LONG-TERM BIAS

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The conventional wisdom among legal and business commentators is that corporate managers are too often pressured to favor short-term gains at the expense of superior long-term returns. The pressures favoring such a short-term bias supposedly come from hedge fund activists and Wall Street investors who are relentlessly myopic in focusing on the next quarterly earnings report. This conventional wisdom has become so well accepted that short-term bias has become a principal concern in modern corporate law, with courts and scholars seeking legal constraints to insulate firms and managers from the undesirable short-termism of investors.

This Article argues that the conventional concern is misplaced. An extensive literature on cognitive psychology provides good theoretical reasons for thinking that corporate managers may suffer from a *long-term bias*, namely, an excessive optimism about long-term projects that they themselves have conceived. This theoretical risk is illustrated with three case studies in which managers in prominent companies (Yahoo!, AOL and Navistar) were excessively confident in their own long-term projects, with a steep price ultimately being paid by their companies' shareholders. The theoretical risk of long-term bias among managers also provides a novel explanation for evidence that investors pressure managers to focus on short-term results. Regardless of whether or not these investors are short-sighted, their pressure operates against the long-term biases of overconfident managers. This Article concludes that, without more definitive evidence, policymakers should hesitate to impose legal mechanisms designed to curb market pressures that may be efficiently countering managers' long-term biases.

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> *"I don`t think the story has yet played out...A lot of tech turnarounds do take five, six, seven years."*
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> *Marissa Mayer, March 11, 2016*

I. Introduction

Short-termism has become the main concern of corporate America. The conventional wisdom among legal and business commentators, judges, policymakers and investors, is that corporate managers are too often pressured to favor short-term gains at the expense of superior long-term returns. This concern is decades old. As far back as 1980, a provocative and influential article in the *Harvard Business Review* predicted that corporate management's "devotion to short-term returns and management by the numbers" was bringing about "a decline in competitiveness of U.S. companies."[1] By the 1990s, the claims about economic "short-termism" being a serious problem were already "widespread."[2]

The rise of activist hedge funds has added a sense of urgency, or even emergency, for those who fear short-termism. Thus, Judge Leo Strine, Chief Justice of the Delaware Supreme Court, has warned that "there is a danger that activist stockholders will make proposals motivated by interests other than maximizing the long-term, sustainable profitability of the corporation."[3] Leading corporate lawyer, Martin Lipton, has echoed such concerns, with harsh words for activists, who, he argues, "are preying on American corporations to create short-term increases in the market price of their stock at the expense

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[1] Robert H. Hayes and William J. Abernathy, *Managing Our Way to Economic Decline*, 58 HARV. BUS. REV. 67, 70, 77 (July/Aug. 1980).

[2] *See e.g.,* Kevin J. Laverty, *Economic "Short-Termism": The Debate, the Unresolved Issues, and the Implications for Management Practice and Research*, 21 ACAD. MGMT. REV. 825, 825 (1996).

[3] *See* Leo E. Strine, Jr., *One Fundamental Corporate Governance Question We Face: Can Corporations Be Managed for the Long Term Unless Their Powerful Electorates Also Act and Think Long Term?* 66 BUS. LAW. 1, 8 (2010) [hereinafter Strine, *Fundamental Question*]; *See also* Leo E. Strine, Jr., *Who Bleeds When the Wolves Bite?: A Flesh-and-Blood Perspective on Hedge Fund Activism and Our Strange Corporate Governance System*, 126 YALE L.J. 1870, 1885 (2017) [hereinafter Strine, *Who Bleeds*] ("human investors are exposed to…changes in corporate behavior influenced by stock market forces such as hedge fund activism: a short-term increase in productivity and stock price at the expense of long-term reinvestment and wage growth will likely harm the overall 'portfolio' of the human investor.")

of long-term value."[4] "This pervasive short-termism" Lipton warned "is eroding the overall economy and putting our nation at a major competitive disadvantage."[5] And these claims have even entered the political arena.[6]

The claims of excessive short-termism have, of course, been controversial, with critics of the claims pointing to efficient markets, and their corrective mechanisms, as a primary reason to be skeptical of any persistent short-term bias.[7] Still, the concern over short-termism has grown in magnitude and influence. The *Harvard Business Review* recently published an article confirming that "*Yes, Short-Termism Really is a Problem*,[8] and dedicated a whole volume to "*Managing for the Long-Term*."[9] Those who fear short-termism have pointed to evidence that associates hedge funds activism with a decline in long-term investment,[10] and to managers' surveys that confirm these short-term pressures

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[4] Martin Lipton, *Important Questions About Activist Hedge Funds*, HARV. L. SCHOOL. F. ON CORP. GOVERNANCE & FIN. REG. (March 9, 2013) [hereinafter Lipton, *Important Questions*], available at https://corpgov.law.harvard.edu/2013/03/09/important-questions-about-activist-hedge-funds/

[5] Martin Lipton, *Some Thoughts for Board of Directors in 2017*, HARV. L. SCHOOL. F. ON CORP. GOVERNANCE & FIN. REG. (December 8, 2016) [hereinafter Lipton, *Some Thoughts 2017*], available at https://corpgov.law.harvard.edu/2016/12/08/some-thoughts-for-boards-of-directors-in-2017/

[6] *See e.g.*, Issie Lapowsky, *Clinton: The Tyranny of Quarterly Earning Hurts Innovation* WIRED (July 24, 2015), available at https://www.wired.com/2015/07/clinton-wall-street-crackdown/ (reporting that as part of her campaign Clinton promoted policies that would fight the "tyranny of today's earnings report.")

[7] *See e.g.*, Mark J. Roe, *Corporate Short-termism -- In the Boardroom and in the Courtroom*, 68 BUS. LAW. 977, 987 (2013) ("If short-term stock market pressures are inducing firms to give up value over the long run, then firms and markets would find themselves with incentives to develop institutions and mechanisms to facilitate that long-run profitability"); Jonathan Macey, *Their Bark Is Bigger Than Their Bite: An Essay on Who Bleeds When the Wolves Bite*, 126 YALE L.J. F. 526, 535 (2017) ("The efficient capital market hypothesis implies that it is virtually impossible for an activist hedge fund to outperform the market without illegally using material inside information unless they improve corporate performance."). Others have questioned the magnitude of the concern. *See e.g.*, Steve N. Kaplan, *Are U.S. Companies Too Short-Term Oriented? Some Thoughts,* NBER WORKING PAPER NO. W23464 (2017) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2980552 (despite ongoing short-termism concerns "corporate profits are near all-time highs"); Or pointed to a classic agency theory, Empire Building – managers' self-interest to control large organizations – as an overinvestment problem that could be mitigated by short-termism. *See e.g.*, Lucian A. Bebchuk, Alon Brav & Wei Jiang, *The Long-Term Effects of Hedge Fund Activism*, 115 COLUM. L. REV. 1085, 1137 (2015) [hereinafter Bebchuk et al., *Long-Term Effects*]. *But see* John C. Coffee, Jr. & Darius Palia, *The Wolf at the Door: The Impact of Hedge Fund Activism on Corporate Governance*, 41 J. CORP. L. 545, 551, 627-630 (2016) ("We think this assumption that managements typically engage in inefficient empire-building is today out of date and ignores the impact of major changes in executive compensation."). For a broader discussion *see infra* part IV.A.

[8] Rojer L. Martin, *Yes, Short-Termism Really is a Problem*, HARV. BUS. REV. (Oct 9, 2015) available at https://hbr.org/2015/10/yes-short-termism-really-is-a-problem

[9] *Managing for The Long Term*, HARV. BUS. REV. (May-June 2017) available at https://hbr.org/2017/05/managing-for-the-long-term.

[10] *See e.g.*, Coffee & Palia, *supra* note 7, at 576 (surveying studies that find that hedge fund activism is associated with a decline in R&D investment); *See also* Nickolay Gantchev, Oleg Gredil & Pab Jotikasthira, *Governance under the Gun: Spillover Effects of Hedge Fund Activism* (2017) available at http://ssrn.com/abstract=2356544 (finding that activism affects also firms that were not directly targeted). *Cf.* Alon Brav, Wei Jiang, Song Ma & Xuan Tian, *How Does Hedge Fund Activism Reshape Corporate Innovation?* J. OF FIN. ECON. (forthcoming 2018) (finding that target firms decrease investment in R&D but

and their consequences for long-term investments.[11] And numerous reforms to discourage short-termism and encourage long-termism are on the table. The proposed *Brokaw Act* would "fight against increasing short-termism in our economy by promoting transparency and strengthening oversight of activist hedge funds;"[12] elimination of other potential sources of short-termism such as quarterly reporting requirements are being advocated;[13] and Delaware courts redefined directors' fiduciary duties to align with a long-term horizon.[14]

Yet, if short-term bias impedes optimality, why don't markets develop mechanisms to protect long-termism? Why would sophisticated players like activist hedge funds leave money on the table that could be gained from optimal long-term investments?[15] For example, hedge fund managers could change their notoriously short-term focused compensation packages–that reward them a staggering 20% on annual appreciation, but only a dismal 2% of the assets they manage. Strikingly, however, not only that hedge funds haven't moved in this direction, but they are now moving the opposite direction –from the common 2 and 20, to 1 and 20 – namely, to an even smaller reward on assets, and relative larger reward on annual, short-term, appreciation.[16] Furthermore, despite the wide consensus over short-term bias and the damages it causes, not all evidence is supportive of the short-termism view. For example, market response to hedge fund activism announcement is strong and positive.[17] Furthermore, hedge funds hold shares for several

improve innovation output measured in patent counts and citations); Alon Brav, Wei Jiang & Hyunseob Kim, *The Real Effects of Hedge Fund Activism: Productivity, Asset Allocation, and Labor Outcomes*, 28 REV. FIN. STUD. 2723 (2015) (finding that target firms improve production efficiency).

[11] *See e.g.*, Harvey Campbell, John Graham & Shiva Rajgopal, *The Economic Implications of Corporate Financial Reporting*, 40 J. ACC. & ECON. 3 (2005); Dominic Barton et al., *Rising to the Challenge of Short-Termism,* FCLT GLOBAL 8-10 (2016), http://www.fcltglobal.org/docs/default-source/default-document-library/fclt-global-rising-to-the-challenge.pdf [http://perma.cc/7Z8P-QPJJ].

[12] *U.S. Senator Tammy Baldwin Introduces Bipartisan Legislation to Strengthen Oversight of Predatory Hedge Funds*, Press Release, US Senate (August 31, 2017), available at https://www.baldwin.senate.gov/press-releases/brokaw-act2017; *See also* Brokaw Act, S. 1744, 115th Cong. (2017), available at https://www.baldwin.senate.gov/imo/media/doc/Brokaw%20Act%20Bill%20Text.pdf

[13] *See e.g.,* Martin Lipton, *The New Paradigm for Corporate Governance,* HARV. L. SCHOOL. F. ON CORP. GOVERNANCE & FIN. REG. (Feb. 3, 2016*)*, [hereinafter Lipton, *New Paradigm*] available at https://corpgov.law.harvard.edu/2016/02/03/the-new-paradigm-for-corporate-governance/ (calling for elimination of quarterly reporting requirements); *see also* Strine, *Who Bleeds, supra* note **Error! Bookmark not defined.** (proposing an array of policy responses, such as curbing shareholder' proposals mechanism).

[14] *See In re Trados Inc. S'holder Litig.*, 73 A.3D 17, 34 (DEL. CH. 2013) ("the duty of loyalty therefore mandates that directors maximize the value of the corporation over the long-term "); *In Re Rural/Metro Corporation S'Holders Litig.*, 102 A.3D 205, 253 (DEL. CH. 2014); Travis Laster & John Mark Zeberkiewicz, *The Rights and Duties of Blockholder Directors*, 70 BUS. LAW. 33, 49 (2014-2015) ("the directors' fiduciary duties … require that they maximize the value of the corporation over the long term.")

[15] *See e.g.* Roe, *supra* note 7, at 987-989.

[16] *See* Lindsay Fortado, *Hedge fund investors question '2 and 20' fees, Fund managers criticized for focusing on management rather than performance fees,* Financial Times (June 6, 2017), available at https://www.ft.com/content/291081ba-49df-11e7-a3f4-c742b9791d43

[17] *See* Alon Brav, Wei Jiang, Frank Partnoy & Randal Thomas, *Hedge Fund Activism, Corporate Governance, and Firm Performance.* 63 J. FIN. 1729 (2008); *See also* Lucian A. Bebchuk, Alon Brav & Wei Jiang, *The Long-Term Effects of Hedge Fund Activism*, 115 COLUM. L. REV. 1085 (2015) (finding that the

years, fight to nominate board members, and reshape long-term operational strategies.[18] Activist hedge funds, thus, do not appear to focus exclusively on extracting short-term gains—rather, they invest resources and energies in reshaping firms' long-term strategies.

