, "are designed to facilitate the future financing of valuable real investment options." Mayers, *supra* note 166, at 85.

¹⁷⁴ This is equivalent to say that the firm will deviate from the risk contractually agreed with investors only when the increase in share value following the undertaking of such actions more than compensate the firm for the dilutive effect on earning per share that follows the exercise of the conversion option. *See also infra* Part III.C.1.a.

¹⁷⁵ There is a further aspect in which the account here proposed of CB departs from conventional explanations. While these explanations focus exclusively on the AS problem, the re-qualification of the conversion option in terms of a cancellation right suggests that CB may also play a role in containing PBE. Because PBE decreases equity value, when firms engage in PBE, it is very unlikely that share price will ever raise over conversion price. Under these circumstances, the bondholders will, thus, exercise their right not to execute an unprofitable investment in the firm's equity and hold on their original investment in the corporate debt. This leaves the firm saddled with an higher than expected cost of financial distress, which is

From a contractual viewpoint, this has significant implications. First, as opposed to straight debt (hereinafter, SD) contracts, which include mostly rigid provisions,¹⁷⁶ CB contracts do not constrain the firm's discretion over investment policy. Under a CB contract, the firm is free to undertake a project that deviate from the contractually agreed set as long as the expected value of this project is high enough as to offset the dilution cost. This means that, by leaving the most informed party, the firm, discretion to adapt contractual arrangements to changes in the external state, CB contracts bans the opportunity costs implied by the rigid design of SD contracts. At the same time, the wealth constraint imposed by CB contracts on the undertaking of AS strategies avoids the risk that flexibility might be abused to depreciate investors' claims, as opposed to what happens in SD contracts that include flexible provisions to the end of reducing opportunity costs.¹⁷⁷ Finally, CB contracts (i) save the costs the parties bear when they attempt to achieve the efficient outcome *ex-post* through renegotiation of SD contracts,

the cost arising out of the risk that the issuer may be unable to repay its obligations. This cost is inherent to any issuance of debt. Yet, upon the issuance of CB the firm anticipates a lower cost of financial distress than upon the issuance of straight debt, because it has an actual expectation that the bonds will be converted into equity. *See generally*, Jeremy C. Stein, *Convertible Bonds as Backdoor Equity Financing*, 32 J. FIN. ECON. 3, 4, 6-9 (1992). *See also* Triantis & Triantis, *supra* note 2, at 1237, fn. 12. By making it unlikely that the conversion option will ever be exercised, PBE frustrates this expectation and leaves the firm burdened by excessive leverage. The cost that excessive leverage imposes on the firm (hereinafter, also the *excessive leverage cost*) can, then, be seen as an SPO owed to investors when the firm engages in PBE, which reduces the firm's expected gains from this form of corporate opportunism. Similarly to what happens with the dilution cost, the ability of the excessive leverage cost to serve as a wealth constraint against PBE will depend on a series of variables that include, *in primis*, the marginal incidence of the cancellation right's exercise on the firm's debt to equity ratio. *Cf. supra* note 172. Indeed, the larger this marginal incidence, the higher the excessive leverage cost and, in turn, the more effective the wealth constraint against PBE. Provided that these conditions of effectiveness are satisfied, CB contracts will induce rational firms to engage in PBE only when they can pursue projects that increase share value more than it is decreased by PBE.

¹⁷⁶ Recall that although the above discussion has dichotomized the distinction between rigid and flexible contracts, most financing contracts, including SD contracts, tend to include a continuum of rigid and flexible provisions. *See supra* note 110.

¹⁷⁷ Put differently, CB contracts, as opposed to SD contracts, allow parties to contain the downside risk of uncertainty and, contextually, to explore its upside potential.

and also (ii) avoid that the likelihood of renegotiation might interfere with the constraint scheme provided by the original debt contract against AS.¹⁷⁸

a. An Example Model

An example model may help to show analytically the mechanisms through which CB contracts may put the firm on an optimal incentive scheme, that is, provide an incentive compatibility constraint that is satisfied only by the undertaking of value-increasing projects.

The following example model adapts that at Paragraph II.C.1.a. on the suboptimal solutions provided by standard financing contracts to the AS problem. Like above, also here an owner-manager, M , borrows $K-A$ from an investor, I , to finance a project (*Type G*). In this case, however, the security S issued by M is a convertible bond. For convenience, then, we need to add a further assumption to the four listed above, (A5): the convertible bond is issued at par. This assumption is added to keep the model manageable. However, it can be easily dropped. Indeed, it is possible to show that our findings also hold for the case of a strike price higher than the par value of the bond. A higher strike price merely reflects the expected growth rate of the firm over time.¹⁷⁹

Moreover, as the model at Paragraph II.C.1.a., this also has three periods: t_0 , t_1 , and t_2 . At t_0 , the contract is signed and S is issued. Because I has information on *Type G* (recall that M needs to disclose such information to induce I to sign the contract) and given A5, in equilibrium she will negotiate the terms of the contract so that:

$$(3) \quad S = \frac{K-A}{K} R_G$$

At t_1 , M can choose a project over the set $\Theta := \{\textit{Type G}, \textit{Type B}_1\}$, where *Type B*₁ is the same project described above at Paragraph II.C.1.a.i. At t_2 , the outcome of the

¹⁷⁸ See *supra* Part II.C.2.

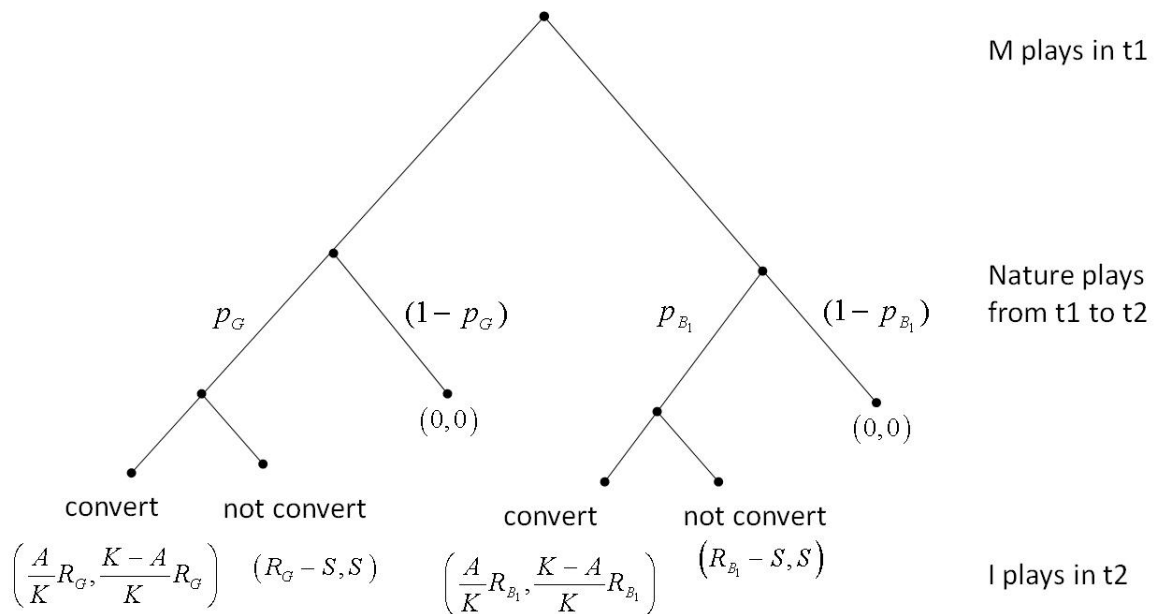
¹⁷⁹ In fact, the conversion price is commonly set 10% to 20% above the market price of the underlying common stock at the time of issue. See Bratton, *supra* note 141, at 675, fn.25. See also *infra* Part III.B.2.a.

project is revealed, I decides whether to convert, and the payoffs from the project are distributed to the parties.

Now, under a CB contract, the parties face a decision-problem structure that can be depicted as an extensive game, in which prior decisions can be observed by the party who plays subsequently.¹⁸⁰ In particular, the game between M and I can be described as follows. M and I play two distinct strategies over a finite set of sequences. M plays first at t_1 and then I plays at t_2 , after having observed how the nature has played from t_1 to t_2 over the project chosen by M .

Hence, to find the subgame equilibrium¹⁸¹ in the game between M and I , as first step we need to define the game's set of finite sequences (histories). Figure 2 below is provided to this end.

Fig. 2. Histories of the game



Payoffs: (M, I)

¹⁸⁰ The application of game theory in the model borrows from ARIEL OSBORNE & MARTIN J. RUBINSTEIN, A COURSE IN GAME THEORY (1994); and from DREW FUDENBERG & JEAN TIROLE, GAME THEORY (1991).

¹⁸¹ According to the Kuhn-Zermelo's theorem, in a finite extensive game with perfect information, at least one subgame perfect equilibrium should emerge. See FUDENBERG & TIROLE, *supra note* 180, at 91.

Then, we need to understand whether, at t_1 , M will undertake *Type G* or *Type B₁*. To this end, we proceed by backward induction. This means that we start by identifying the possible choices of I at t_2 and, then, move back to t_1 to compute the optimal choices of M .¹⁸² Following this logic, we need first to define the payoff function of I :

$$(4) \quad U_I^i = p_i \max \left\{ S, R_i \frac{K - A}{K} \right\}$$

where $i = G, B_1$.¹⁸³

In the first subgame, then, where M has undertaken *Type G* and income R_G is realized, given Equation (3), I will be indifferent toward whether exercising the conversion option: $((TypeG, p_G R_G, convert) \sim_I ((TypeG), p_G R_G, not convert))$.