This Article argues that the shortcomings of the conventional wisdom are rooted in a strong but erroneous assumption that long-termism is *never excessive*. The conventional view holds a premise of asymmetry—unlike short-termism, long-termism is presumably *unbiased*.[19] In contrast, this Article introduces a novel notion of l*ong-term bias,* which is an inclination to favor inferior long-term projects over superior short-term projects or gains. While short-term bias originates primarily from external sources such as investors and capital markets, long-term bias originates internally, from managers' biased beliefs about the prospects of their long-term projects. Long-term bias arises since with respect to their long-term projects managers are (1) inclined to be highly optimistic; (2) face only weak constraints on their optimism; and (3) tend to dismiss feedback and relevant data. As a result of excessive optimism, thus, long-term projects are *prone to overestimation*.

While the Article's framework identifies an overlooked long-term bias, it does not rule out the widely perceived short-term bias. Quite the contrary, within the Article's framework, long-term bias co-exists, and interacts with, the well-recognized short-term bias.[20] Since both biases affect managers, their corresponding costs are limited, and sometimes might even wash out. Once we relax the assumption of long-term optimality, therefore, short-termism bias turns less costly, and accordingly more sustainable and believable. Put differently, long-term bias helps in explaining why costly market mechanism haven't arisen to limit short-termism.[21]

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initial increase in value does not fade within five years); *Cf.* Martijn Cremers, Erasmo Giambona, Simone M. Sepe, & Ye Wang, *Hedge Fund Activism and Long-Term Firm Value* (working paper 2015) (Using a matching procedure they find that target firms were less successful in the long-term than similar firms that were not targeted).

[18] *See infra* Part II for a broader discussion.

[19] For example, while a Google Scholar search for "short-term bias" & "corporate law" yields results, around 100 results, a Google Scholar search for "long-term bias" & "corporate law" yields 11 results, none of which is relevant to corporate investment, or to the long-term bias that we discuss here. Indeed, long-termism has long been the darling of corporate practice and policy, frequently equated with efficiency and growth. *See e.g.*, In re Trados Inc. S'holder Litig., 73 A.3D 17, 37 (DEL. CH. 2013) ("Focusing on long-term investments rather than short-term gains is the proper role of managers, board members and investors."); William T. Allen, *Ambiguity in Corporation Law*, 22 DEL. J. CORP. L. 894, 896-97 (1997) ("[I]t can be seen that the proper orientation of corporation law is the protection of long-term value of capital committed indefinitely to the firm."); Gantler v. Stephens, 965 A.2d 695, 706 (Del. 2009) ("enhancing the corporation's long-term share value is a distinctively corporate concern").

[20] *See* Michal Barzuza & Eric Talley, *Short-Termism and Long-Termism,* Virginia Law and Economics Research Paper No. 2; Columbia Law and Economics Working Paper No. 526 (2016), available at http://ssrn.com/abstract=2731814, (modeling short-termism interactions with long-termism).

[21] For an analysis of the relationship between biases' costs and biases' survivorship over time *see* Xavier Gabaix, *A Sparsity-Based Model of Bounded Rationality*, 129 Q. J. ECON. 1661 (2014). Similarly, the Article does not rule out the possibility that sometimes the manager rightly believes in her long-term project, while activists mistakenly undervalue her unique vision. *See* Zohar Goshen & Assaf Hamdani, *Idiosyncratic Vision and Corporate Control*, 125 YALE L.J. 560 (2016) (arguing that investors might undervalue, and even

Managers' optimism–that is their inclination to overestimate the probability of their projects to succeed–was documented extensively. This Article however, argues that optimism bias is *amplified, unbridled*, and *more influential* in the context of long-term investments. As a result, while managers' optimism affects all investments, it leads to a disproportionally high overestimation of long-term investments–and hence, to a long-term bias. The analysis of how and why the prospects of long-term investments are prone to overestimation draws on extensive literature in psychology and behavioral finance, and, is illustrated by three case studies of overconfidence driven long-term investments, that were disrupted by hedge fund activism, namely those of Yahoo, AOL and Navistar.[22]

As the analysis of the overconfidence literature shows, and the case studies illustrate, there are several different reasons that make long-term investments especially vulnerable to overconfidence. To begin with, due to the many unknowns and uncertainties involved, long-term investments are frequently volatile–namely, they could result in either a high upside or a low downside. An optimist manager, who overestimates the likelihood to achieve the high upside, the Article shows, will greatly overestimate the value of a volatile investment.[23] This amplified effect of optimism bias on long-term investments, could have played a role in the hiring of Marissa Mayer as Yahoo's CEO. Mayer lacked relevant experience to lead a company of Yahoo's size, and, had an inconsistent trajectory at Google (which included a recent demotion). Yet, Yahoo's board was impressed by her ambitious long-term plan to make Yahoo competitive with Facebook and Google.[24] Yet, when the upside is that high, this Article argues, even a moderate optimism on the board's part could have led to a significant overestimation of Mayer's plan for Yahoo.[25]

Further, executives' optimism is not only more influential, the Article argues, but is also *stronger* with respect to long-term investments.[26] To begin with, the factors that drive overconfidence and contribute to its magnitude are especially salient when the investment has a long-term horizon.[27] One of the major contributing factor to overconfidence—what

frustrate, idiosyncratic, value enhancing, investments). Nevertheless, the Article argues that due to excessive overconfidence, long-term projects suffer from a systemic over-assessment.

[22] *See Infra* Part III.A (discussing the three case studies); *infra* Part III.B & III.C (discussing Literature).

[23] To illustrate, assume two similar investments, a short-term investment ST that could produce either 200 or 320, each with 50% probability, and a long-term investment LT, that involves higher uncertainty (high upside and low downside) and hence could produce either 0 or 500, each with 50% probability. ST has a higher expected value than LT (260 relative to 250). Now assume that for each of these investments, an overconfident manager overestimates the probability of a good scenario to be 60%, (and accordingly underestimates the probability of a bad scenario to be 40%). For the overconfident manager the LT investment has a higher expected value than the ST investment (300 relative to 272). The overconfident manager thus would exhibit a long-term bias, preferring an objectively inferior LT investment to a superior ST one.

[24] Accordingly, the Yahoo board viewed the less risky plan proposed by Yahoo's internal candidate, Ross Levinsohn, as short-sighted. *See* discussion *infra* Part III.A.1.

[25] Indeed, long-term investors of Yahoo were not as supporting as the Yahoo board was. *See id.*

[26] Namely, while the overconfident manager will assess the probability of a ST project to succeed at 60% instead of the objective 50%, the same overconfident manager will probably assess the probability of a LT project to succeed at 70% or 80% instead of the objective 50%.

[27] *See infra* Part III.B.

psychologists refer to as the "illusion of control"—evidently thrives on a long-term horizon' seeming endless opportunities to strategize, act, and overcome impediments.[28] For example, Dan Ustian, the CEO of Navistar, was confident that during the almost ten years he had unti new environmental standards were to come into effect, that he did not even develop a backup plan.[29] Also telling was Mayer's sole interview post Yahoo failure, in which she revealed her belief that the only thing that was missing was time – if she had a few more years she could have successfully turn Yahoo around.[30] Another major contributing factor to overconfidence—the tendency to neglect potential competition, and instead overestimate the relevance of managers' skills—is especially salient with respect to long-term investments, as long-term competition is hard to predict, and the initial project is inevitably vague.[31] Mayer's long-term plan for Yahoo, for example, which was focused on creating different apps, and most notably a search app—relied on Mayer's skills, experience, and success while neglecting to predict how competitive the market for apps would become.

Overconfidence is not only stronger but is also less bridled for long-term projects. Factors that have been shown to constrain overconfidence—such as a robust and immediate feedback, and the ability to learn from data—the Article argues, are significantly weak, or even absent, for long-term investments.[32] Immediate feedback is either lacking or limited at best,[33] and when the feedback finally arrives, the manager is already invested in the long-term project, and thus resists learning from negative feedback.[34] When problems arose with the EGR technology, for example, Ustian practically closed his office to the company engineers, and fired employees who were vocally skeptical.[35] And in "probably the most intense moment you'll ever hear during a workplace conference call,"[36] Tim Armstrong,

[28] *See e.g.*, Ellen J. Langer, *The Illusion of Control*, 32 J. OF PERSON. & SOC. PSYCH. 311 (1975) (participants who had more time to think about actions and strategies demonstrated higher overconfidence on their chances to win a lottery).

[29] *See inf*ra Part III.A.3

[30] *See e.g.*, Tiernan Ray, *As the Yahoo! Turns: Mayer Defends Strategic Plan, M&A with Charlie Rose*, BARRON'S (March 11, 2016), available at https://www.barrons.com/articles/as-the-yahoo-turns-mayer-defends-strategic-plan-acquisitions-with-charlie-rose-1457714287 ("Here we are, when you look at what has happened, what did you do wrong? Asked Rose. Well, …I don't think the story has yet played out…A lot of tech turnaround adds we do take five, six, seven years."); *See also* Douglas MacMillan, *Marissa Mayer Wants Three More Years to Turn Around Yahoo*, WSJ (March 11, 2016) available at https://blogs.wsj.com/digits/2016/03/11/marissa-mayer-wants-three-more-years-to-turn-around-yahoo/

[31] On the relationship of vagueness to overconfidence *see infra* Part III.B.3.

[32] *See infra* Part III.C

[33] *See e.g.,* Stephano DellaVigna & Joshua Pollet, *Investor Inattention and Friday Earnings Announcements*, 64 J. FIN., 709 (2009) (finding that "shareholder attention to events far in the future is limited").

[34] *See e.g.,* Tali Sharot, Christoph W. Korn, & Raymond J. Dolan, R. *How Unrealistic Optimism is Maintained in the Face of Reality,* 14 NATUR. NEURO. 1475 (2011) (finding asymmetric updating of beliefs in light of new information); Ziva Kunda, *The Case for Motivated Reasoning* 108 PSYCH. BULL. 480 (1990) (arguing that motivation could affect reasoning).

[35] *See* discussion *infra* Parts III.A.3 & III.C.

[36] Nicholas Carlson, *LEAKED AUDIO: Listen to AOL CEO Tim Armstrong Fire A Patch Employee in Front Of 1,000 Coworkers,* BUSINESS INSIDER (August 12, 2013) [hereinafter Carlson, *Leaked Audio*] available at

AOL's CEO, who had to cut costs on the Patch – his long-term project– impulsively fired an employee in front of the entire division. Looking back, in a recent interview, Armstrong identified his treatment of Patch as his main mistake at AOL, and in particular, ignoring incoming feedback and data with respect to the project.[37]

The long-term bias that this Article introduces, has implications for corporate law and policy. To begin with, the analysis here offers an account of *overinvestment* in long-term projects. As a result, short-term focused strategies' effect in limiting investment, might not be all negative.[38] Granted, activist hedge funds face pressure to demonstrate short-term performance, which might be their sole motivation to increase payouts. Yet, regardless of activists' motivations, short-termism could limit value decreasing overinvestments. Furthermore, overconfidence, it turns out, thrives on internal funds—overconfident managers invest more, and undertake worse investments, when they have cash flow available within the company.[39] The pressure to increase payouts requires overconfident managers to raise new capital for their investments, namely, to take their investments to the market test.[40] Thus, while activist hedge funds have been highly criticized for

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http://www.businessinsider.com/leaked-audio-listen-to-aol-ceo-tim-armstrong-fire-a-patch-employee-snapping-a-photo-2013-8.

[37] *See* Oath CEO Tim Armstrong on Recode Media (Sep 3, 2017) https://www.recode.net/2017/9/3/16243970/transcript-oath-ceo-tim-armstrong-aol-patch-verizon-yahoo-recode-media ("The judgment changed and the mistake I made was going exactly what you said, too bullish down a path without making sure those early positive metrics were actually coming true in all the other markets.")

[38] So far, the conventional wisdom dismissed arguments of overinvestments. Empire building, an agency-costs theory of overinvestment, was considered dated, since compensation packages align managers incentives with firm value. *See supra* note 7. The long-termism approach, though is overconfidence driven– as a result, incentive-based compensation does not solve it, quite the contrary. Overconfident managers who genuinely but mistakenly believe in the desirability of these investments, are encouraged to invest more if their compensation is tied to firm value. *See e.g.*, Ulrike Malmendier & Geoffrey Tate, *CEO Overconfidence and Corporate Investment*, 60 J. OF FIN. 2661, 2697 (2005) [hereinafter Malmendier & Tate, *Investment*] ("Specifically, standard incentives such as stock- and option-based compensation are unlikely to mitigate the detrimental effects of managerial overconfidence.")

[39] *See* Malmendier & Tate, *Investment*, supra note 38 (finding that overconfident CEOs "overinvest when they have abundant internal funds, but curtail investment when they require external financing." And that this "sensitivity of investment to cash flow is strongest for CEOs of equity-dependent firms, for whom perceived financing constraints are most binding."); Ulrike Malmendier & Geoffrey Tate, *Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction*, 89 J. OF FIN. ECON., 20 (2008) [hereinafter Malmendier & Tate, *Acquisitions*]; (overconfident CEO are likely to make value destroying acquisitions, and the effect is stronger "if they have access to internal financing.") In addition, in all the three case studies that this Article discusses – namely, Yahoo, AOL & Navistar – the firms were generating significant cash-flow, which was used to finance the long-term investments. *See* discussion *infra* Part III.A.

[40] Indeed, a recent study finds that new equity issues wash out half of firms' payouts to shareholders. *See* Jesse Fried & Charles C.Y. Wang, *Short-Termism and Capital Flows*, HARV.BUS. S. ACC. & MAN. U. WORKING PAPER NO. 17-062 (2017) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2895161; *see also* Bebchuk et al., *Long-Term Effects*, *supra* note 7, at 1136 (arguing that in the absence of short-termism pressures "management might refrain from taking actions that would reduce the size of the empire under its control or the freedom to pursue projects without the discipline generated by having to raise outside financing.")

pressuring managers to increase payouts, these demands might have the advantage of limiting exactly those investment that are overconfident driven and thus inefficient. Third, long-termism underscores the importance of a monitoring board.[41] Independent board members, that were mandated by SOX and the listing-standards, a recent study found, have successfully limited overconfident investments, and improved firm performance.[42] Board monitoring thus, is potentially effective in limiting long-termism.

Fourth, the perceived need to protect long-termism from short-term bias has shaped doctrines, laws, and pending rules. The Brokaw Act, which intends to limit hedge fund activists, was reintroduced on August 31, 2017. Opponents of hedge fund activism also call for elimination of quarterly reporting requirements. Two decisions and an article by Delaware judges determine that a director that is nominated by a short-term investor, might be in a conflict of interest with his duty to maximize the firm's long-term value.[43] This Article's analysis calls for cautiousness in any regulatory intervention that is intended to protect long-termism from short-termism.

Fifth, the analysis has implications to takeover law, an in particular to Delaware approach that allows manages to "just say no" to a hostile bidder. As law school professors and students know well, managers frequently argue in court that an offer a bidder has made to shareholders—to buy their shares in a premium that is frequently 30% or even 50% over the market price—is lower than the real value of the company's long-term prospects, In a seminal case, Delaware courts applied a deference rule, to management' assessment— as long as their assessment is genuine and informed, managers may just say no to a hostile bidder's offer.[44] As the analysis suggests, managers assessment of their long-term plans however, is systematically biased. Thus, they might mistakenly block a high premium offer to protect a lower value long-term plan. Finally, the Article also has implications for understanding the new phenomenon of dual-class IPOs.[45] Despite a potential discount to the IPO price, overconfident managers, who believe that the market undervalues their long-term project, may choose a dual-class structure to protect their projects from shareholder intervention.[46]

A significant literature has accumulated about short-term bias. This is the first Article to establish that managers also suffer from a long-term bias. The argument unfolds as follows. Part II discusses the current premise of long-termism's optimality and short-termism's bias, and its limitations. Part III.A moves to discuss the three illustrative case studies – Yahoo, AOL & Navistar – of long-term investments that were interrupted by activist hedge funds. Parts III.B. & III.C. analyze over-confidence literature and argue that

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[41] *See* Malmendier & Tate, *Investment, supra* note 7, at ("the results confirm the need for independent and vigilant directors.")

[42] *See* Suman Banerjee, Mark Humphery-Jenner & Vikram Nanda, *Restraining Overconfident CEOs through Improved Governance: Evidence from the Sarbanes-Oxley Act*, 28 REV. OF FIN. STUD., 2812 (2015) [hereinafter, Banrjee et al., *Overconfidence & SOX*].

[43] *See* sources cited *supra* note 14.

[44] *Paramount Communications, Inc. v. Time Inc*., 571 A.2D 1140 (1989)

[45] *See* discussion *infra* Part IVA.

[46] *Cf.* Goshen & Hamdani, *supra* note **Error! Bookmark not defined.** (arguing that founders sometimes rightly maintain control in order to pursue value enhancing investments with idiosyncratic vision).

based on experemintal evidence, data and theory, overconfidence should lead to a long-term bias. Part IV discusses implications. Part V concludes.

II. Short-Termism - The Conventional View and its Shortcomings

Short-termism has been the main concern of corporate America. According to conventional wisdom, managers face constant pressures–most notably the pressure exerted by hedge fund activists, and the pressure to meet quarterly earnings–to produce short-term gains, at the expense of superior long-term investments and growth.[47] Activists pressures–to increase dividend distribution and share repurchases, cut investments, and promote spinoffs and sales–it is argued, increase shareholder short-term payoffs at the price of forgoing superior long-term investments and growth. Shortly after they coup their short-term gains, these short-term-biased activists flip their shares–leaving other shareholders to bear the long-term damages they caused. Activists are interested in short-term gains "above all", it is argued, since their compensation structure – only 2% on assets, but a staggering 20% on appreciation of their portfolio – highly rewards them for a short-term home run, even if it comes at the expense of long-term efficiency.[48] In addition, hedge funds' investors typically can pull their money out of the fund within six months to two years, and might do so if the activists do not demonstrate short-term performance and gains.[49] This short-term bias, the argument goes, results in significant damages including a documented decline to R&D investments, and CAPEX.[50] Furthermore, these effects reach far beyond the specific firms that were targeted – affecting industries and the market as a whole.[51] Furthermore, in addition to the pressure from activists, quarterly reporting requirements push managers to focus excessively on demonstrating short-term performance [52] Management surveys confirm this short-term pressures and their effect of limiting long-term investments.[53]

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[47] *See e.g.*, The Conference Board, *Is Short-Term Behavior Jeopardizing the Future Prosperity of Business?* (2015) available at http://www.wlrk.com/docs/IsShortTermBehaviorJeopardizingTheFutureProsperityOfBusiness_CEOStrategicImplications.pdf*;*

[48] *See e.g.*, Strine, *Who Bleeds*, *supra* note **Error! Bookmark not defined.**, at 1894-1895.

[49] *See* Strine, *id.*, at 1893-1894 ("A useful contrast is private equity's typical five- to ten-year lock-up); Coffee & Palia, *supra* note 10, at 573.

[50] *See e.g.* Coffee & Palia, *supra* note 10, at 576 (surveying studies that find that hedge fund activism is associated with a decline in R&D investment); *But see* Alon Brav, Wei Jiang, Song Ma & Xuan Tian, *How Does Hedge Fund Activism Reshape Corporate Innovation?* J. OF FIN. ECON. (forthcoming 2018) (finding that target firms decrease investment in R&D but improve innovation output measured in patent counts and citations); Alon Brav, Wei Jiang & Hyunseob Kim, *The Real Effects of Hedge Fund Activism: Productivity, Asset Allocation, and Labor Outcomes*, 28 REV. FIN. STUD. 2723 (2015) (finding that target firms improve production efficiency).

[51] *See* Gantchev et al., *supra* note 10.

[52] *See e.g.*, Lipton, *New Paradigm*, *supra* note 13.

[53] *See* Harvey Campbell, John Graham & Shiva Rajgopal, *The Economic Implications of Corporate Financial Reporting*, 40 J. ACC. & ECON. 3 (2005); Dominic Barton et al., *Rising to the Challenge of Short-Termism,*

The concern that short term-bias is impeding valuable investments and growth has become widespread, significant, and highly influential. Judges, policy makers, investors, lawyers, and managers, all share this concern and a sense of urgency to act to limit short-termism. Judge Leo Strine, Chief Justice of the Delaware Supreme Court, has warned in 2010 that "there is a danger that activist stockholders will make proposals motivated by interests other than maximizing the long-term, sustainable profitability of the corporation." [54] More recently, he reiterated that "…changes in corporate behavior influenced by stock market forces such as hedge fund activism: a short-term increase in productivity and stock price at the expense of long-term reinvestment and wage growth, will likely harm the overall 'portfolio' of the human investor."[55] Larry Fink, Chair and CEO of Blackrock, one of the largest investment funds, similarly stated that " The effects of the short-termism phenomenon are troubling... more and more corporate leaders have responded with actions that can deliver immediate returns to shareholders, such as buybacks or dividend increases, while underinvesting in innovation, skilled workforces or essential capital expenditures necessary to sustain long-term growth."[56]

Leading corporate lawyer Martin Lipton, has been vocal for decades about the risks of short termism. For example, in a recent publication Lipton argued that "This pervasive short-termism is eroding the overall economy and putting our nation at a major competitive disadvantage."[57] Lipton has harsh words for activists' "misuse of shareholder power,"[58] which "can only be considered a form of extortion"[59] Similarly, the Conference Board, a leading business research organization, has warned about the risks of short-termism in a publication titled "*Is Short-Term Behavior Jeopardizing the Future Prosperity of Business?*"[60]

To be sure, several commentators questioned the magnitude of the concern.[61] As some have argued, managers might overinvest, since they benefit from making their organization larger and more diversified.[62] Yet, this classic Empire Building agency theory was

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FCLT GLOBAL 8-10 (2016), http://www.fcltglobal.org/docs/default-source/default-document-library/fclt-global-rising-to-the-challenge.pdf [http://perma.cc/7Z8P-QPJJ].

[54] *See* Strine, *Fundamental Question*, *supra* note 3, at 8.

[55] Strine, *Who Bleeds, supra* note **Error! Bookmark not defined.**, at 1885

[56] Larry Fink, Chair and CEO of Blackrock, *Letter To CEOs* (March 31, 2015) available at http://www.shareholderforum.com/access/Library /20150331 BlackRock.pdf .

[57] *See* Lipton, *Some Thoughts 2017*, *supra* note 5.

[58] Martin Lipton, *Bite the Apple*; Poison the *Apple*; *Paralyze the Company; Wreck the Economy*, HARV. L. SCHOOL. F. ON CORP. GOVERNANCE & FIN. REG. (Februry 23, 2013), available at http://corpgov.law.harvard.edu/2013/02/ 26/ bite-the-apple-poison-the-apple-paralyze-the-company-wreck-the-economy.

[59] *See* Lipton, *Important Questions*, *supra* note 4.

[60] The Conference Board, *supra* note 47.

[61] *See e.g.*, Steve N. Kaplan, *Are U.S. Companies Too Short-Term Oriented? Some Thoughts,* NBER WORKING PAPER NO. W23464 (2017) available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2980552 (despite ongoing short-termism concerns "corporate profits are near all-time highs").

[62] *See e.g.*, Lucian A. Bebchuk, Alon Brav & Wei Jiang, *The Long-Term Effects of Hedge Fund Activism*, 115 COLUM. L. REV. 1085, 1137 (2015).

dismissed as dated - ever since executive compensation packages reward managers for performance, it has been argued, they won't pursue acquisitions that reduce shareholder value.[63] The short-termism concern thus increased in magnitude and influence. Indeed, the short-termism concern has turned sufficiently influential that numerous reforms to discourage short-termism and encourage long-termism are on the table. The proposed *Brokaw Act* would "fight against increasing short-termism in our economy by promoting transparency and strengthening oversight of activist hedge funds;"[64] elimination of other potential sources of short-termism such as quarterly reporting requirements are being advocated;[65] and Delaware courts redefined directors' fiduciary duties to align with a long-term horizon.[66]

There are several problems, however, with this conventional wisdom. To begin with, the conventional wisdom is relying on a premise that long-termism is never excessive. Indeed, in sharp contrast to short-termism, long-termism has long been the darling of corporate practice and policy, frequently equated with efficiency, optimality and growth. Is it really true however that long-termism could never be excessive? Has this assumption even been tested or even thought through carefully? Are there no reasons why managers might prefer inferior long-term investments over superior short-term gains?