In the second subgame, instead, where M has undertaken *Type B₁* and income R_{B_1} is realized, given Condition (1) above,¹⁸⁴ to I the following payoffs relation holds: $\frac{K - A}{K} R_{B_1} > S$. This means that, at t_2 , I will *always* exercise the conversion option: $((Type B_1), p_{B_1} R_{B_1}, convert) \succ_I ((Type B_1), p_{B_1} R_{B_1}, notconvert)$.

At this point, it is worth remarking that the subgames emerging at t_2 are competitive games.¹⁸⁵ At t_2 , cash flows from the projects are realized and, thus, what is relevant is their distribution between the players. In turn, given Equations (3) and (4), and because in the game's sequence of actions M plays first, the payoff functions of M can be

¹⁸² See *id.* at 68-69

¹⁸³ This implies that a necessary condition for I to agree to the financing of any investment project (i.e., I 's participation constraint) is that $U_I^i \geq K - A$, where $i = (G, B_1)$.

¹⁸⁴ See *supra* Part II.C.1.a.i.

¹⁸⁵ A competitive game is solved through a *maximin strategy*. According to this strategy, the first player will choose an action that is best for him on the assumption that the second player will choose her action to hurt the first player. See OSBORNE & RUBINSTEIN, *supra* note 180, at 21.

written as follows, depending on whether M undertakes *Type G* or *Type B₁*:

$$U_M^i = p_i \min \left\{ R_i \frac{A}{K}, R_i - S \right\} \text{ where } i = G, B_1. \text{ }^{186}$$

The payoff functions of M shows that the wealth constraint imposed by $\min \left\{ R_i \frac{A}{K}, R_i - S \right\}$ (i.e., the dilution cost) will induce M to undertake always the project with the higher expected value. Indeed, when $E(\textit{Type G}) > E(\textit{Type B}_1)$, M will never undertake *Type B₁* because the incentive compatibility constraint, $U_M^G > U_M^{B_1}$, always holds to her. This means that M will never undertake *Type B₁* when this project constitutes an AS strategy. By analogy, when $E(\textit{Type B}_1) > E(\textit{Type G})$, to M the incentive compatibility constraint, $U_M^{B_1} > U_M^G$, holds. This means, in turn, that M will always undertake *Type B₁* when the pursuing of such a project is socially desirable.

Finally, it can be concluded that, under a CB contractual structure, to the firm the choice of the project with the highest expected value is the sole Nash equilibrium¹⁸⁷ that can be achieved.¹⁸⁸

2. Puttable Stock and the PBE Problem

Puttable stock (hereinafter, also PS) is a complex HFI that may attribute investors several kinds of options. In their basic version, PS gives investors the right to put the stock back to the issuing corporation at a predetermined price (hereinafter, also the guaranteed floor). Alternatively, such instruments may provide for the investor's right¹⁸⁹ to opt for a settlement of the guaranteed floor through additional common shares,

¹⁸⁶ This implies that a necessary condition for M to undertake either project (i.e., M 's participation constraint) is that $U_M^i \geq A$, where $i = (G, B_1)$.

¹⁸⁷ A Nash equilibrium is that in which no single player, by changing her strategy, can obtain higher utility if the other players stick to their parts. See John F. Nash, *Equilibrium Points in N-Person Games*, Proceedings of the National academy of Sciences USA 36, 48-9 (1950); John F. Nash, *Non-Cooperative Games*, Annals Of Mathematics 54, 286-95 (1951).

¹⁸⁸ The model, however, does not take into account the effect that the shareholder primacy rule can have on M 's investment choices (i.e., incentives). This is discussed *infra* at Part IV.B.2.a.

¹⁸⁹ The choice among these alternative settlements methods can also be contractually attributed to the issuer. See Chen & Kensinger, *supra* note 154, *passim*.

preferred shares, or corporate debt.¹⁹⁰ In option terms, PS can, thus, attribute investors either (i) a redemption option to put the stock back in exchange for cash, (ii) a conversion option to exchange puttable stock for (newly issued) common stock,¹⁹¹ or (iii) an upstream conversion option to exchange puttable stock into corporate debt or preferred stock.¹⁹² What matters to the purpose of this Essay, however, is that any of the option rights provided for by PS contracts acts as a termination right, which protects investors against the losses in returns that materialize when the stock value falls below the guaranteed floor.¹⁹³

Puttable stock are often likened to convertible bonds, as both these instruments allow investors to participate fully in the upside potential of firms with reduced downside risk.¹⁹⁴ Like convertible bonds, however, puttable stocks do more than providing a nice package of debt-equity features. Specifically, this Essay claims that such instruments may provide optimal contractual solutions to the PBE problem.

¹⁹⁰ On this specific type of puttable stock, see Triantis & Triantis, *supra* note 2.

¹⁹¹ The investor right to put the puttable stock back to the issuer in exchange for common shares can be regarded as a conversion option because of the different rights attributed by each class of shares.

¹⁹² Because of the different rights attributed by preferred and common shares, also the investor right to put the puttable stock back to the issuer in exchange for preferred shares can be considered a conversion option. In particular, because preferred shares, like debt, attribute investors a fixed claim, such option can be considered an upstream conversion option.

¹⁹³ This is straightforward when PS contracts give investors a redemption option to put the stock back in exchange for cash. Still, such contracts give investors a termination right also when they provide for a conversion option. Regardless of whether investors are entitled to convert puttable stock into (additional) common shares, preferred stock or debt, the conversion option gives them the right to exit from an existing contractual relationship with the firm to enter into a new one. The terms of exit, however, change depending on the specific type of conversion right attributed to the investor. When PS contracts provide for a right of conversion into corporate debt, to the holder the option's exercise implies not only a shift to a new contractual relationship, but also to a different category of corporate investors. When such contracts provide for a right of conversion into common or preferred shares, instead, the shift to a new contractual relationship triggered by the option's exercise takes place within the same class of investors. It should be noted, however, that in the case of settlement through preferred shares, the permanence within the equity class, is more formal, than material, because preferred shares present debt-like characteristics such as the entitlement to a fixed claim and, frequently, the limitation of voting rights.

¹⁹⁴ By applying the put-call parity principle, the payoffs from holding puttable stock are equivalent to those from holding convertible bonds. *See, e.g.*, Chen & Kensinger, *supra* note 154, at 31; Triantis & Triantis, *supra* note 2, at 1245.

By decreasing equity value, PBE¹⁹⁵ makes it more likely that puttable stockholders will exercise any of the options described above, thereby imposing on the firm the cost of the difference between the decreased stock value and the value of the predetermined guaranteed floor. For sake of simplicity, the Essay will refer generally to this cost as the *guaranteed-floor cost*.¹⁹⁶ In the actuality, however, the various option rights which can be included in PS contracts impose on firms (i.e., on common shareholders) different costs. Where such instruments attribute investors a redemption option, the settlement of the guaranteed floor implies an actual disbursement of cash. By taking cash out of the firm, this cost (hereinafter, the also the *cash disbursement cost*) reduces the managers' ability "to turn their 'free cash flows' into lavish perks or futile negative net present value investments." (i.e., to use free cash to bankroll forms of PBE).¹⁹⁷ Things are similar where such contracts provide for a conversion option into corporate debt¹⁹⁸ or preferred shares. From a financial viewpoint, in fact, the settlement of the guaranteed floor through cash, corporate debt, or preferred shares can be considered equivalent, as any of these alternative settlement methods force managers to disgorge free cash to investors.¹⁹⁹ Where PS contracts provide for a conversion option into common shares, instead, the common shareholders bear a dilution cost, because the issue of new shares dilutes the value of their claims.²⁰⁰

Regardless of whether it qualifies as an expected financial distress or a dilution cost, the guaranteed-floor cost can be seen as an SPO owed to puttable stockholders when the firm engages in PBE. As such, this cost decreases the firm's expected gains from

¹⁹⁵ Of course, stock value downfall may be determined also by factors other than PBE, such as systematic or exogenous specific risks. What matters to the purpose of this Essay, however, is that when the firm engages in PBE it willingly decreases share value, thereby increasing the likelihood that puttable stock's options will go in the money.

¹⁹⁶ This is, actually, the option's cost to the firm.

¹⁹⁷ TIROLE, *supra* note 12, at 51.

¹⁹⁸ This is apparent if one thinks that, the issuer might have to issue additional debt to raise the funds necessary to redeem puttable stock through cash.

¹⁹⁹ Corporate debt, by definition, forces managers to disgorge cash flows, either in the form of interest payments or in a lump sum at maturity. See TIROLE, *supra* note 12, at 51. Likewise, the attribution to preferred shareholders of fix dividend claims takes free cash out of the firm.

²⁰⁰ See *supra* text accompanying note 169.

PBE.²⁰¹ Hence, provided that the firm's capital structure is so construed as to make the guaranteed floor cost significant enough,²⁰² PS contracts imposes a wealth constraint on PBE that lowers the firm's incentives to engage in this form of opportunism.²⁰³ This reduces the cost of equity capital, which leads to more corporate projects being funded. Even more significantly, the wealth constraint imposed by the guaranteed-floor cost on PBE induces rational firms to engage in PBE only as long as they can undertake courses of actions that increase share value more than it is decreased by this form of opportunism. Because this incentive compatibility constraint is satisfied only by the undertaking of value-increasing projects,²⁰⁴ PS contracts ultimately promote the undertaking of optimal courses of actions

a. An Example Model

An example model is, again, useful to explain analytically how PS contracts may provide optimal solutions to the PBE problem. The following example model adapts, in part, the model above on CB contracts²⁰⁵ and, in part, that at Paragraph II.C.1.a.ii on the suboptimal solutions provided by standard financing contracts to PBE. Like in the foregoing examples, also here an owner-manager, *M*, needs to borrow funds, *K-A*, from

²⁰¹ Looking at this from the investors' perspective, the *payment* of the guaranteed floor cost hedges them against the risk of depreciation of their claims due to PBE.

²⁰² The variables to be taken into consideration to evaluate the effectiveness of the guaranteed floor cost might differ, however, depending on whether such cost qualifies as a cash disbursement cost or a dilution cost.

²⁰³ More specifically, when the PS agreement provides for conversion into additional common shares, the dilution cost has the potential to serve as a wealth constraint also against managerial shirking and entrenchment. *Cf. supra* note 91. Because the conversion option's exercise, in this case, might lead to a substantial shift of control rights from existing to puttable stockholders, managers might risk being replaced following exercise of the option (i.e., the transfer of control to the puttable stockholder). This risk, then, motivates managers not to engage in PBE. This specific type of puttable stock, then, would serve a function somehow similar to that of stock options. The latter induce managers to maximize firm value, by giving managers a call to purchase corporate stock sometime in the future at today's price. Puttable stock of this type, instead, motivate managers to maximize firm value so to avoid the exercise of the investor's conversion option and the risk of being replaced which might arise thereof.

²⁰⁴ Under a PS contract, it is excluded that the firm may engage in PBE when the project is not value-increasing because, in this case, the gains from PBE would be offset by the guaranteed-floor cost. *See also infra* Part III.C.2.a.

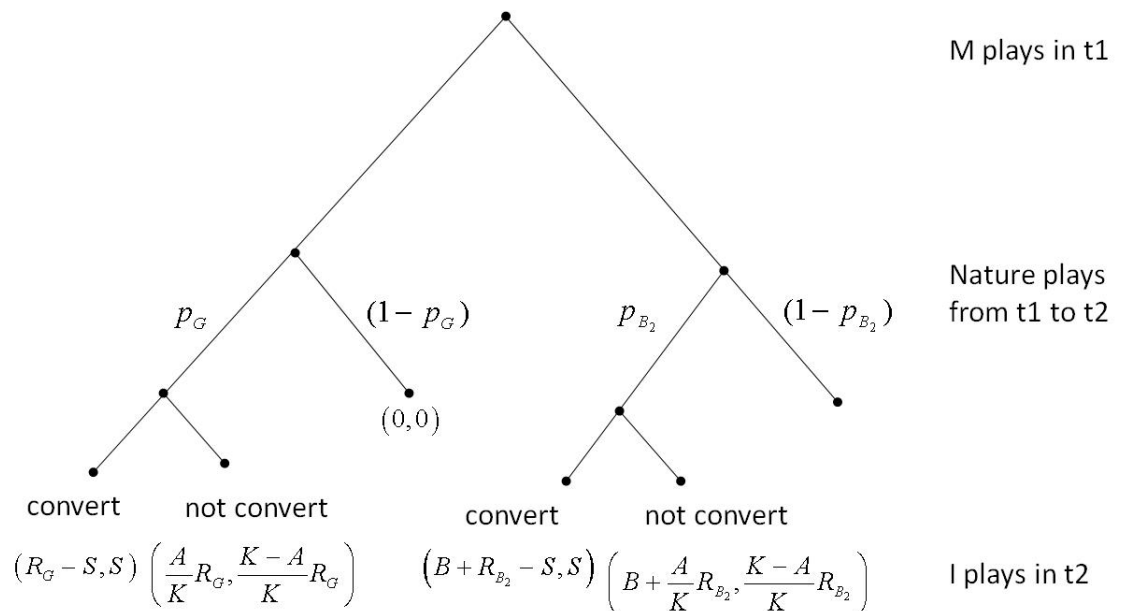
²⁰⁵ *See supra* Part III.C.1.a.

an investor, I , to finance a project (*Type G*). In this case, however, M raises $K-A$ by issuing a puttable stock security, S , which gives I the right to put the stock back to M in exchange for debt at a predetermined price. Like in the CB model, then, also here, for convenience, it is assumed that S is convertible at par and that I at t_0 has all relevant information on *Type G*. Hence, in equilibrium, Equation (3) above still holds.

The periods of the model are also analogous to those of the CB model. At t_0 , the contract is signed and M issues S . At t_1 , M can choose a project over the set $\Theta := \{\textit{Type G}, \textit{Type B}_2\}$, where *Type B₂* is the same project described above at Paragraph II.C.1.a.ii.. At t_2 , the outcome of the project is revealed, I decides whether to convert, and the payoffs from the project are distributed to the parties.

Also under a PS contract, the parties can be said to face an extensive game, in which M and I play two distinct strategies over a finite set of sequences.²⁰⁶ Figure 3 below describes the game's set of finite sequences.

Fig. 3. Histories of the game



Payoffs: (M, I)

²⁰⁶ See *id.*

To find the subgame equilibrium in the game between M and I , we begin, again, by seeking to understand, through backward induction, whether at t_1 , M will undertake *Type G* or *Type B₂*. Accordingly, we need first to define the payoff function of I . Because of the put-call parity principle,²⁰⁷ this function is the same as that described under Equation (4).²⁰⁸

Hence, like above, in the first subgame, where M has undertaken *Type G* and income R_G is realized, I will be indifferent toward whether exercising the conversion option: $((TypeG, p_G R_G, convert) \sim_I ((TypeG), p_G R_G, not\ convert))$.

In the second subgame, instead, where M has undertaken *Type B₂* and income R_{B_2} is realized, to I the following payoffs relation holds: $S > R_{B_2} \frac{K - A}{K}$. This means that, at t_2 , I will always choose to convert PS into debt: $((Type B_2), p_{B_2} R_{B_2}, convert) \succ_I ((Type B_2), p_{B_2} R_{B_2}, notconvert)$.

Recall that the subgames emerging at t_2 are competitive games. In turn, given Equation (3) and (4), and because the game is so set that M plays first, the payoff functions of M can be written as follows: $U_M^G = p_G \min \left\{ R_G - S, R_G \frac{A}{K} \right\}$ and

$$U_M^B = p_{B_2} \min \left\{ B + R_{B_2} - S, B + R_{B_2} \frac{A}{K} \right\}.^{209}$$

The payoff functions of M shows that the wealth constraint (i.e., the cash disbursement cost) imposed by $\min \left\{ B + R_{B_2} - S, B + R_{B_2} \frac{A}{K} \right\}$ makes it profitable for M to undertake *Type B₂*, that is, to engage in PBE, only as long as $E(Type B_2) > E(Type G)$. Put differently, the wealth constraint imposed on M 's payoff functions by

²⁰⁷ See *supra* note 147.

²⁰⁸ It follows that that the participation constraint for I is the same as that described *supra* at note 183.

²⁰⁹ This implies that a necessary condition for M to undertake either project (i.e., M 's participation constraint) is that $U_M^i \geq A$, where $i = \{G, B_2\}$.

$\min \left\{ R_i, \frac{A}{K}, R_i - S \right\}$ will induce M to choose always, between *Type G* and *Type B₂*, the project with the higher expected value. Finally, then, also under a PS contractual structure, to the firm the choice of the project with the highest expected value is the sole Nash equilibrium that can be achieved.

D. The Signalling Function of HFI

Thus far, this Essay has focused on the potentiality of HFI contracts to manage efficiently corporate moral hazard problems. Such contracts, however, may also provide efficient solutions to corporate adverse selection problems.

As briefly outlined in the beginning of this paper,²¹⁰ contracts constraining the agent's ability to engage in moral hazard also help mitigating adverse selection problems. Because an agent that engages in moral hazard is, by definition, a bad-type agent,²¹¹ contracts preventing agents from behaving opportunistically *ex-post* reduce the number of bad types and, therefore, the likelihood that they will be selected in place of good types. Applied to HFI contracts, this means that the wealth constraints imposed by CB and PS contracts on the undertaking of, respectively, AS and PBE inherently decreases also adverse selection costs.

Even more significantly, the agent's willingness to sign a contract that constrains her ability to engage in moral hazard may serve as a signal to separate good from bad types. Specifically, in the case of HFI contracts, the firm's willingness to give investors option rights of the type described can be considered as a dissipative signal that good-type firms use to obtain better financing conditions (or financing at all).²¹² A dissipative signal is the costly distortion in contracting that is introduced in asymmetric information contexts by the informed party "so as to signal attributes that are attractive to the

²¹⁰ See *supra* Part. I.A.

²¹¹ See *supra* note 23. In this specific case, however, the term good/bad type is used exclusively to discriminate between agents (i.e., firms) who behave or do not behave opportunistically.

²¹² See TIROLE, *supra* note 12, at 238-39, 249-64 (stating that borrowers, in asymmetric information environments, "often try to convey the quality of the securities they issue through 'dissipative signals'").

uninformed side.”²¹³ Such signals break the market because, although they are costly to good agents, they are even more costly to bad ones.²¹⁴ Now, although HFI options represent in the first place a cost to investors,²¹⁵ the costs they impose on firms once they are exercised²¹⁶ tend to be much higher, especially to bad-type firms. By reasoning in terms of expected, rather than actual costs, it seems, thus, possible to liken HFI options to dissipative signals.