Second, if activists are indeed short-term biased, who appreciate short-term gains *"above all"*, to the extent that they force managers to deviate from optimal long-term strategy, then these activists leave significant value on the table. Why would sophisticated and financially motivated hedge funds managers take only limited short-term gains, if they could derive higher revenues from long-term investments.[67] Activists could for example, correct their own biases, by choosing a compensation structure that is less rewarding for short-term performance. Strikingly, however, not only that hedge funds haven't moved in this direction, but they are now moving the opposite direction –from the common 2 and 20, to 1 and 20–that would reward them even less on assets, and relatively more on appreciation.[68] To be sure, hedge fund managers also face pressure to demonstrate short-term performance to their investors, who might redeem their investment if short-term

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[63] *See* Coffee & Palia, *supra* note 10, at 82-87.
[64] *See* U.S. Senator Tammy Baldwin, supra note **Error! Bookmark not defined.**; *See also* Brokaw Act, S. 1744, 115th Cong. (2017), available at https://www.baldwin.senate.gov/imo/media/doc/Brokaw%20Act%20Bill%20Text.pdf
[65] *See e.g.*, Lipton, *New Paradigm*, *supra* note 13 (calling for elimination of quarterly reporting requirements); *see also* Strine (proposing an array of policy responses, i.e., curbing shareholder proposals mechanism.)
[66] *See* In re Trados Inc. S'holder Litig., 73 A.3D 17, 34 (DEL. CH. 2013) ("the duty of loyalty therefore mandates that directors maximize the value of the corporation over the long-term "); *In Re Rural/Metro Corporation S'Holders Litig.*, 102 A.3D 205, 253 (DEL. CH. 2014); Travis Laster & John Mark Zeberkiewicz, *The Rights and Duties of Blockholder Directors*, 70 BUS. LAW. 33, 49 (2014-2015) ("the directors' fiduciary duties … require that they maximize the value of the corporation over the long term.")
[67] *See* Roe, *supra* note 7.
[68] *See* Lindsay Fortado, *Hedge Fund Investors Question '2 and 20' Fees, Fund Managers Criticized for Focusing on Management Rather than Performance Fees*, FINANCIAL TIMES (June 6, 2017).
https://www.ft.com/content/291081ba-49df-11e7-a3f4-c742b9791d43

performance is weak.[69] For example, hedge funds suffered high rates of liquidation during the last financial crisis.[70] Why, however, activists did not develop tools to commit to long-term gains, or signal the value of long-term investment to their investors?[71] Why hedge funds do not tie their hands? Put differently, how can a short-term bias be sustained in capital markets, among professionals, if it imposes significant costs?

Third, conventional wisdom is also short of explaining why an announcement of an activist intervention triggers a positive and significant market response at the average size of 5%.[72] If hedge fund short-termism destroys value why do markets respond positively to their intervention? Efficient markets should reflect the long-term effect of activism in the current price of the shares. Hedge fund opponents reply that capital markets might be short termism as well, and do not reflect the future effect of hedge fund activism.[73] But why should capital markets be that inefficient? And if hedge fund activism harms firms in the long run how come there is no learning among professional analysts and investors?

Fourth, in contrast to initial claims and assumptions that hedge fund activists flip their shares, the average holding of a hedge fund activist amounts to close to two years, not exactly the go in, go out, initial image of hedge funds investments strategies.[74] Moreover, activists that obtain board representation, hold stock in the target for a median of 3 years.[75]

Fifth, for a while now hedge fund strategies haven't been limited to short-term financial gains such as distributing money to shareholders, and this trend is strengthening. Most of activists' campaigns now involve board nominations, and a detailed plan for improving the company long-term strategy. Opponents of activists used to point to these activists who act to nominate board members, as a positive but rare example, of long-term activism.[76] These days however, this type of activism has become the dominant. In 2016 alone, activists participated in 110 proxy fights, and won 145 board seat, 127 out of which via settlements.[77] The settlements rarely contain explicit terms to distribute capital, sell the company, replace the CEO, or any other specific demand that is typically attributed to

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69 *See e.g.*, Strine, *Who Bleeds, supra* note **Error! Bookmark not defined.**.

70 *See* Itzhak Ben-David, Francesco Franzoni & Rabih Moussawi, *Hedge Fund Stock Trading during the Financial Crisis of 2007-2009*, 25 REV. FIN. STUD. 1 (2012).

71 *See* Roe, *supra* note 7, at 987-989; *But see* Jeremy C. Stein, *Why Are Most Funds Open-End? Competition and the Limits of Arbitrage*, 120 Q. J. OF ECON. 247 (2005) (showing how, under asymmetric information, fund managers signal their quality to investors by keeping their funds open for withdrawal); Andrei Shleifer & Robert W. Vishny, *The Limits of Arbitrage*, 52 J. FIN. 35 (1997) (showing how fund managers might skip profitable long-term investments to demonstrate short-success to their investors).

72 *See* Brav et al, *supra* note 10.

73 *See* Roe, *supra* note 7.

74 *See* Alon Brav, Wei Jiang, Frank Partnoy & Randal Thomas, *Hedge Fund Activism, Corporate Governance, and Firm Performance.* 63 J. FIN. 1729 (2008).

75 *See* Ian D. Gow Sa-Pyung Sean Shin Suraj Srinivasan, *Activist Directors: Determinants and Consequences*, Harvard Business School Working Paper, No. 14-120, June 2014

76 *See* Strine, *Who Bleeds, supra* note **Error! Bookmark not defined.**.

77 *See* Lazard's shareholder advisory group, *2017 Activism Year in Review*, available at https://www.lazard.com/media/450414/lazards-review-of-shareholder-activism-q4-2017pdf.pdf

hedge fund activism.[78] Instead, settlements secure seats on board committees for activists directors, and establish a strategic committee that is typically responsible for the company long-term strategy.[79] Yahoo settlement for example required establishment of strategic committee;[80] For Darden proxy fight Starboard value prepared a long and detailed report about the long table wait at Darden restaurants and other suggested improvements.[81] Similarly the recent campaign of Peltz for P&G included significant proposals for improvement.[82] Hedge fund intervention thus is also directed at improving the firm long-term strategy, including operational changes and advice.[83]

Despite significant inconsistencies in theory and data, the perceived need to protect long-term investment from short term bias has lead to policy proposals, and legal changes ranging from curbing hedge funds profits, increasing their disclosure obligations and eliminating quarterly reporting requirements.

In contrast to the conventional wisdom, in this Article's framework long-termism is not perfect. Rather, similar to short-termism, long-termism is sometimes excessive and biased. Long-term projects, the next part will show, are especially vulnerable to managerial overconfidence, and as a result, overestimation. Since managers disproportionally overestimate the expected value of their long-term projects they might prefer them over superior short-term investments or gains. As shown below, the long-term bias this Article introduces, helps in explaining the forgoing puzzles in evidence and theory.

III. A New Approach: The Overlooked Long-Term Bias

This Part will challenge the assumption that long-termism is not biased. Rather, it will argue that similar to short-termism, also long-termism could assume, and has assumed, an excessive role in managers' decisions. Long-term projects, it will show, are prone to overconfidence bias, and in turn to overestimation. Since managers disproportionally overestimate their long-term projects, they might prefer them over superior short-term

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[78] *See* Alon Brav, Lucian Bebchuk, Wei Jiang, & Thomas Keusch, *Dancing with the Activists*, Harvard Law School Olin Discussion Paper No. 906, May 2017; John C. Coffee, Robert J. Jackson, Joshua Mitts & Robert Bishop, *Activists Directors and Agency Costs: What Happens When an activist Director Goes on the Board*, Columbia Business School Research Paper No. 18-15 (2018).

[79] *See* Bebchuk et al, Dancing with the Activists

[80] *See* Yahoo Inc! Form 8-K, Exhibit 10.1 (April 26, 2016) available at https://www.sec.gov/Archives/edgar/data/1011006/000119312516558861/d185516dex101.htm

[81] *See* Transforming, Darden Restaurant, Starboard Value (September 11, 2014) available at https://www.sec.gov/Archives/edgar/data/940944/000092189514002031/ex991dfan14a06297125_091114.pdf

[82] *See* The Proctor & Gamble Company, Schedule 14A (August 16, 2017) available at https://www.sec.gov/Archives/edgar/data/80424/000090266417003355/p17-1738dfrn14a.htm

[83] *See* Strine, *Who Bleeds, supra* note **Error! Bookmark not defined.** ("here is some emerging evidence suggesting that activist hedge funds prepared to take a long-term position and work as fiduciaries to improve the performance of the companies they target achieve a better market reaction."); *See also* C.N.V. Krishnan et al., *The Second Wave of Hedge Fund Activism: The Importance of Reputation, Clout, and Expertise*, 40 J. CORP. FIN. 296 (2016)

projects/gains – and hence, long-term bias. The definition of long-term bias thus, mirrors the definition of short-term bias.

Table 1: Definitions

Long-Term Bias	*A preference for a long-term investment over a* ***superior*** *short-term investment/gain.*
Short-Term Bias	*A preference for a short-term investment/gain over a* ***superior*** *long-term investment.*

The intuition for long-term bias is straight-forward; managers tend to fall in love with their projects, and especially, with their long-term projects. The analysis, however, builds on significantly more than this intuition. Our analysis starts in Part A with a discussion of three prominent cases of long-term investments that were interrupted by hedge fund activism – Yahoo, AOL & Navistar. While these interventions were previously described as short termism, we suggest that different factors have contributed to overestimation of the long-term projects involved. We then move to analyze these factors more systematically. Relying on evidence and theory from overconfidence bias literature in general, and managerial overconfidence bias in particular, Part B shows that long-term investments are prone to overestimation as they typically involve higher uncertainty, higher illusion of control, weaker accountability and feedback, and due to their uniqueness are difficult to be assessed against a reference class. Part C shows that limits on overconfidence, and learning over time, are especially limited with respect to long-term projects.

A. Illustrative Examples – Long-Term Bias and Hedge Fund Activism

The following Part will present three known examples of long-term investments that were interrupted by hedge fund activism – Yahoo, AOL and Navistar. Part 1 discusses Marissa Mayer hiring by Yahoo board; her investments as Yahoo CEO; activist Starboard Value's intervention to cut investments, and the eventual sale of Yahoo core assets to Oath, a Verizon subsidiary, led by Tim Armstrong, the former CEO of AOL; Part 2 discusses Tim Armstrong B1$ investment at his long-term project Patch, during his term as AOL's CEO, and its eventual sale due to intervention by the same activist; Part 3 discusses Navistar long-term investment in the novel technology EGR, led by Dan Ustian, that resulted in Navistar becoming the target of three hedge fund activists. After it became clear that RGR did not meet the environmental standard, Ustian was ousted by his board.

These cases could have, and have been described at the time, as having short-term bias curbing long-term investments.[84] A closer look however, reveals that all cases involved

[84] *See e.g.*, Martin Lipton, *Lessons from the AOL Proxy Fight*, HARV. L. SCHOOL. F. ON CORP. GOVERNANCE & FIN. REG. (June 22, 2012) available at https://corpgov.law.harvard.edu/2012/06/22/lessons-from-the-aol-

factors that are could have contributed to overestimation of, and overinvestment in, long-term projects – the significant potential upside was highly tempting; the inevitable vagueness of the initial plan fostered illusion of control, overestimation of relevance of one's skills, and competition neglect; the managers were highly committed to the long-term investments; over time the managers became highly invested in the project/strategy, they continued believe in it after everyone else lost hope, which sometimes created tension with their teams, and they tended to ignore or underweight negative information; the company was generating a significant cash flow that financed these investments.