By shifting to firms the risk of investments’ depreciations due to unforeseen contingencies, HFI options are potentially costly to every firm.²¹⁷ This Essay argues, however, that firms with low-quality projects (hereinafter, also LQ firms) bear an higher expected cost for attributing investors HFI options than firms with high-quality projects (hereinafter, also HQ firms). Because of the poor quality of their projects, LQ firms are indeed more likely to incur in a corporate assets’ devaluation,²¹⁸ which raises the expected cost of HFI options. Think, for instance, to PS contracts. The attribution to investors of the various options that may be provided for by such contracts potentially impose a guaranteed floor cost on any firm.²¹⁹ This expected cost, however, is higher to LQ firms. Because of the scarce quality of their projects, it is, indeed, more likely that the former will incur in a stock value downfall triggering the option’s exercise by puttable stockholders. Things are similar in the case of CB contracts. If one considers the cancellation right function served by the conversion option, such contracts potentially

²¹³ *Id.*, at 238-39. Dissipative signals, include, among others, costly monitoring, the insufficient diversification of the issuer’s portfolio, the of underpricing claims, hoarding insufficient liquidity, etc.

²¹⁴ *See id.*, at 239, 250-51 (discussing the dissipative-signal function served by certificates that attest the quality of the issuer’s securities, such as certificates issued by rating agencies, auditors, underwriters, etc. These certificates achieve a separating equilibrium because bad borrowers have no incentive to pay an additional cost to reveal the poor quality of their securities to the capital market.)

²¹⁵ Recall that investors pay the option price to have the right to walk away from the relationship when an unforeseen investment risk materializes depreciating the value of their claims. *See supra* Part III.B.

²¹⁶ *See id.* This holds true regardless of whether the cost imposed by the HFI option’s exercise is a dilution cost or a cash disbursement cost.

²¹⁷ Indeed, any firm may incur in a corporate assets’ devaluation due to several kinds of investment risk. *See supra* Part I.B.

²¹⁸ The poor quality of the firm’s projects increases the investment’s exogenous specific risk, which, in turn, makes it more likely that corporate assets might depreciate.

²¹⁹ *See supra* Part III.C.2.

increase the expected financial distress costs of any firm.²²⁰ If the conversion option is not exercised, the firm risks, in fact, being burdened by excessive debt. This cost, however, is higher to LQ firms, because the scarce quality of their projects makes it unlikely that share price will ever raise over the conversion price. From this perspective, then, HFI contracts can be regarded as a dissipative signal used by firms to convey favorable information to investors on the quality of corporate projects. The higher expected cost of the HFI option borne by LQ firms will, indeed, tend to exclude that such firms may enter into an HFI contract. That is, because HFI contracts do not appeal to LQ firms, HQ firms will be able to separate by offering investors this type of contract.²²¹

The considerations on the dissipative-signal function served by HFI contracts as to firms characterized by low-quality projects hold likewise as to firms that engage in corporate opportunism (hereinafter, also opportunistic firms). Because corporate opportunism makes HFI options to go in the money,²²² the expected cost borne by opportunistic firms for attributing investors such options is intrinsically higher than that borne by non-opportunistic firms.²²³ For this reason, HFI contracts are unappealing to opportunistic firms. Hence, such contracts can be used by non-opportunistic firms as a

²²⁰ See *supra* note 175.

²²¹ On the basis of this consideration, Jeremy Stein suggests that the issuance of convertible debt makes it “possible to sustain a separating equilibrium in which all types of firms issue fairly priced claims and invest efficiently.” Stein, *supra* note 175, at 6-9. More specifically, Stein argues that the issue of convertibles allows investors to distinguish among three different types of firms: good, bad, and medium. Having no expected cost of financial distress, good firms (i.e., HQ firms) issue straight debt to save on the higher issue costs of equity. Bad firms (i.e., LQ firms) issue equity because of the excessively high expected financial distress cost they would bear if they issued debt. Medium firms (i.e., firms having medium-quality projects) issue convertibles because concerns of financial distress make too costly to them to issue debt, but want to signal their better expected earning potentials as compared to that of bad firms. According to Stein, convertibles fit the purpose because if expected earnings are not realized, the firm will be punished with higher than optimal debt and more limited ability to raise capital in the future. Under this view, CB would have the characteristics of “low-information-intensity-securities”; i.e., “securities for which investors are not “too exposed” to errors in their assessment of the borrowers’ type”. See Tirole, *supra* note 12, at 249.

²²² See *supra* Part III.B.

²²³ Opportunistic firms bear, in fact, an actual, rather than expected cost when they attribute investors an HFI option.

dissipative signal that conveys favorable information on the lower agency costs of the investment, thereby allowing such firms to separate from opportunistic ones.²²⁴

IV. ECONOMIC AND LEGAL CONSTRAINTS HAMPERING HFI EFFICIENCY

The foregoing discussion has illustrated the potential of HFI to provide superior contractual solutions to corporate agency problems. Economic and legal constraints, however, currently exist that may undermine this potential. This Essay addresses both these problems and seeks to devise solutions that may help fostering HFI efficiency. Specifically, as to the economic constraints, it suggests that the recent boom in HFI offerings should be interpreted as evidence that such constraints have relatively limited incidence. As to the legal constraints, instead, it proposes that corporate fiduciary law should be amended so as to implement a permissive regime of fiduciary duties.

A. *Economic Constraints*

Complexity costs constitute the basic economic constraint which might undermine HFI efficiency. Such costs are those arising out of (i) the intrinsic complexity of HFI instruments (hereinafter, also HFI *intrinsic complexity costs*), and (ii) the increased risk of intra-governance conflicts to which this complexity may lead.

HFI are highly complex financial instruments.²²⁵ Indeed, if the attractiveness of HFI lies in that they combine debt and equity features in a sole security, this quality also makes them more complex instruments than straight debt or equity securities.

²²⁴ As a matter of fact, firms that have low-quality projects are also more likely to engage in *ex-post* opportunism. When corporate projects are of poor-quality, they have, indeed, a lower probability of success. This, in turn, increases LQ firms' incentives to behave opportunistically, because such firms tend to be relatively insensitive to the further reduction in the project's probability of success determined by the undertaking of opportunism. Still, also firms with higher quality projects may find *ex-post* profitable to engage in corporate opportunism.

²²⁵ HFI complexity is underlined both by practitioners' articles and financial analysts' recommendations to investors. *See, e.g.*, Cruz, *supra* note 154, at 1; (defining HFI as "increasingly complex and esoteric products") Kostigen, *supra* note 154, at 1 (stating bluntly that "hybrids are complex"). Among the several websites that can be consulted on convertible bonds, warnings on the complexity of these instruments are common. To make a few examples, About.com says that investors "should be very careful of several potential problems", <http://stocks.about.com/od/bonds/a/Convert122104.htm>, last visited March, 5th, 2008; Investopedia speaks of the "details and intricacies of convertible bonds", <http://www.investopedia.com/articles/01/052301.asp>, last visited March, 5th, 2008.

Accordingly, investors need to factor in a larger series of variables to evaluate hybrid securities. Take, for instance, convertible bonds. Investors will be required to take into consideration, among other variables, the creditworthiness of the convertible itself (often pursuant to an option-based analysis), the value of the underlying equity, equity's growth potential,²²⁶ the existence of asymmetric risk/reward scenarios,²²⁷ the strength or weakness of the industry in which the company operates as well as the company's competitive position,²²⁸ the influence of possible contingent conversion triggers,²²⁹ and so on. Carrying out this kind of evaluations demands expertise, time, and economic and technical resources, which individual investors commonly lack. For this reason, hybrid securities "don't bode so well for individual investors."²³⁰ This could explain (among other causes)²³¹ why firms still raise capital mainly through traditional financial instruments. Because of the learning externalities implied by HFI offerings, to firms it would be more difficult to market these securities. This would raise issue costs and lead issuers to prefer more conventional instruments.

An additional source of complexity costs is the increased risk of intra-corporate conflicts to which the issue of HFI may lead. Publicly traded corporations are characterized by a multilayered structure that counts several classes of both equity and debt securities. This complex capital structure naturally gives rise to conflicts of interests. Not only debt and equity investors have intrinsically conflicting interests, but, often, even investors holding a common debt or equity position might have divergent interests when they are grouped into different classes. For instance, the position of senior

²²⁶ Interview to Nick Calamos, director of research at Calamos Asset Management Inc., on convertible bonds' analysis. See "*A Convertibles Conversation – Focus Convertible Bonds*", *supra* note 3, at 103 (arguing that convertibles need "to be looked at from many different standpoints" and including the first three factors reported in the text as the most important steps to follow in this analysis).

²²⁷ Interview to Doug Forsyth, portfolio manager of the Nicholas Applegate Convertible Fund, on the evaluation of new bonds structures. See *id.* at 104.

²²⁸ Interview to Yaw Debrah, head of convertibles research at Bear, Stearns & Co., on credit analysis of convertible bonds. See *id.* at 104.

²²⁹ Interview to Venu Krishna, vice president and convertible securities analyst at Salomon Smith Barney on evaluating zero-coupon convertibles. See *id.* at 104.

²³⁰ See Kostigen, *supra* note 154, at 1.

²³¹ Among these other causes, a prominent one is that constituted by the major tax benefits implied by straight debt.

and junior creditors might differ widely as firm value starts to depreciate. Similarly, holders of different classes of tracking shares²³² might have opposed view on strategic business decisions and investment policies. Because the issuance of HFI further complicates the firm's capital structure, it inherently increases the risk of intra-corporate conflicts. As a result, transaction costs (including contracting, monitoring and expected litigation costs) increase under a capital structure that includes HFI, which might potentially offset the benefits brought about by the issuance of these instruments.