1. *Marissa Mayer's Long-Term Plan for Yahoo*

On the morning of July 11, 2012, Marissa Mayer, a Google executive, entered Gibson Dun offices at Paolo Alto. Mayer was one of the four finalists for Yahoo's CEO position, and this was the final meeting with Yahoo board, before the board made its decision.[85] Mayer's chances of getting the job were not high, to say the least. Yahoo's board was concerned that Mayer, who was recently demoted from Google's search division and top management team, did not have the experience to manage a company at Yahoo size: Mayer never managed or even headed a division in a public company, managed only 20 employees, and probably never worked with balanced sheets.[86] Furthermore, Mayer faced a serious competition from within Yahoo - Ross Levinson, the interim CEO, who interviewed in the early morning–had support from most of the members of Yahoo's board.[87]

Mayer and Levinson had markedly different plans for Yahoo's future. Levinsohn offered the board a safe low risk low reward plan - to take out Yahoo from competition

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proxy-fight/ ("These results confirm that investors will not blindly follow the recommendation of ISS — when presented with a well-articulated and compelling plan for the long-term success of the Company, they are able to cut through the cacophony of short-sighted gains promised by activist investors touting short-term strategies."); Sanjay Sanghoee, *Yahoo's Mayer Should Take On Starboard*, FORTUNE (Oct. 23, 2014), available at http://fortune.com/2014/10/23/how-yahoos-mayer-should-take-on-starboard/ ("Jeffrey Smith, who runs Starboard, is in the business of maximizing shareholder wealth in the short-term. But Mayer's job is to create value in the long-term, and in the Starboard version of this deal, she may have to give up the growth strategy that could be key to Yahoo's success."); Joe Necora, *Out of the Spotlight, an Industry Copes With Crisis*, NYTIMES MAG. (NOV. 28, 2008), Xavailable at http://www.nytimes.com/2008/11/29/business/29nocera.html?_r=0 ("Though no one at Navistar can prove it, they strongly suspect that the stock has been hammered because hedge funds, badly hurt during this phase of the financial crisis, have been forced to sell some of their more liquid positions to return money to existing shareholders. I suspect this theory is correct, and it would be yet another way that fallout from the financial crisis has spread from New York to the rest of the country.")

[85] *See* Nicholas Carlson, MARISSA MAYER AND THE FIGHT TO SAVE YAHOO! pp.237-238 (Grand Central Publishing 2016) [hereinafter Carlson, MARISSA MAYER].

[86] *See* Carlson, MARISSA MAYER, *id.*, at 237-238 ("An unnamed Google executive opined on Mayer's hire: 'It will be a struggle. She's never managed more than ten to twenty people. She's a product person who hasn't managed sales, business development, human resources and all that.'")

[87] *Id.*, at 220 ("For the two months prior, the new chairman of Yahoo's board, Fred Amoroso, had made it clear that he was going to do everything he could to make sure Levinsohn and his team would be running the company for the foreseeable future. ")

with Google and Facebook by moving it to content business. Mayer on the other hand offered an ambitious long-term plan, that if successful could make Yahoo competitive with Google and Facebook. while some board members initially preferred Johnson safer plan,[88] others viewed it as short-sighted, preferring the high upside in Mayer's plan.[89] At the evening of July 11, Yahoo's board voted unanimously to nominate Marissa Mayer as Yahoo CEO.

At the end, thus, Yahoo's board voted for Mayer's high-risk high reward plan. As the following Part will show, high upside is one of the reasons why long-term investments are vulnerable to overestimation. Due to the high upside even a little overconfidence on the board side in the plan's prospects to succeed could lead to great over estimation of the plan. Indeed, a long-term investor, Citi's Mark Mahany, was more concerned about the risk involved:

> *What we are a bit worried about is that by selecting Ms. Mayer, Yahoo! is explicitly pursuing an aggressive and bold Growth strategy, whereas we believe a Value strategy might be more appropriate.*[90]

Furthermore, a long-term horizon could have contributed to overestimation of the relevance of Mayer's skills to the success of the plan, while neglecting potential future competition. Adding to the credibility of Mayer's plan were her user-focused experience at Google, and pedigree at search.[91] The plan features were closely related to Mayer's skills: creating great apps for daily habits, such as news, weather, email, and photos.[92] And most notably, creating a search application, which Mayer believed, could significantly improve Yahoo search market share and revenues.[93] Mayer and the board, however, did not predict how intensely competitive the Apps market will become. When Yahoo Apps

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[88] *Id.*, at 231 ("The directors who opposed Mayer— most vocally Amoroso, but also Brad Smith and David Kenny— argued that Levinsohn, with his "media" strategy, had a better plan for Yahoo than Mayer and her "products" strategy. They argued that Mayer may present a greater upside—she was more likely to come up with the next Facebook or Google Maps or Twitter—but that Levinsohn was the safer bet, a more guaranteed return.")

[89] *Id.*, at 221 ("Harry Wilson, another director brought onto the board by Loeb, joined Wolf in his criticism of the deal as 'shortsighted.'")

[90] *See* Robert Hoff, *What Google Veteran Marissa Mayer Can Do As Yahoo's New CEO*, FORBES (Juy 16, 2012) available at http://www.forbes.com/sites/roberthof/2012/07/16/surprise-googles-marissa-mayer-is-yahoos-new-ceo/#2cec2c8c7e0f. Indeed, the overconfidence with respect to long-term projects is internal to managers, and if at all, affects investors only to a limited extent. For a discussion of the internal factors that affect managers' overconfidence and long-term bias *see infra* Parts III.B. & III.C.

[91] *See e.g.*, Amir Efrati & John Letzing, *Google's Mayer Takes Over as Yahoo Chief*, WSJ (July 17, 2012) available at https://www.wsj.com/articles/SB10001424052702303754904577531230541447956 ("Yahoo's board selected Ms. Mayer because "she stands for the user," in contrast with a string of the company's previous CEOs who had little experience with consumer websites, said a person with direct knowledge of the company's CEO search.")

[92] Carlson, MARISSA MAYER, *supra* note 85, at 250-251.

[93] Carlson, *id.*, at 286.

finally came out – as companies, startups, and individuals were all constantly producing iPhone applications - only two of Yahoo's Apps made it to Apple's top 100.[94]

Shortly after becoming Yahoo CEO, Mayer embarked on a shopping spree, spending hundreds of millions of dollars on dozens of small startups. Mayer relied on internal funds - proceeds that Yahoo was receiving from its holdings in Alibaba. Yet, when Yahoo's acquisitions and investments did not produce the desirable results, Mayer's solution was more investments. Mayer announced to shareholders a potential plan to sell its Alibaba's holdings and use half of the proceeds to further invest in Yahoo's long-term plan. This was an explicit deviation from Yahoo's initial plan, pre-Mayer, to distribute all proceeds to investors.[95]

In July 29, 2014, Eric Jackson published a Forbes column titled "*How do you solve a problem like Marissa?*" advocating the need to stop Mayer from spending, and require management to distribute all Alibaba's proceed to shareholders.[96] Jackson noted that Yahoo's market value is lower than the value of yahoo's holdings of Alibaba, suggesting that investor value of Yahoo's core assets is negative.[97] Shortly after Jackson published his column, in September 2014 Mayer's plan became the target of Starboard Value CEO, Jeff Smith, a renowned activist.[98] Echoing Jackson concerns' in a letter to management Smith warned against Mayer spending again money on acquisitions instead of distributing it to shareholders. At first, Mayer cut a secret deal with Smith to cut costs and increase

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94 *See* Carlson, *id.*, at 305.

95 *See e.g.*, Yahoo! Inc, Form 8-K (August 9, 2012) available at https://www.sec.gov/Archives/edgar/data/1011006/000119312512347591/d394429d8k.htm ("Ms. Mayer is engaging in a review of the Company's business strategy to enhance long term shareholder value...This review process may lead to a reevaluation of, or changes to, our current plans, including our restructuring plan, our share repurchase program, and our previously announced plans for returning to shareholders substantially all of the after tax cash proceeds of the initial share repurchase under the Share Repurchase and Preference Share Sale Agreement we entered into on May 20, 2012 with Alibaba Group Holding Limited.")

96 Eric Jackson, *How do you Solve a Problem like Marissa*? FORBES (July 29, 2014), available at https://www.forbes.com/sites/ericjackson/2014/07/29/how-do-you-solve-a-problem-likemarissa/33447f527b6d

97 *Id.* (".. investors would rather get all of the cash coming back to Yahoo from the pending Alibaba IPO as well as what's already on the balance sheet, rather than see CEO Marissa Mayer and her management team spend it on value-destroying acquisitions."); *See also* Jeff Smith, *Starboard Value Letter to Marissa Mayer, President and CEO of Yahoo, and to Yahoo's Board of Directors* (September 26, 2014) available at http://www.prnewswire.com/news-releases/starboard-delivers-letter-to-ceo-and-board-of-directors-of-yahoo-inc-277223182.html ("This substantial valuation gap is likely due to the fact that investors currently expect Yahoo to continue its past practices of … using the cash proceeds from such sales to acquire businesses at massive valuations with seemingly little to no regard for profitability and return on capital.")

98 Smith was not the first activist to target Yahoo. Dan Loeb, who brought Mayer to Yahoo, also pressured her to cut costs and return Alibaba money to shareholders. But he exited Yahoo several months earlier – taking on Mayer's offer to greenmail him. *See* Carlson, MARISSA MAYER, *supra* note 85, at 276. ("Mayer went to Loeb and told him that Yahoo would buy forty million of his Yahoo shares at $ 29 per share. That was more than twice what he paid for them in the summer of 2011. The deal would reduce Third Point's stake in Yahoo below 2 percent, forcing Wolf, Wilson, and Loeb to step down from the board, per Third Point's settlement from the year prior.")

buybacks, in return for Smith holding off a proxy fight.[99] Yet, following this agreement Yahoo's expenses rose even faster.[100] Indeed, Despite Yahoo's weak results, Mayer did not seem to lose faith in her plan and its potential to turnaround Yahoo. On the company 4Q 2015 earning call, Mayer retreated her belief in her long-term plan for Yahoo stating; "Overall, I have very aggressive expectations for Yahoo's core business. We have the right talent, the right strategy, and the right assets to drive long-term sustainable growth for our investors."[101] And when all of its investments turned out not successful, Mayer embarked on a new "bet-the-company" – Project Index a search on mobile application – which has the potential to make Yahoo competitive with Google and Facebook, Mayer again believed.[102]

Four years down the road, however, and close to $3B in spending on more than fifty startups, did not produce the growth investors and management were hoping for. Quite the contrary, Yahoo reports for First Q 2016, were exceptionally weak, showing declines across the board in Yahoo's businesses' market share, and profitability. In April 27, 2016 Yahoo reached a deal with Smith to nominate four members to the Board. At the end, it was Smith who pushed for Yahoo to sell its core business.[103] On July 25, 2016 Yahoo announced it closed a deal with Verizon in which Yahoo will sell its core businesses to Verizon for $4.5B. Whether Yahoo could be saved if Mayer acted differently, is debated. Some believe that Yahoo had no future. Yet, without Starboard intervention, Mayer probably would have continued with her turnaround plan.[104]

In the sole interview Mayer gave shortly before Yahoo was sold, Mayer still did not concede to mistakes. Rather, "What's needed, she said, is a little more time."[105] Time could solve all Yahoo's problem.[106]

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[99] *See* Douglas MacMillan, *Yahoo's Marissa Mayer Stumbled After Secret Truce With Investor*, WSJ (June 17,2016) available at http://www.wsj.com/articles/yahoos-marissa-mayer-stumbled-after-secret-truce-with-prodding-investor-1466174597

[100] *See Id.*

[101] Q4 2015, Edited Transcript of YAHOO Conference Earning Call, Thomson Reuters, StreetEvents, October 21, 2016 available at http://finance.yahoo.com/news/edited-transcript-yhoo-earnings-conference-055111175.html

[102] *See* MacMillan, *supra* note 99.

[103]*See* MacMillan, *Id.*

[104] *See* Todd Spangler, *Yahoo's False Prophet: How Marissa Mayer Failed to Turn the Company Around*, VARIETY (May 24, 2016) ("Others say Mayer refuses to admit her failures, a stick-to-her-guns hubris that has made Yahoo slow to correct course when things weren't working.") available at https://www.yahoo.com/movies/yahoo-false-prophet-marissa-mayer-failed-turn-company-160630052.html

[105] *See* Diana Goovaerts, *Mayer's Three-Year Plan to Turn Yahoo into a Mobile Hitter,* WIRELESSWEEK (March 15, 2016) https://www.wirelessweek.com/news/2016/03/mayers-three-year-plan-turn-yahoo-mobile-hitter

[106] *See* Tiernan Ray, *As the Yahoo! Turns: Mayer Defends Strategic Plan, M&A with Charlie Rose*, BARRON'S (March 11, 2016), available at https://www.barrons.com/articles/as-the-yahoo-turns-mayer-defends-strategic-plan-acquisitions-with-charlie-rose-1457714287 ("Here we are, when you look at what has happened, what did you do wrong? Asked Rose. Well, …I don't think the story has yet played out…A lot of tech turnaround adds we do take five, six, seven years."); Douglas MacMillan, *Marissa Mayer Wants Three More Years to Turn Around Yahoo,* WSJ (March 11, 2016) available at https://blogs.wsj.com/digits/2016/03/11/marissa-mayer-wants-three-more-years-to-turn-around-yahoo/

As shown in the following parts, Yahoo's faith could have been affected by long-term bias.[107] The excessive faith executives sometimes have in their long-term investments. The ambitious, high potential upside, plan of Mayer for Yahoo, this Article will argue, magnifies the influence of overconfidence bias. A small overestimation of the probability of success could result in the board highly overestimating her plan. In addition, due to the long-term horizon and the inevitable vague nature of the plan, building it around Mayer's skills and ignoring the role of luck and potential competition lead to high level of overconfidence. Finally, Mayer determination to stick to her plan, while ignoring negative feedback and data, is also common to long-term projects, in which learning from feedback is limited by managers' attachment to the project.