1. Downsizing Complexity Costs

If, on the one hand, companies still raise capital mainly through the issue of straight debt and equity securities, on the other hand, in the past few years an enormous surge in HFI offerings has been recorded.²³³ This empirical evidence demands a reexamination of the alleged constraints imposed by complexity costs on the use of HFI.

a. The Role Played by Sophisticated Investors

As to intrinsic complexity costs, this Essay argues that the increasingly sophisticated nature of many corporate investors can help reducing such costs, which could explain the recent boom in HFI. Sophisticated investors are high net worth professional investors equipped with both the technical skills and the economic resources necessary to fully evaluate investments' rewards and risks. This enables them, as opposed to individual investors, to perform the complex evaluations required by HFI analysis.²³⁴ Moreover, the ability of these investors to "exploit economies of specialization, scale, and scope in the gathering and processing of information"²³⁵ reduces the costs they bear to evaluate corporate assets. For this reasons, sophisticated investors can fully profit from HFI potential. Indeed, when HFI are stripped off intrinsic complexity costs, what is left

²³² Tracking shares are hybrid forms of common stock that represents "an equity stake in a particular segment or 'group' operated by a diversified parent corporation", which might originate "extensive intergroup conflicts". Jeffrey J. Hass, *Directorial Fiduciary Duties in a Tracking Stock Equity Structure: The Need for a Duty of Fairness*, 94 MICH. L. REV. 2089, 2090-91 (1996).

²³³ See *supra* note 3.

²³⁴ See, generally, "A Convertibles Conversation – Focus Convertible Bonds", *supra* note 3, at 103-04.

²³⁵ Triantis, *supra* note 50, at 308 (speaking of financial intermediaries).

out of them is the potential to deal more efficiently with transacting problems.²³⁶ To this respect, a promising field to expand future research on HFI could come from the analysis of hedge funds' activity. Hedge funds are often credited with the merit of having allowed hybrid securities markets to develop.²³⁷ In recent times, then, the critical role played by such funds in both corporate governance and corporate control has renewed corporate scholars' attention toward shareholder activism.²³⁸ Thus, a study on the use of HFI in hedge funds' activism could constitute a good empirical test for the theses that have been developed in this Essay.

Moreover, the role played by sophisticated investors in containing HFI intrinsic complexity costs may also have positive learning externalities for individual investors. As a matter of fact, most sophisticated investors collect money from individual investors (think, for instance, to mutual or pension funds).²³⁹ From this perspective, this type of investors act primarily as financial intermediaries. Now, because of their economic, informational and organizational resources, financial intermediaries are generally attributed a key role in mitigating several transacting problems, including, among others,

²³⁶ The capacity of sophisticated investors *to read* the market for hybrids may enable professional arbitragers to speculate through arbitrage technique (i.e., by selling a firm's equity in anticipation of buying its convertibles). As this distorts the market for hybrids, it could jeopardize HFI potential to provide efficient contractual solutions to corporate agency problems. Sophisticated issuers, however, are aware of this issue and "work very closely with underwriters to manage [] arbitrage activity." Interview to Charles Burdick, finance director at the UK's second-largest cable company, Telewest Communications Plc.. *See A Convertibles Conversation, supra* note 3, at 105.

²³⁷ Interview to Jeremy Howard, head of global convertible research at Deutsche Bank. *See id.* at 105 (saying that "[h]edge funds have had a majorly beneficial role in [the European] market, ..., and-for the first time really in European convertibles-allowed an efficient market to develop.")

²³⁸ *See, e.g.,* Marcel Kahan and Edward B. Rock, *Hedge Funds in Corporate Governance and Control*, 155 PENN. L. REV.1021 (2007) (examining the nature of renewed shareholders' activism by hedge funds and arguing that "[h]edge funds have become critical players in both corporate governance and corporate control"); Frank S. Partnoy & Randall S. Thomas, *Gap Filling, Hedge Funds, and Financial Innovation*, BROOKINGS-NOMURA PAPERS ON FINANCIAL SERVICES (Fuchita et al. eds.2007) (examining the changes in financial instruments and institution brought about by hedge fund activism); Thomas W. Briggs, *Corporate Governance and the New Hedge Fund Activism: An Empirical Analysis*, 32 J. CORP. L. 681 (2007) (underlying that hedge funds have made shareholder activism "once again a hot topic.")

²³⁹ This is not the case of hedge funds, because the Securities Act mandates that they be open to only a limited range of *qualified* investors, i.e., individuals and organizations having a net worth of at least one million US dollars or have made at least \$200,000 each year for the last two years.

problems arising out of asymmetric information, coordination costs, and learning externalities.²⁴⁰ Accordingly, sophisticated investors, acting as financial intermediaries, could also help reducing the transaction costs borne by firms to market HFI to individual investors, which would provide a further explanation to the growing success of HFI offerings.

b. Debtholders' Intergroup Conflicts and Option Rights

As to the increased risk of intra-corporate conflicts to which the issue of HFI may lead, a distinction must be drawn depending on whether HFI's underlying security is debt (hereinafter, also debt-based HFI, such as, for instance, convertible bonds) or equity (hereinafter, also equity-based HFI, such as, for instance, puttable stock). As opposed to conflicts among different classes of debtholders, which constitutes a purely contractual matter,²⁴¹ conflicts among different classes of equity investors also involve legal facets because they raise fiduciary problems.²⁴² For this reason, the analysis of intergroup conflicts originated by equity-based HFI will be carried out in the next paragraph, which discusses the legal constraints affecting hybrid securities.

Although conflicts among different classes of debtholders do not raise fiduciary problems,²⁴³ they depreciate the value of investors' claims.²⁴⁴ Rational investors, however, anticipate that complex capital structures might increase the likelihood of these conflicts and, therefore, negotiate contractual provisions designed to contain such a risk. For instance, cross-default clauses, providing that a company is in default if it fails to pay any of its debt obligations, are designed to contain the possible conflicts among

²⁴⁰ Although intermediation is costly, it is generally believed to benefit issuers as it ultimately leads to a net decrease in the cost of capital, by reducing several transaction costs. *See* Triantis, *supra* note 50, at 308-309.

²⁴¹ *See supra* text at note Part II.B.

²⁴² The basic tenet of American corporate fiduciary law, the shareholder primacy rule generally mandates directors to maximize shareholder wealth. When the firm's capital structure counts more classes of equity claimants, the material content of this rule, however, tends to become obscure. *See infra* Par IV.B.1.

²⁴³ The shareholder primacy rule excludes any fiduciary obligation of directors toward creditors. *See supra* Part II.B.

²⁴⁴ For instance the issue of subsequent debt raises an intergroup conflict because it dilutes the value of prior debt claim. For other examples, see *infra* in the text. Moreover, to govern these conflicts both the firm and the investors might incur significant transaction cost, including litigation costs.

debtholders that may arise in the vicinity of insolvency.²⁴⁵ Negative pledge clauses serve an analogous function.²⁴⁶ Covenants designed to prevent conflicts among debtholders, however, present similar problems to those affecting covenants governing debtholders-stockholders conflicts.²⁴⁷ Both these types of covenants constrain discretion in the corporate-decision making process and, therefore, tend to impose significant opportunity costs on firms.²⁴⁸

As the firm's capital structure becomes more complex because of the issuance of debt-based HFI, the risk of debtholders' intergroup conflicts increases. Thus, one would expect that HFI contracts included even stricter covenants against this risk. On the contrary, such contracts, in general, tend to include very few restrictive covenants.²⁴⁹ This empirical evidence suggests a broader scope for the use of option rights in HFI contracts. Such rights may also serve to address efficiently debt intergroup conflicts.

Consider, for instance, the problems arising out of leverage buyouts. Increases in firm leverage associated with an acquisition depreciates the value of prior lenders' claims in a manner not dissimilar from the issuance of subsequent debt. Now, HFI redemption options generally insulates investors against investment depreciations, by enabling them to terminate their contractual relationship with the firm. Hence, HFI that include a redemption option can be used to limit the investors' downside risk associated to the occurrence of a leverage buyout.²⁵⁰ Under this view, the occurrence of a leverage

²⁴⁵ By placing all the debtor's creditors on equal footing, such clauses exclude that a debtor may expropriate the bulk of its creditors by offering more favorable terms to just one of them with the purpose of avoiding default under a specific debt contract.

²⁴⁶ By limiting the firm's ability to pledge its assets when doing so gives prior lenders less security, negative pledge clauses (or "covenant of equal coverage") prevent the firm from issuing any debt in the future that would jeopardize other lenders' priority claim on the company assets.

²⁴⁷ See *supra* Part II.C.1.

²⁴⁸ In fact, where investors are attributed veto powers on the firm's investment policy, this type of conflicts might, to the extremes, paralyze the firm's investment policy.

²⁴⁹ See Marcel Kahan & David Yermack, *Investment Opportunities and the Design of Debt Securities*, 14 J. L. ECON. & ORG. 136 (1998) (providing empirical evidence on the matter and arguing that "covenants impose costs by limiting managerial discretion, leading firms that value managerial flexibility to prefer convertibility as a method of reducing the agency costs of debt.")