2. *Tim Armstrong, AOL & the Patch*

At Verizon, Yahoo's core assets will be managed by Tim Armstrong, a one-time salesperson, who became the CEO of AOL, until it was sold to Verizon. Under Armstrong's leadership, Oath – a Verizon subsidiary – will manage the combined assets of Yahoo and AOL. Similar to Mayer Armstrong left Google to save AOL, which like Yahoo, was declining at the time he joined. Saving AOL was not a slam dunk, but Armstrong believed AOL was undervalued, could benefit from a big bet, and was producing sufficient cash from its internet access business to invest in a necessary turnaround. [108] Furthermore, Armstrong believed he had a winning card – Patch, a local news web platform - that Armstrong founded while at Google.[109] The idea was somewhat in the family of Facebook personalized news approach, but as Armstrong argued a differentiated needed product – for one of "the last white spaces on the Internet" – that would create a local community of users, and a hub for business owners.[110]

Armstrong believed that Patch will provide the growth that could save AOL, and accordingly, conditioned his acceptance to the offer to run AOL on Time-Warner acquiring Patch. After joining AOL Armstrong started pouring money into the project–under Armstrong and the AOL board, AOL investment in Patch exceeded $300M. Like Mayer, Armstrong was targeted by Jeff Smith, Starboard Value CEO. On January 13, 2012, Armstrong and AOL management met with Smith and his team, who wanted to discuss AOL expenses on Patch.[111] Jeff Smith came prepared with highly detail presentation:

("We have a three-year strategic plan. I can see how it will work and how we can actually get to a successful turnaround of Yahoo.")

[107] *See infra* Parts III.B. & III.C.

[108] *See* Nicolas Carlson, *The Story Behind Why AOL CEO Tim Armstrong Fired an Employee In Front Of 1,000 Coworkers*, BUSINESS INSIDER (Nov. 6, 2013), (hereinafter, Carlson, *AOL Story*] available at http://www.businessinsider.com/tim-armstrong-patch-aol-2013-10?op=1

[109] Armstrong already put some of his own money into Patch and made an old friend, Jon Brod, to become CEO of the company. *See Id.*, at 2. http://www.businessinsider.com/tim-armstrong-patch-aol-2013-10?page=2

[110] *Id.*

[111] *Id., at* 1.

Running the numbers for Patch, he showed, even under best-case scenarios, assuming Patch sell all its add space to local business in maximum price, it will not cover the costs of salaries it is currently paying its employees.[112] Armstrong's response presentation included a big picture plan, literally drown on the board with many arrows but no numbers, no financial details, which Smith found disconcerting.[113]

After three more meetings on the Patch haven't achieved resolutions, in what has become a common course of hedge fund intervention, Smith has asked Armstrong for board representation, and when Armstrong refused, Smith opened a proxy fight which he lost. Martin Lipton was quick to declare the result as a victory of a "well developed", "well-articulated" long-term management strategy over short-term, short-sighted, hedge fund strategy.[114] AOL victory shows, Lipton explained a client memo, that when management present a "compelling long term strategy," investors "are able to cut through the cacophony of short-sighted gains promised by activist investors touting short-term strategies."[115] Yet, to win the proxy fight, Armstrong made a promise that by the end of 2013, management will bring Patch to profitability.[116] Following this promise, Armstrong became more involved in Patch, visiting their offices at least once a week, sharing his idea with the product designers and with creative director Abel Lenz.[117] As the time passed, however, it became clear that Patch will not meet the promise, but Armstrong refused to see what his team was seeing.[118] And when AOL CFO, Arthur Minson, who played a key role in wining the proxy fight, became vocal with respect to his Patch skepticism, Armstrong fired him.[119] Eventually, however, on August 2013, close to his promise deadline, Armstrong finally realized that there is no way around cutting Patch costs significantly. This defeat had an emotional toll on him.[120] In a notoriously known incident, Armstrong impulsively fired Abel Lenz during a company conference call that was open and directed to around 1,000 co-workers. The event which was later described as "probably the most intense moment

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[112] *Id.*

[113] *Id.* ("As an activist investor, Smith has to meet with management teams all the time. For him, it's obvious when they know how their core businesses fit together with the businesses they are trying to grow and develop. But looking at Armstrong's board, full of arrows going all over the place, it seemed to Smith that Armstrong and his team were just grasping at straws, hoping that something they threw at the wall would stick.")

[114] *See e.g.*, Martin Lipton, *Lessons From the AOL Proxy Fight*, HARV. L. SCHOOL. F. ON CORP. GOVERNANCE & FIN. REG. (June 22, 2012) available at https://corpgov.law.harvard.edu/2012/06/22/lessons-from-the-aol-proxy-fight/ ("The victory represents a clear and powerful message that a well-developed and well-articulated business strategy for long-term success will be supported by investors notwithstanding activist generated criticism and ISS support.")

[115] *Id.*

[116] *See* Carlson, *AOL Story*, *supra* note 108.

[117] *Id.*

[118] *Id.* ("Armstrong's apparent stubbornness and blindness with respect to Patch, moreover, continued to cause significant friction between him and his senior team.")

[119] *Id.* ("Minson was quite vocal about his skepticism about Patch. And in February 2013, Armstrong suddenly fired him.")

[120] *Id.* (That Friday in August, Armstrong was finally making a decision that he had needed to make for a long time. And it was killing him. ")

you'll ever hear during a workplace conference call,"[121] was received as a negative signal with respect to Armstrong's leadership.[122] On January 2014, AOL let go of its control in Patch. The day after the announcement AOL market price rose 8%.[123] Investors appreciated Armstrong commitment to his promise.[124] Smith lost the proxy fight, but not the war.[125] Without Starboard intervention Armstrong wouldn't have made his promise, and probably, at the very least, taken longer and cost more, before Armstrong would have given up the idea of Patch being the engine of AOL growth.[126]

The investment in Patch demonstrates the vulnerability of long-term projects to overconfidence, and especially the difficulty of their initiators to respond to data, and abandon the project when needed. Armstrong became highly attached to the Patch, to the extent that he did not compute the bottom line profitability, resisted incoming negative information, did not learn from data, and close the end became irrational and emotional, losing his usual superb leadership skills. Indeed, looking back at the Patch with perspective, Armstrong numerated his mistakes in a recent interview, and pronounced regret for not looking at incoming data, and proceeding too fast with the project:

> I'd say a few of the lessons that you're pointing to is there's two sides of the coin. One is listen to everybody and two is listen to nobody. The reality is what you need to do is listen to the best judgment you possibly can and try to look at the best data you possibly can. Then there's gonna be some unknowns…Going back to that situation, we probably did roll out too quickly. The criticisms we were getting, a lot of them were probably accurate. We could have done a better job out of the gates narrowing that focus. That's really helped me since then, I think, improve my style of

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[121] Nicholas Carlson, *LEAKED AUDIO: Listen To AOL CEO Tim Armstrong Fire A Patch Employee In Front Of 1,000 Coworkers*, BUSINESS INSIDER (August 12, 2013) [hereinafter Carlson, *Leaked Audio*] available at http://www.businessinsider.com/leaked-audio-listen-to-aol-ceo-tim-armstrong-fire-a-patch-employee-snapping-a-photo-2013-8.

[122] *See Id.* ("most people across the country and world saw it as gratuitous and humiliating: What's wrong with Tim Armstrong, people wondered? What kind of CEO fires some poor guy in front of all his colleagues? What did this say about what was going on at AOL? ")

[123] *See* Nicholas Carlson, *Tim Armstrong Finally Got Rid Of Patch, And Wall Street Loves It*, BUSINESS INSIDER (January 16, 2014), available at https://finance.yahoo.com/news/tim-armstrong-killed-baby-wall-181300569.html

[124] *See* Nicholas Carlson, *The End of an Error: AOL Just Disposed of Controlling Interest in Patch*, BUSINESS INSIDER (Jan. 15, 2014) [hereinafter, Carlson, *AOL's Error*] available at http://www.businessinsider.com/aol-just-disposed-of-controlling-interest-in-patch-2014-1 ("Patch was always a mistake. But today, Armstrong deserves tons of credit for honoring a promise he made to shareholders – especially since he has always had a deep emotional connection to the Patch project. ")

[125] *See* David Carr, *AOL Chief's White Whale Finally Slips His Grasp* , NYTIMES MAGAZINE (Dec. 15, 2013) available at http://www.nytimes.com/2013/12/16/business/media/aol-chiefs-white-whale-finally-slips-his-grasp.html?_r=1 ("The insurgents lost the war, but turned out to be right.")

[126] *See C*arlson, *AOL's Error*, *supra* note 124 ("We're pretty sure that if he had his way, AOL would still be investing in Patch. But he made a promise, and he stuck to it.")

management but also just the judgment piece of like how to correctly make judgments about things overall. [127]

As the following will argue, for numerous reasons, for long-term projects learning is systematically limited.[128] As for Armstrong, his interest in Yahoo, might indicate that he hasn't given up on the idea of Patch, or at least on his content oriented long-term plan.

3. Dan Ustian, Navistar & the EGR Technology

With no engineering background, climbing the ladder from within, Dan Ustian became the CEO, President, and Chairman of the Board, of Navistar, an international manufacturer of trucks, busses and diesel engines. Under Ustian leadership Navistar became a poster child for R&D investment and growth - embarking into new directions, such as military vehicles, and school buses, expanding globally, and investing in current technologies.[129] Ustian commitment to innovation and long-term growth was so strong, that some suggested it was like he was managing an internet incubator, rather than a trucks and engine company.[130]

In 2001, a newly introduced regulation from the Environmental Protection Agency ("EPA") required the industry to meet a new, stringer, quality standard, for nitrogen dioxide pollutant, which would have to be met by 2010. Rather than using the existing Selective Catalytic Reduction ("SCR") technology, which all Navistar's competitors were relying on to meet the standard, Ustian wanted Navistar to develop a novel, unique technology.[131] The novel technology that Ustian had in mind – Exhaust Gas Recirculation ("EGR") – had clear advantages: it was less costly to apply, and more importantly, it saved drivers the need to keep an additional tank in the truck.[132] If successful, thus, EGR could provide Navistar with a significant competitive advantage,[133] which, according to Navistar

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[127] *See* Full transcript: Oath CEO Tim Armstrong on Recode Media (Sep 3, 2017), available at https://www.recode.net/2017/9/3/16243970/transcript-oath-ceo-tim-armstrong-aol-patch-verizon-yahoo-recode-media**;** *See also* Eric Johnson, *What Yahoo and AOL CEO Tim Armstrong learned from Patch's struggles*, RECODE (August 31, 2017), available at https://www.recode.net/2017/8/31/16228076/yahoo-aol-oath-verizon-ceo-tim-armstrong-learned-from-patch-struggles

[128] *See* discussion *infra* Parts III.B & III.C

[129] *See* Joe Cahill on Business, *Suits Can Innovate, Too*, CRAIN'S CHICAGO BUSINESS (March31, 2012) available at http://www.chicagobusiness.com/article/20120331/ISSUE01/303319959/suits-can-innovate-too ("Navistar International Corp. CEO Dan Ustian churns out new products so fast, you'd think he was running an Internet incubator, not a 175-year-old company that once made the McCormick reaper.")