²⁵⁰ Puttable convertible bonds constitute an example of HFI that can be used to this purpose. This type of convertible bonds, in fact, attributes the holder the right to demand redemption of the bonds, at par value or (most often) at a premium to par value at a predetermined date or at several dates up to maturity. It

buyout can, in fact, be considered as an exogenous specific risk,²⁵¹ which triggers the option's exercise by investors. As compared to restrictive covenants, the attribution to investor of a redemption option is a superior means to contain the risk of debt-intergroup conflicts, because it leaves the firm free to undertake a leverage buyout as long as it can sustain the option's cost. This avoids the risk that wealth-increasing acquisitions might not occur, which, in turn, save parties opportunity costs. Finally, as long as the potential arising out of the attribution of option rights in financial contracts is fully explored, not only the issuance of HFI does not risk exacerbating the problem of debtholders' intergroup conflicts, but may open the path to a new way of solving such problems.

B. Legal Constraints

American corporate law provides for a mandatory fiduciary model. Under this model, directors owe their duties to the exclusive benefit of shareholders while the firm is solvent, and to creditors once the firm becomes insolvent. By limiting the room for private contracting, the current corporate fiduciary model may prevent parties from being able to fully exploit HFI contracts so as to implement superior solutions to their transacting problems in both solvent and insolvent states. Because of space constraints, however, this Essay confines discussion to the use of HFI as a means to reduce corporate agency problems in solvent firms.²⁵² Hence, the ensuing discussion will focus exclusively on the shareholder primacy rule (hereinafter, SPR), the basic principle governing fiduciary duties as long as the firm is solvent.²⁵³ Specifically, the following paragraphs

should be noted, however, that the attribution of option rights may help containing debt intergroup conflicts also when they are added in as contingent features in straight debt contracts. Put option rights that are commonly attributed by straight bonds' indentures upon the occurrence of a leverage buyout do respond to this logic. *See* Marcel Kahan, *Anti-Dilution Provisions in Convertible Securities*, 2 *Stan. J. L. Bus. & Fin.* 147, 160 (1995) (reporting that about 85% of the indentures contain this type of put provisions).

²⁵¹ Under this view, the occurrence of a leverage buyout can be considered as an exogenous specific investment risk.

²⁵² The analysis on the property of HFI to reduce (also) insolvency costs is postponed to a subsequent paper. *See infra* the Conclusive Remarks.

²⁵³ Although some scholars have questioned whether the SPR is a descriptively accurate norm, the vast majority of commentators, lawyers, judges and economists assumes that corporate law imposes on directors an exclusive duty to maximize shareholder wealth. *See supra* note 69. *See also* Jonathan R. Macey, *An Economic Analysis of the Various Rationales for Making Shareholders the Exclusive Beneficiaries of Corporate Fiduciary Duties*, 21 *STETSON L. REV.* 23 (1991); Hu, *supra* note 2, at 1278;

will show that such a rule introduces distortions in directors' incentives that might undermine HFI optimal incentive scheme. To avoid this inefficiency, this Essay suggests that corporate fiduciary law should be amended so as to implement a permissive fiduciary model.

1. Theoretical Foundations of the SPR

The economic rationale at the basis of the current conception of the SPR rests on the status of shareholders as residual claimants.²⁵⁴ Because shareholders are entitled to the firm's residual value (i.e., to the surplus that is left "after all definite obligations are satisfied"),²⁵⁵ a rule that requires to maximize shareholder wealth indirectly maximizes the overall wealth.²⁵⁶ Although at first sight this rationale may appear strongly persuasive, this Essay argues that shareholder wealth maximization is a suboptimal proxy for firm value maximization for at least two reasons.

First, maximizing share value is not always equivalent to maximizing firm value. As showed by the example model at Paragraph II.C.1.a.i., AS strategies, for instance, increase shareholder wealth, but reduces the value of the firm as a whole. Moreover, because such strategies increase the cost of capital, they may jeopardize the undertaking of profitable investment projects, thereby decreasing the overall welfare.

Second, even when taking decisions in the residual claimants' interests can maximize corporate value, the introduction of new equity and equity-related securities

Partnoy, *supra* note 2, at 7. *But see, e.g.*, Jill Fisch, *Measuring Efficiency in Corporate Law: The Role of Shareholder Primacy* 13, Law & Economics Workshop (University of California, Berkeley) (2004); Lynn A. Stout, *Bad and Not-So-Bad Argument for Shareholder Primacy*, 75 S. CAL. L. REV. 1189, 1202-03 (2002).

²⁵⁴ *See, e.g.*, FRANK H. EASTERBROOK & DANIEL R. FISCHEL, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* 67-69 (1996); Robert Clark, *CORPORATE LAW* 46 (1986); Ronald J. Gilson, *Separation and the Function of Corporate Law*, STAN. L. & ECON. OLIN WORKING PAPER NO. 307 (2005); Fisch, *supra* note 253, at 20.

²⁵⁵ Clark, *supra* note 254.

²⁵⁶ Under this economic rationale, allocative efficiency is, thus, pursued by linking directors' fiduciary duties to the firm's order of priority in right of payment. By commanding to maximize the returns of the party holding the lowest priority in the hierarchy of payment, the SPR maximizes the aggregate wealth because it indirectly requires directors to satisfy the claims of all parties entitled to a higher priority.

has made increasingly difficult to identify who the firm's residual claimants are.²⁵⁷ The generic formulation of the SPR does not distinguish between common shareholders and other equity claimants. This fosters uncertainty as to the principles that should guide the corporate decision making process,²⁵⁸ especially in front of the often competing financial interests held by different classes of residual claimants.²⁵⁹ In fact, the rule's ambiguity risks generating the same runaway agency costs that are commonly invoked to deny a duty of directors toward non-shareholder constituencies.²⁶⁰

Law-and-economics scholars advance a different explanation to justify the SPR. The (common) shareholders should be considered as the exclusive beneficiary of corporate fiduciary duties because the open-endedness of their claims makes them the class of corporate participants that face "the most severe set of contracting problems with respect to defining the nature and extent of the obligations owed to them by officers and directors."²⁶¹ On the contrary, the more limited entitlements of other corporate investors,

²⁵⁷ See, e.g., Hu, *supra* note 2, at 1287 (arguing that "[w]ith the proliferation of securities convertible, linked, or similar to common stock, financial innovation has made more difficult the issue of which securities embody maximization rights."); Partnoy, *supra* note 2, at 9-19 (relying on option theory to get insights on the difficulties to identify the firm's "true residual claimants"); Fisch, *supra* note 253, at 21 (arguing that "it is not clear that shareholders should be viewed as the exclusive residual claimants in a corporation.")

²⁵⁸ See Hu, *supra* note 2, at 1286 (claiming that "[f]inancial innovation ... has rendered the principle [of shareholder primacy] ... intolerably ambiguous."); Partnoy, *supra* note 2, at 6 (affirming that financial innovation, "in both theory and practice, has made the traditional scholarly approach to the corporate law conception of fiduciary duty "contradictory and meaningless."). Professor Partnoy also reports that, for instance, in the venture capital context where HFI such as preferred shares are largely used, courts have had contradictory approaches as to the interpretation of the SPR. Commonly, courts have held that the rule should be interpreted as imposing on directors an exclusive obligation to maximize the common shareholders' wealth and not also that of preferred shareholders. In other cases, however, courts have held that, at least upon some specific circumstances, directors do not owe fiduciary obligations exclusively to the common shareholders. See *id.* at 28-29.

²⁵⁹ See also *supra* Part II.B.

²⁶⁰ Cf. Stout, *supra* note 253, at 1208 (stating that the need to avoid the runaway agency costs that would be incurred if directors' duties were extended to other corporate stakeholders provides a good justification for the SPR)

²⁶¹ Macey, *supra* note 253, at 25.

including those of other equity-claimants, make the contract a sufficient instrument to protect these parties' interests in the corporation.²⁶²

This view, however, overlooks that a rule mandating to maximize exclusively the (common) shareholder wealth may have negative externalities on other investors' contracts with the firm. The SPR may potentially extend to managers the preference of shareholders toward excessive levels of risk taking, which exacerbates the AS problem. That is, in a situation like that described under the example model at Paragraph II.C.1.a.i., *M* could justify her decision to undertake *TypeB₁* even when $E(\textit{Type } B_1) < E(\textit{Type } G)$ on the basis of the dictate of the SPR, as *TypeB₁* is the project that maximizes expected equity returns, notwithstanding it is socially inefficient.²⁶³ An interpretation of the SPR to the exclusive benefit of the common shareholders may have a similarly adverse impact on the contract of other equity claimants. Consider the case of tracking-shareholders, whose interests in the firm are linked to the economic performance of a particular division of the corporate business rather than to the overall firm's performance.²⁶⁴ This divergence of financial interests between tracking and common shareholders can originate inter-group conflicts as to any corporate decision that disproportionately affects the interests of the former. This may be the case of, for instance, decisions concerning the allocation of scarce resources to a business activity different from the *tracked* one.²⁶⁵ The SPR, in the above interpretation, tends to increase these conflicts and may potentially lead managers to choose courses of action that favor the common shareholders' at the tracking shareholders' expenses.

²⁶² *See id.* The above reasoning is put out by Professor Macey with reference to shareholder constituencies as opposed to, generally, non-shareholder constituencies. The logic behind it, however, can be equally applied to the dichotomy between common shareholders and other investors, including both equity investors different from the former and debt investors.

²⁶³ This means that, from a legal viewpoint, when the economic rational at basis of the SPR does not hold true, because the end of maximizing shareholder wealth diverges from that of maximizing corporate wealth, such a rule may justify the undertaking of value decreasing courses of actions.

²⁶⁴ *See supra* note 232.

²⁶⁵ Other decisions which are likely to give raise to equity inter-group conflicts in tracking-stock corporations include decisions concerning corporate expenses, merger or acquisition considerations, inter-group transactions, capital raising activities and the use of the proceeds stemming therefrom, etc. *See* Hass, *supra* note 232, at 2120.

2. *SPR and HFI*

Pursuant to the contractarian view of corporate relationships, however, as long as corporate investors other than the common shareholders can anticipate the externalities raised by the SPR, they can bargain for an adequate contractual protection against them. As acutely observed by Professor Macey, the relevant issue to this point is “whether it is technologically possible”²⁶⁶ to devise such contractual solutions. This Essay has argued that the technology provided by standard financing contracts serves this purpose suboptimally.²⁶⁷ On the contrary, HFI and, more generally, the inclusion of options in financing contracts,²⁶⁸ offer superior contractual technology to protect investors’ interests from unforeseen contingencies, including those arising out of the distortions introduced in the parties’ exchange by the SPR. Thus, as showed by the example model at Paragraph III.C.1.a., CB structures make the undertaking of AS strategies no longer profitable for the shareholders and, therefore, avoid that the SPR might be used to justify the undertaking of value-decreasing actions. The inclusion in the tracking shareholders’ contract of redemption or conversion options can provide these claimants with analogous protection against the problems originated by an interpretation of the SPR that makes the common shareholders the exclusive beneficiary of the rule. The inclusion of a redemption option would enable the tracking shareholders to withdraw from the investment²⁶⁹ where a board’s decision benefited the common shareholders at their expenses and, thereby, depreciated the value of tracking shares. The inclusion of a conversion option, instead, would impose on the common shareholders an expected dilution cost, which would make it unprofitable for them to undertake actions that increase common share value by expropriating wealth from the tracking shareholders.

Nonetheless, this Essay argues that the SPR might prevent parties from being able to fully exploit the superior technology provided by the inclusion of options in their contracts. CB and PS contractual structures can be considered paradigmatic of the

²⁶⁶ Macey, *supra* note 253, at 39.

²⁶⁷ See *supra* Part II.C.

²⁶⁸ See Macey, *supra* note 253, at 39. (generally arguing that the inclusion of put options in debt contracts constitute a means that provides “virtually complete protection for bondholders against unforeseen contingencies.”)

²⁶⁹ See *supra* note 144.

inefficiency to which the SPR may lead in the case of, respectively, debt-based and equity based HFI. Yet, to understand how this happens in practice, it is first necessary to relax some of the assumptions on which both the example model at Paragraphs III.C.1.a. and that at Paragraph III.C.2.a. are based.

First, the modern public corporation is characterized by a separation of ownership from control. This imposes to relax the assumption that the firm is run by an owner-manager. In the actuality, in fact, there are dispersed shareholders, who can be said to *own* the firm, and a board of directors running it. For notational simplicity, however, we will hereinafter consider a firm run by a sole director, M . Second, in the real world, a firm commonly undertakes a continuum of projects during its lifetime, which also imposes to relax assumption A4, that a firm is the project it pursues.²⁷⁰ In practice, this means that, between t_0 and the repayment date of the debt, M will be able to choose a project over a collection of *Type G* and *Type B₁* (or *Type B₂*) projects, rather than over a set made of a sole *Type G* and a sole *Type B₁* (or *Type B₂*) project. Third, in the actuality, convertible bonds are usually issued at a conversion price higher than the par value of the bonds, which finally relaxes assumption A5.²⁷¹ Hence, whereas M undertake a *Type G* project, the decision of I as to whether converting will depend on the specific income R_G generated by that project. That is, I 's decision will depend on whether the firm's actual growth rate over time is higher or lower than the expected growth rate reflected in the conversion price.²⁷²

a. SPR and Convertible Bonds

As exhibited by the example model at Paragraph III.C.1.a., under a CB contractual structure, for the firm the choice of the project with the highest expected value is the sole Nash equilibrium that can be achieved. The current SPR regime, however, might break this equilibrium. This does not mean that, under such a regime, M will engage in AS, because the wealth constraint imposed by $\min\left\{R_i, \frac{A}{K}, R_i - S\right\}$ will

²⁷⁰ See *supra* Part II.C.1.a.i.

²⁷¹ See Part III.C.1.a.

²⁷² See *supra* text at note 179.

still make it unprofitable for the shareholders that M choose any $TypeB_1$ projects when $E(TypeG) > E(TypeB_1)$. Nevertheless, under these circumstances, the SPR might induce directors to forego the $Type G$ project with the highest expected value. In fact, given a significant level of gearing, the expected dilution cost the shareholders bear when M chooses such a project might well be higher than the expected earning per share they derive out of it. As a result, the shareholders may prefer a project that, having a lower expected value, will not increase share price up to the conversion price and, therefore, dilute their expected gains from that and future investments.²⁷³ Accordingly, under the SPR regime, M could have incentives to behave strategically and choose a suboptimal project²⁷⁴ to advance the interests of the shareholders.

b. SPR and Puttable Stock

As showed by the example model at Paragraph III.C.2.a., a PS structure makes it profitable for the firm to engage in PBE only as long as it can pursue value-increasing projects. In the real world, however, there will not be a sole value-increasing project that satisfies the incentive compatibility constraint imposed by PS contracts as to PBE, but rather a collection of projects of this type. Similarly to what happens with CB contractual structures, the SPR might introduce distortions in directors' incentives so to induce them to forego the value-increasing project with the highest expected value. Indeed, among the collection of projects that satisfies PS contracts' incentive compatibility constraint, the common stockholders, in their capacity as controllers of the firm, might well prefer that yielding the highest private benefits, rather than that with the highest expected value. In fact, while profits from a projects must be divided among all the firm's stockholders, including the puttable stockholders, the gains from PBE accrue solely to the common stockholders-controllers. Hence, under a regime which mandates to maximize exclusively

²⁷³ That is, the shareholders may prefer the undertaking of a project that, by avoiding to put the bondholders' option into the money, does not oblige them to give up part of their profits to the bondholders nor dilutes their control rights.

²⁷⁴ The failure of M to undertake the $Type G$ project with the highest expected value originates a social loss equal to the difference between the value of such project and that of the less profitable $Type G$ project chosen by M .

the common shareholders' wealth, *M* might have incentives to choose sub-optimal projects to the controllers' exclusive benefits.

3. *Toward a New Corporate Fiduciary Model*

Under the traditional contractarian approach, the SPR is conceived as a legal device needed to fill-in the gaps of the intrinsically incomplete contract of the shareholders with the corporation.²⁷⁵ This view, however, neglects to consider the potential of innovative contractual technology in the corporate context.²⁷⁶ Drawing on the implementation economic literature²⁷⁷ and on the irrelevance theorem devised by Eric Maskin and Jean Tirole,²⁷⁸ this Essay argues that the inclusion of options rights in financing contracts through HFI constitute a superior means to implement contingent contractual schemes, including contingent shareholder contracts.

The basic idea behind the irrelevance theorem is that “if parties have trouble foreseeing the possible *physical* contingencies [of future states of the world], they can write contracts that *ex ante* specify only the possible *payoff* contingencies. (...) Then, later on, when the state of the world is realized, they can fill in the physical details.”²⁷⁹

²⁷⁵ The ultimate function served by the SPR is that of providing an “off-the-rack” term, which contains the unusually high costs of completing the shareholder contract. See EASTERBROOK & FISCHER, *supra* note 254, at 34, 90-93.

²⁷⁶ In fact, innovative contractual technology, and, in particular, the inclusion of options in corporate contracts, has been generally welcomed by scholars as a means to grant full protection to debt investors. See, e.g., Macey, *supra* note 253, at 39. Yet, very little scholarship exists as to the impact of option rights on equity contracts and corporate fiduciary law principles. See *supra* note 2.

²⁷⁷ See, e.g., Georg Nöldeke and Klaus M. Schmidt, *Option Contracts and Renegotiation: A Solution to the Hold-up Problem*, 26 RAND J. ECON. 163 (1995); Georg Nöldeke and Klaus M. Schmidt, *Sequential Investments and Options to Own*, 29 RAND J. ECON. 633 (1998); Aaron S. Edlin & Benjamin E. Hermalin, *Contract Renegotiation and Options in Agency Problems*, J. L. ECON. & ORG. 395 (2000); John Moore & Rafael Repullo, *Subgame Perfect Implementation*, 56 ECONOMETRICA 1191 (1999); Eric Maskin & Jean Tirole, *Implementation and Renegotiation*, 66 REV. ECON. STUD. 57 (1999).

²⁷⁸ See Eric Maskin & Jean Tirole, *Unforeseen Contingencies and Incomplete Contracts*, 66 REV. ECON. STUD. 83, 84 (1999); Eric Maskin, *On Indescribable Contingencies and Incomplete Contracts*, 46 EUROP. ECON. REV. 725, 726 (2002).