[130] *Id.*

[131] *See* Joann Muller, *Death by Hubris? The Catastrophic Decision that Could Bankrupt A Great American Manufacturer*, FORBES (August 2, 2012), available at https://www.forbes.com/sites/joannmuller/2012/08/02/death-by-hubris-the-catastrophic-decision-that-could-bankrupt-a-great-american-manufacturer/#37a35fe06fbb

[132] *Id.*

[133] *See International Trucks and Engines Will Comply with 2010 Emissions Standards without SCR*, Navistar Investor Relations Release (Oct. 31, 2007), available at http://ir.navistar.com/releasedetail.cfm?releaseid=272413 ("'While SCR is a means to achieve the NOx reduction requirement for 2010, it comes with a steep cost to our customers,' said Daniel C. Ustian, Navistar

employees, was a typical Ustian's obsession.[134] In 2007 Navistar officially declared that it will pursue the EGR technology rather than SCR which would "come[s] with a steep cost to our customers,"[135] Accordingly, the EGR became one of the three pillars in Navistar long term growth strategy.[136] There was a risk that EGR might not meet the EPA standard, but Ustian believed the engineers could achieve that by 2010. Ustian confidence was so high that the company had no backup plan, as he replied to an earning conference call question: "Plan B is we're going to make Plan A work."[137] Furthermore, when difficulties with the project presented themselves, Ustian was not open to discuss them with his engineers, as a former executive recall:

> "Dan is telling his technical people, 'You've got to deliver,' and they're saying, 'We don't know how, but we'll try,'" says the former executive. "There was a lot of tension in the technical community, from the scientists on up to the managers, about whether we should be agreeing to something we don't know how to do. Dan didn't want to hear any of it. 'You're going to get it done.' He's a positive thinker. He doesn't like negative thinking."[138]

Ustian was neither concerned when Navistar, burning cash at growing, alarming rates on EGR.[139] These short-term expenses, he believed, are necessary for Navistar long-term growth.[140] Accordingly, despite a significant decline in Navistar share price in 2008, Ustian

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chairman, president and chief executive officer. 'Our ability to achieve our goals without adding customer cost and inconvenience is a competitive advantage for International.'"); Charlie Morasch, Digging Out, Land Line (October 2012), available at http://www.landlinemag.com/magazine/2012/oct/Section2/digging-out.aspx ("Navistar, Allen said, wanted to have a long-term competitive advantage for its customers and against its competitors. Allen said such lasting advantages are a rarity, particularly in trucking, where innovations are quickly emulated.")

[134] *See* Muller, *Hubris, supra* note 131 ("Above all, say those who worked closely with him, Ustian is obsessed with avoiding what happened to companies like Motorola or RIM, which notoriously lost their market leadership to more innovative rivals.")

[135] *See Navistar Investor Relations Release, supra* note 133.

[136] *See e.g.,* Navistar International Corporation, Form 10-K, For the fiscal year ended October 31, 2010, available at https://www.sec.gov/Archives/edgar/data/808450/000119312510285754/d10k.htm ("Our long term strategy is focused on three pillars: 1. Great Products:...Focusing on engine research and development in order to have a competitive advantage using Exhaust Gas Recirculation ('EGR') and other technologies for compliance with 2010 emissions standards").

[137] *See* Muller, *Hubris, supra* note 131 ("The company had banked so many credits in earlier years that it could lawfully use them, in lieu of fines, all the way until this year. But rather than buying time for a plan B, Ustian, who was convinced a breakthrough was just around the corner, plowed forward with his EGR plan, full steam ahead. "); *See also Securities and Exchange Commission v. Daniel Ustian*, Civil Action No. 16-cv-3885 (U.S. District Court for the Northern District of Illinois), at 8, available at https://www.sec.gov/litigation/complaints/2016/comp23507.pdf ("As Ustian stated at a September 15, 2009 conference attended by, among others, securities analysts, "Plan B is we're going to make Plan A work.")

[138] *See* Mueller, *Hubris*, supra note 131.

[139] *See* Joann Muller, *Navistar Starts Paying The Piper For Its Costly Strategic Mistake,* FORBES (August 31, 2012), available at http://www.forbes.com/sites/joannmuller/2012/08/31/navistar-starts-paying-the-piper-for-its-costly-strategic-mistake/#4376b008431d ("the primary concern, says Gimme Credit analyst Vicki Bryan, is the rate at which Navistar is burning cash.")

[140] *See* Navistar Media Release (Dec. 21, 2009) available at http://media.navistar.com/index.php?s=43&item=344 ("Despite current economic challenges, we have

confidence remained intact: the low market price was attributed to hedge fund liquidating positions to meet recession redemptions and margin calls.[141] Similarly, when share price declined 40% in 2012, Ustian answer was again, innovation: "We've got some more breakthroughs coming."[142] Wall street, it was argued, was suffering from short termism.[143] Some analysts, however, believed that the decline in market price is not driven by short-termism but rather reflects lack of faith in management. As the value of the shares got below 27, reflecting a multiplier of sales below 0.15, less than a fourth of the median multiplier of its competitors, Patrick Nolan, an analyst for Penn Capital who sold its position to Navistar, opined to Bloomberg: "It's a high-quality company with a management issue."[144] Indeed, by then Navistar became the target of three activists.[145]

On July 6, 2012, as a result of the combined pressure of share value and hedge fund activism, Ustian finally gave up on EGR, announcing that the company will more to SCR technology. After 10 years of working on EGR and 700M in spending, for the market, that was too little too late.[146] Navistar's shares fell additional 15% that day, and the company faced a real risk of bankruptcy. On August 27, 2012 Navistar board, which in 2011 awarded Ustian with a large compensation package, ousted Ustian from the company. Icahn however, was not done. Icahn believed that the board that allowed this to happen could not shape Navistar future, and navigate it safely out of the bankruptcy risk it faced. On Sep 9, 2012 Icahn issued an open letter to the board of directors demanding board sits. On July

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remained focused on our three-pillar strategy which includes being profitable in the toughest of times while investing in our future for profitable growth," said Daniel C. Ustian, Navistar's chairman, president and CEO… "We believe that our customer-friendly solution positions our products with a significant competitive advantage," said Ustian…"The momentum established in the wake of these accomplishments positions us well for long-term success and to take on the challenges that 2010 will pose for all in our industry."); *see also* Cahill, *supra* note 129 ("For Mr. Ustian, the answer is innovation: "We've got some more breakthroughs coming.")

[141] Joe Necora, *Out of the Spotlight, an Industry Copes With Crisis*, NYTIMES MAG. (NOV. 28, 2008), available at http://www.nytimes.com/2008/11/29/business/29nocera.html?_r=0 ("Though no one at Navistar can prove it, they strongly suspect that the stock has been hammered because hedge funds, badly hurt during this phase of the financial crisis, have been forced to sell some of their more liquid positions to return money to exiting shareholders. I suspect this theory is correct, and it would be yet another way that fallout from the financial crisis has spread from New York to the rest of the country.")

[142] *See* Cahill, *supra* note 129 ("Ustian's innovations haven't helped Navistar's stock. Wall Street focuses on short-term earnings performance and truck sales forecasts. Thanks to a recent earnings shortfall and worries about the new truck engine, shares are down 40 percent from last May's 52-week high and trade at a discount to its industry peers. Corporate raider Carl Icahn is pressuring the company into a merger.")

[143] *Id.*

[144] Mark Clothier and Alex Barinka, *Navistar Turns Target After Poison Pill Adopted*, Real M&A, BLOOMBERG (June 22, 2012) available at http://www.bloomberg.com/news/articles/2012-06-21/navistar-turns-target-after-poison-pill-adopted-real-m-a

[145] *See* Scott Malone, *Embattled Navistar adopts poison pill as big investors circle*, REUTERS (June 20, 2012) available at http://www.theglobeandmail.com/globe-investor/embattled-navistar-adopts-poison-pill-as-big-investors-circle/article4356698/

[146] *See* Kate Macarthur, *Navistar's Plan B offers little confidence in its future*, CRAIN'S CHICAGO BUSINESS, (July 6, 2012, updated July 9, 2012) available at http://www.chicagobusiness.com/article/20120706/NEWS05/120709911/navistars-plan-b-offers-little-confidence-in-its-future

15, 2013 Navistar agreed to let Carl Icahn and Mark Rachesky appoint two directors each to Navistar board. The board also agreed to raise the poison pill threshold from 15% to 20%. Navistar's shares rose 10% in response.[147]

Like Mayer and the Yahoo board Ustian was drawn to the potential high upside of the project – which could provide Navistar with a significant competitive advantage. The long-time horizon made Ustian so confident that they could succeed in developing the technology that he didn't even have a plan B. Along the road, Ustian became invested in the project, that he ignored incoming data and engineers' concerns, and dismissed the low market value that investors gave Navistar, as a reflection of investors' short termism.[148]

B. Long-Term Investments: Magnified and Influential Overconfidence

The previous part presented three cases with characteristic factor that potentially contributed to overconfidence and overestimation – high upside, vagueness, illusion of control, excessive reliance on one's own skills, competition neglect, commitment to the project and dismissal of incoming feedback and data. Drawing on extensive literature this part will show that these factors – through experiments and data analysis - have been identified as contributing factors to overconfidence. As a result, the following will argue, overconfidence *is amplified, most durable and influential, in <u>long-term</u> projects,* and long-term investments, in turn, are particularly vulnerable to overestimation.

1. Managerial Overconfidence – Overestimating Probabilities of Success

Overconfidence, most known as the "above than average", effect has been documented in many experiments. Most People rank themselves above average in a range of skills and circumstances, including driving skills, likelihood to remain healthy and stay married.[149]

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[147] *See* Liz Hoffman, Liz Hoffman, *Navistar Deals with Ichan, Rachesky to Avoid Proxy Fight* (July 15, 2013), available at http://www.law360.com/articles/457245/navistar-deals-with-icahn-rachesky-to-avoid-proxy-fight

[148] Furthermore, the SEC has charged Navistar and Ustian for misleading investors about the EGR likelihood to succeed in the company's 2011 fillings. The company has settled with no admission of wrongdoing, while Ustian is still in settlement discussions with the SEC. *See* U.S. SECURITIES AND EXCHANGE COMMISSION, Litigation Release No. 23507 / March 31, 2016, *Securities and Exchange Commission v. Daniel Ustian*, Civil Action No. 16-cv-3885 (U.S. District Court for the Northern District of Illinois), available at https://www.sec.gov/litigation/litreleases/2016/lr23507.htm; Eric Miller, *Former Navistar CEO Daniel Ustian, SEC Ready to Discuss Settlement,* TRANSPORT TOPICS (Sep. 5, 2017) available at http://www.ttnews.com/articles/former-navistar-ceo-daniel-ustian-sec-ready-discuss-settlement; *See also* Catherine M. Schrand & Sarah Zechman, *Executive overconfidence and the slippery slope to financial misreporting*, 53 J. OF ACC. AND ECON. 311 (2012) (finding that "overconfident executives are more likely to exhibit an optimistic bias and thus are more likely to start down a slippery slope of growing intentional misstatements.")

[149] *See e.g.,* Neil D. Weinstein, *Unrealistic Optimism About Future Life Events,* 39 J. PERS. SOC. PSYCHOL. 806 (1980) (Finding above average effect with respect to both positive and negative events including one's health, longevity, employment and marriage); Baker, L.A. & Emery, R.E. *When every relationship is above average: perceptions and expectations of divorce at the time of marriage,* 17 LAW HUM. BEHAV. 439 (1993); Calderon, T.G. *Predictive properties of analysts' forecasts of corporate earnings*. THE MID-ATLANTIC J.

For example, more than 90% of people rank themselves above average in driving skills.[150] Or, in a high school students' survey, 70% of students ranked themselves above average in leadership skills. Among College professors, optimism bias was even larger, as 94% rated their work to be above average.[151]

Executives are even more prone to overconfidence bias than the general population. In a range of studies - including experiments, surveys and data analyses - managers demonstrated exceptionally high "better than average effect".[152] For example, a survey of approximately 1,000 executives, who work at the largest 10,000 companies found CEOs, and even more so US CEOs, to be significantly more optimistic than the average person.[153] In a test designed to measure optimism's levels, CEOs gained an average score of 20.34 relative to 14.33-15.15 in the general population. More than 80% of the CEOs were tested to be very optimistic, with a mean score of at least 18. CEOs are significantly more optimistic than CFO's, and are also perceived as highly optimistic by their CFO's.[154] Accordingly, when they come to assess investments, executives exhibit overconfidence with respect to the probability of success of these investments, which leads to overestimation of their expected value. For example, a study of US entrepreneurs found significant optimism with respect to the chances of their startup to succeed. Entrepreneurs estimated a mean of 80% for their business to survive for more than 5 years, in reality however, a majority of these startups do not survive for more than a few years.[155]

Executives, in fact, rarely accept risk estimates as given. Probably since, as a management survey reveals, they typically believe with the right efforts and planning, they

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BUS. 29, 41 (1993); Puri, M. & Robinson, D.T. *Optimism and Economic Choice*. 86 J. FIN. ECON. 71 (2007); Armor, D.A. & Taylor, S.E. *When Predictions Fail: The Dilemma of Unrealistic Optimism*, HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT (eds. Gilovich, T., Griffin, D.W. & Daniel Kahneman, Cambridge University Press, New York, 2002) 334; Svenson (1981).