²⁷⁹ Maskin & Tirole, *supra* note 286, at 84. See also Maskin, *supra* note 286, at 726 (further explaining that when the parties are able to specify *ex-ante* “a probability distribution to their possible payoffs, the fact that they cannot describe the possible *physical states* (...) in advance is *irrelevant* to

Option contracts have these characteristics insofar as they just specify a pair of prices, the option's price and the exercise price, and give the option's holder the right to choose whether to undertake an action (i.e., to trade) at the exercise price, or not to undertake it by paying no more than the option's price.²⁸⁰ Depending on which state of the world materializes *ex-post*, the holder will decide which course of action is worthy pursuing. If the *ex-post* state makes the option to go in the money, the holder will undertake the action. Otherwise, she will choose not to undertake it. Hence, by signing an option contract, parties can implement a contingent, albeit incomplete, agreement.²⁸¹

Through HFI, this property of option contracts can be applied to both debt and equity investors corporate relationships. By specifying payoffs contingencies and giving investors the right to modify the allocation of contractual entitlements,²⁸² redemption and conversion options make the investors' contract always contingent on the external state. If an unforeseen contingency materializes depreciating investment value, the holder exercises her right to modify the contractual allocation of entitlements. Otherwise, the option expires unused and the original contractual scheme remains in place. To make an example, puttable stockholders do not need a legal mechanism to complete their contract, because the options PS contracts attribute to investors provide them with contingent protection against unforeseen events.²⁸³

It follows from the above that, under HFI equity structures, the very foundation of the argument advanced by contractarians to justify the SPR is discarded. Option rights included in HFI contracts remove the obstacles to shareholders' efficient contracting. First, by avoiding the need of specifying *ex-ante* the physical details of future contingencies, they limit both specification and monitoring costs. Second, because option rights constitute self-enforcing remedies, i.e., remedies that can be automatically enforced

welfare. That is, the parties can devise a contract that leaves them no worse off than were they able to describe the physical states *ex-ante*.”)

²⁸⁰ Cf. Schmidt, *supra* note 277, at 433 (arguing that “an option contract specifies a pair of prices $\{p_0, p_1\}$ and gives one party, say the seller, the right to choose whether to trade and receive p_1 , or not to trade and receive p_0 .”)

²⁸¹ *See id.*

²⁸² *See supra* Part III.B.

²⁸³ This Essay

by the holder without the intervention of a third party arbiter, such contracts also contain enforcement costs. In fact, as illustrated by the above discussion,²⁸⁴ the SPR might introduce distortions in the incentive scheme provide by HFI that might jeopardize corporate welfare maximization.²⁸⁵ Absent the distortions introduced by the SPR, PS contracts not only would ensure full protection of the investors' interests, but also promote the undertaking of optimal courses of actions.

To increase efficiency, this Essay suggests that existing law should be amended so as to implement a permissive, rather than a mandatory fiduciary model. This means, in practice, that the SPR should become a default rule, which is applicable when the shareholders do not choose to regulate their interests in the corporation by contract. As long as sophisticated equity investors can make their contracts contingent through the use of HFI options, there is, in fact, no need for legal intervention.²⁸⁶ On the contrary, when shareholders are not sophisticated enough to bargain for the contractual protection granted by HFI, or they cannot do so for any reason, the traditional contractarian argument for the SPR still holds. However, to avoid that the residual application of the SPR might undermine HFI optimal incentive scheme or, more generally, increase the risk of corporate conflicts, a further change under current law would be required. The rule should be reinterpreted so as to impose on directors an obligation to undertake always the project with the highest expected value. In the light of the proliferation of new complex financial products, focusing directly on the end of maximizing the firm's projected cash flows represents, in fact, the only alternative to explicit contracting to increase allocative efficiency. Such a modification of the SPR would respond to this rational and avoid the risk that directors might undertake suboptimal projects to advance shareholder interests at

²⁸⁴ *See supra* Part IV.B.2.

²⁸⁵ Puttable stockholders do not need a legal mechanism to complete their contract, because the attribution of HFI options already makes their contract always contingent on the external state. In particular, the case of the puttable stockholders' contract can be considered paradigmatic in this sense. Absent the distortions introduced by the SPR

²⁸⁶ This does not mean, however, that the implementation of HFI equity structures is possible only in the presence of sophisticated investors. This type of investors, in fact, often act as financial intermediary, what makes such structures also available to less sophisticated investors. *See supra* Part IV.A.1.a.

the expenses of corporate value maximization.²⁸⁷

CONCLUSIVE REMARKS

Corporate agency problems, i.e., asset substitution and private benefits extraction, reduce the *ex-ante* value of the parties' exchange. Hence, an efficient corporate governance system should provide solutions that constrain such problems. However, the instruments traditionally used to this end, corporate fiduciary law and standard corporate contracts, fail to advance the aggregate welfare of firms and investors. The uncertainty surrounding corporate fiduciary duties makes them weak constraints against corporate opportunism. The benefits from the more effective constraints imposed by rigid corporate contracts are offset by the opportunity costs that arise from such contracts. Flexible contracts that leave firms discretion on the corporate investment policy avoid opportunity costs, but tend to increase the risk of corporate opportunism. Finally, the renegotiation of *ex-post* inefficient corporate contracts is costly and might ultimately weaken the deterrent effect of rigid contracts on corporate agency problems.

This Essay suggests that HFI might provide a superior solution to corporate agency problems. The option design of such instruments has, indeed, the potential to put the firm on an optimal incentive scheme. That is, a scheme which reduces firms' incentives to engage in asset substitution and private benefits' extraction and, at the same time, allows parties to exploit the real options of the investments without bearing additional opportunity or renegotiation costs. Because the engagement in corporate opportunism puts the options attributed to investors by HFI into the money, thereby imposing a cost on firms, they have less incentives to deviate from the contractual set of

²⁸⁷ This solution is not entirely new in the judiciary landscape. In *Credit Lyonnais Bank Nederland, N.V. v. Pathe Communications Corp.*, Chancellor Allen proposed a similar test of directors' liability, although in the context of a corporation "in the vicinity of insolvency." Through the use of an hypothetical, he suggested that to avoid liability, directors should undertake only projects with positive net present value. See *Credit Lyonnais Bank Nederland, N.V. v. Pathe Communications Corp.*, No. 12150, 1991 Del. Ch., LEXIS 215, (Del. Ch. Dec. 30, 1991), reprinted in 17 DEL. J. CORP. L. 1099, 1155, fn. 55. Unlike the test proposed by *Credit Lyonnais*, however, the criterion of the highest NPV project proposed by this Essay does not have the intent to expand directors' liability toward corporate constituencies other than the shareholders. On the opposite, it purports to specify in practice what it means to pursue shareholder wealth maximization in the light of the changes brought about by financial innovation.

actions under an HFI contract. At the same time, however, under such a contract, the firm remains free to deviate from the agreed upon set of actions as long as the expected surplus of the deviating action is higher than the option's cost. Because this Essay shows that only value increasing actions satisfies this incentive compatibility constraint, HFI contracts ultimately increase the *ex-ante* value of the parties' exchange.

Economic and legal constraints, however, exist that might hamper HFI potential to provide more efficient solutions to corporate agency problems. In particular, the intrinsic complexity costs of such instruments, and the higher risk of intra-corporate conflicts to which this complexity might lead, may induce parties to adopt more simple, albeit suboptimal, contractual schemes. The mandatory nature of the shareholder primacy rule, instead, introduces distortions in directors' incentives that may hamper the property of HFI contracts to promote the undertaking of optimal courses of actions.

In addressing these constraints, this Essay argues that the increasingly sophisticated nature of many corporate actors plays a crucial role in reducing HFI complexity costs, which also has positive externalities for individual investors. Moreover, it claims that as long as the potential of option design in financial contracting is fully explored, not only HFI do not exacerbate intra-corporate conflicts, but they may provide innovative solutions to govern such conflicts. Finally, it proposes that the current regime of corporate fiduciary duties should be modified so as to make the shareholder primacy rule (i) a default (ii) mandating to undertake the project with the highest expected value. These modifications would avoid distortions in directors' incentives, which might compromise the optimal incentive scheme provided by HFI, and, therefore, guarantee the pursuing of corporate welfare maximization.

Because of space constraints, this Essay omits to consider the effect of corporate insolvency on HFI optimal incentive scheme. Such an event has been commonly seen by corporate scholars as capable of altering firm's incentives so as to nullify the deterrent effect of HFI on corporate opportunism.²⁸⁸ In brief, the conventional argument goes that once insolvency approaches the firm, shareholders have nothing to lose and everything to

²⁸⁸ In particular, corporate scholars have considered insolvency as a major limit to the alleged efficiency of HFI against asset substitution strategies. *See, e.g.*, Triantis & Triantis, *supra* note 2, at 1239 (claiming that the "agency cost savings of convertible debt are easily overstated since it does not prevent the exacerbation of risk alteration incentives when the debtor is insolvent or near insolvency").

gain from behaving opportunistically. Under this circumstance, shareholders are, thus, indifferent at the margin to the cost they bear following the exercise of HFI options by investors.²⁸⁹ This criticism, however, is both overinclusive and underinclusive. It is overinclusive because it omits to recognize that the optimal incentive scheme provided by HFI makes it less likely that a firm will become insolvent. By imposing a costs on firms who deviate from the contractual set of actions agreed with the investors, such instruments virtually eliminates the possibility that insolvency may occur because of corporate opportunism. When financial distress arises because of causes other than corporate opportunism, the above criticism is, instead, underinclusive, because it fails to recognize that HFI contracts also enable parties to structure their claims initially so to minimize insolvency costs. But this necessarily must be left as subject for a subsequent paper.

²⁸⁹ Upon the approaching of insolvency, shareholders no longer have any liquidation interest in the firm. Hence, the wealth constraint imposed by HFI options on the undertaking of both AS and PBE strategies becomes meaningless. *Cf. id.*, 1239 (referring exclusively to the AS problem).