[150] Ola Svenson, *Are We all Less Risky and More Skillful than our Fellow Drivers?* 47 ACTA PSYCHOLOGICA 143 (1981)

[151] Patricia K. Cross, *Not Can but Will College Teaching be Improved?* 17 NEW DIR. IN HIG. EDU. 1 (1977).

[152] *See e.g.*, Laurie Larwood & William Whittaker, *Managerial Myopia: Self-Serving Biases in Organizational Planning*, 62 J. OF APP. PSYCH. 94 (1977) (MBA students and corporate presidents exhibited better than average effects, both for their skills and for their company's predicted growth rates); J. B. Kidd & J. R. Morgan, *A predictive information system for management*, 20 OPER. RES. QUART. 149 (1969) (finding that managers predict better performance to their operations than the one they eventually achieved); John Graham, Harvey Campbell & Manju Puri, *Managerial Attitudes and Corporate Actions*, 109 J. OF FIN. ECON. 103 (2013) (Finding high optimism bias among entrepreneurs); James G. March & Zur Shapira, *Managerial Perspectives on Risk and Risk Taking*, 33 MANAGEMENT SCIENCE, l404 (1987). Reprinted in J. March (Ed.). *Decisions and Organizations*, New York: Basil Blackwell, 1988. Executives also exhibit another form of over confidence, an "over preciseness" effects, that is, overestimation of the accuracy of their predictions. *See e.g.*, Itzhak Ben-David, John Graham & Cam Harvey, *Managerial Miscalibration*,128 Q. J. ECON. 1547 (2013) (finding miscalibration among CFOs).

[153] John Graham, Harvey Campbell & Manju Puri, *Managerial Attitudes and Corporate Actions*, 109 J. OF FIN. ECON. 103 (2013).

[154] US CEOs are more optimistic, less risk averse, and display weaker loss aversion than foreign CEOs.

[155] *See* Arnold C. Cooper, Carolyn Y. Woo and William C. Dunkelberg, *Entrepreneurs' Perceived Chances for Success*, 3(2) J. OF BUS. VENT. 97 (1988).

can significantly improve the odds of their project to succeed.[156] Accordingly, they exhibit optimism even with respect to pure chances events.[157]

Granted, a certain level of optimism could be valuable in certain situations. Yet, recent evidence suggests that own average, executives lose money due to overconfidence. In particular, in a recent influential line of literature in Finance Ulrike Malmendier and Geoffrey Tate, developed measures for CEO's overconfidence levels, and tested its effect on firms' investments and acquisitions.[158] As proxies for overconfidence Malmendier and Tate adopted two main measures–press mentions of the CEO as confident, and how long a CEO holds on to her options after they vest. Options typically consists a significant part of CEOs compensation. CEOs have to wait till their options vest, before they can exercise it and sell the underlying stock. Presumably, risk averse CEOs, who are already invested in their own firms in many ways (their future, trajectory and compensation are all affected by the firm's success) should exercise their options right when they vest, to reduce their high exposure to their company's risk. If, however, the CEO believes that investors underestimate the value of her company, she might hold on to her options despite the associated costs of risk-aversion.[159] Many CEOs, the study found, hold on to their options after they vest, consistent with the "above the average effect". To be sure, theoretically, it could be that these CEOs were right in their predictions, or even had information that investors didn't have about firm value. Yet, the study found that on average, CEO's lost money from holding on to their options to the end, till they expire. CEOs, thus. lost money from their overconfidence bias.[160]

Second, Malmendier & Tate found that overconfident CEOs "overpay for target companies and undertake value-destroying mergers."[161] And, that these effects were stronger if the CEOs could finance these acquisitions with the firm–namely, when they were internally, rather than externally, financed. More generally, also other investments of overconfident CEOs were highly sensitive to the amount of cash-flow that was available to them within the firm. If they had money they tended to invest a lot, but if they had to

[156] James G. March & Zur Shapira, *Managerial Perspectives on Risk and Risk Taking*, 33 MANAG. SCI. l404 (1987) (results from a survey). Reprinted in J. March (Ed.). *Decisions and Organizations*, New York: Basil Blackwell, 1988.

[157] *Id.; see also* Ellen J. Langer & Jane Roth, *Heads I win, Tails it's chance: The illusion of control as a function of the sequence of outcomes in a purely chance task*, 32 J. OF PERSON. & SOC. PSYCH. 951 (1975).

[158] Ulrike Malmendier & Geoffrey Tate, *CEO Overconfidence and Corporate Investment,* 60 J. OF FIN. 2661 (2005) [hereinafter Malmendier & Tate, *Investment*]; Ulrike Malmendier & Geoffrey Tate *Does Overconfidence Affect Corporate Investment? CEO Overconfidence Measures Revisited* 11 EUROP. FIN. MANAG., 649 (2005) [hereinafter Malmendier & Tate, *Measures*].

[159] *Id.*

[160] *Id.*, at 653 ("Indeed, it appears that CEOs who hold all the way to expiration would have been better off on average by exercising (1, 2, 3, or 4 years) earlier and simply investing the proceeds in the S&P 500.")

[161] *See* Ulrike Malmendier & Geoffrey Tate, *Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction*, 89 J. OF FIN. ECON., 20 (2008) [hereinafter Malmendier & Tate, *Acquisitions*]; (overconfident CEO were more than 1.5 times more likely to acquire other companies, and their acquisitions triggered significant negative market response).

raise money from the markets, they were relatively reluctant to invest, probably since they believed that their company's securities are being undervalued.[162]

Finally, a legal institution–independent directors that were mandated by the Exchanges' listing standards following SOX, were found to have an effect on firms with overconfident managers.[163] For these firms, adding independent directors to the board, in order to comply with the then newly enacted listing standards, resulted in lower investments and higher profitability. Independent directors thus, restrained overconfident costly investments. [164]

2. Long-Term Projects: Little Optimism is Sufficient for High Overassesment

The previous Section has surveyed evidence showing that managers frequently overestimate the probability of their projects to succeed. Building on this well documented optimism, this section will how this optimism is especially distortive for the assessment of long-term investments. That is, for long-term projects, even a moderate level of optimism bias could result in high overestimation of the project' expected value, relative to its objective, expected value.

The reason optimism affects long-term projects more than short-term ones, is that optimism effect increases with the volatility of the project potential outcomes. Due to the large uncertainty they involve, long-term projects frequently involve high volatility. A ten-year project outcome could vary considerably depending on different factors at play. Thus, for long-term projects both the potential upside and downside are relatively large. As illustrated below, however, since overconfident managers overestimate the likelihood to achieve the upside, a large upside will result in large distortion. Overconfidence, thus, disproportionally affects uncertain volatile investments, making them more desirable to management, than less volatile, less profitable, investments.

To illustrate, assume two investments, a long-term investment LT and a short-term investment ST. Assume that both investments involve some uncertainty, in particular, assume that there are two potential outcomes, with equal probabilities, to each investment. Assume also that both investments involve some uncertainty, in particular, assume that there are two potential outcomes, with equal probabilities, to each investment. Assume for example, as shown in table 1, that the short-term investment S could produce either 200 or 320, each with 50% probability, and thus has an expected value of 260. Assume also that the long-term investment LT produces either 0 or 500, each with 50% probability. [165] Thus,

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[162] J. B. Heaton, *Managerial Optimism and Corporate Finance*, 31 FIN. MANAG. 33 (2002).

[163] Suman Banerjee, Mark Humphery-Jenner & Vikram Nanda, *Restraining Overconfident CEOs through Improved Governance: Evidence from the Sarbanes-Oxley Act*, 28 REV. OF FIN. STUD., 2812 (2015) [hereinafter, Banrjee et al., *Overconfidence & SOX*].

[164] *Id.* (finding that in firms that added independent directors to comply with SOX and the Exchanges listing standards "overconfident CEOs reduce investment and risk exposure, increase dividends, improve post-acquisition performance, and have better operating performance and market value.")

[165] To be sure, overconfidence also leads managers to underestimate volatility, especially with respect to long-term assessments. Yet, due to the significantly higher objective volatility of long term projects,

investment LT has higher volatility of outcomes (higher range between potential outcomes) than investment ST, and lower expected value (250 relative to 260). A manager who subscribes to objective unbiased probabilities, would choose to pursue Investment ST.[166] Assume though that the manager is overconfident, and in particular that she believes that for both investments, the probability of the good outcome to occur is 60% rather than 50%, and accordingly the probability of the bad outcome to occur is only 40%. [167]

As table 2 shows, exhibiting overconfidence toward both investments results in a dramatic change, a flip in the rank of investment ST and investment LT: with optimistic probabilities the expected value of investment LT seems higher than the expected value of investment ST (300 relative to 272). While an optimistic manager overestimates the probability of a good scenario in both investments, she overestimates the expected value of investment S less. Her optimism is amplified by the volatility of the long-term investment. [168]

Table 2: Long-Term, Volatility and Overconfidence

Invest	***Potential Outcomes***		***Objective Probabilities***		***Expected Value Objective***	***Optimistic Probabilities***		***Expected Value Overconfidence***
Short Term	*200*	*320*	*0.5*	*0.5*	***260***	*0.4*	*0.6*	***272***
Long Term	*0*	*500*	*0.5*	*0.5*	***250***	*0.4*	*0.6*	***300***

managers assign a significantly higher volatility to long-term project than to short term ones. *See* Ben-David et al, supra note 152.

166 For now, assume that all risk is diversifiable so that volatility does not matter. If risk is not diversifiable, risk aversion could make the LT investment less desirable for the manager. Yet, managers display a significantly high tolerance for risk. *See e.g.,* John Graham, Harvey Campbell & Manju Puri, *Managerial Attitudes and Corporate Actions*, 109 J. OF FIN. ECON. 103 (2013) (Finding that only 9.8% of CEOs displayed low risk tolerance relative to 64% in the general population); Po-Hsin Ho, Chia-Wei Huang, Chih-Yung Lin & Ju-Fang Yen, *CEO Overconfidence and Financial Crisis: Evidence from Bank Lending and Leverag,*.120 J. OF FIN. ECON. 194 (2015) (finding that banks with overconfident CEOs were more aggressive in lending during the recent financial crisis. Overconfident banks issued more loans, increased their leverage more, experienced higher rates of loans defaults and greater drops in market value).

167 For a formal modeling of managerial optimism as reflected in optimistic probability *see* J. B. Heaton, *Managerial Optimism and Corporate Finance*, 31 FIN. MANAG. 33 (2002).

168 To be sure, managers also do not like losing. Loss aversion could, under certain circumstances, create the opposite effect, that is preference for lower volatility investments. Yet, as shown in Part II.B.3 managers will also underestimate the probability of failure, believing that they have a control on it, and can bring it close to zero. *See also* James G. March & Zur Shapira, *Managerial Perspectives on Risk and Risk Taking*. 33 MANAGEMENT SCIENCE, l404 (1987). Reprinted in J. March (Ed.*).* Decisions and Organizations, New York: Basil Blackwell, 1988; Christoph Schneider & Oliver Spalt, *Conglomerate Investment, Skewness, and the CEO Long Shot Bias*, 71 J. OF FIN., 635 (2016) (finding that in allocating capital within conglomerates, managers allocated disproportionally large capital to investments with high positive skewness, that is, investments with low probability, high payoffs); *See also* Daniel KAHNMANN, THINKING, FAST AND SLOW, at 252 (Farrar, Straus and Giroux 2011) ("optimistic bias is a significant source of risk taking") .

Thus, overconfident managers might be drawn to long-term projects because of the high upside that they offer. Indeed, overconfident managers—measured using options-based proxies, and the character of descriptions of the CEO in the press— invest disproportionally in R&D, where payoffs are inherently quite uncertain.[169]

Note that long-termism did not rely on an assumption that managers are more optimistic for long-term investments. Rather, the analysys assumed the same overconfidence toward both investments. In particular, these examples assumed that both for LT and for ST investments an optimistic manager will place a probability of 60% on the good scenario instead of 50%. The following part will show that overconfidence is also stronger for these investments. That is, for the LT project, the manager could overestimate the probability of the good scenario to be, for example 70% or higher, and almost neglect as a result the size of the down side.

3. Optimism is Stronger for Long-Term Projects

The previous Section has shown that optimism effect of overestimating projects' expected value is more salient with respect to long-term investments, due to their high volatility. This Section will argue that optimism is also *stronger* for long-term projects. That is, for long-term projects managers will overestimate the probability of success more than they would for a short-term project. Thus, for example, while the previous section assumed that for both the LT and the ST investment, an optimistic manager will assess the probability of the good scenario to occur as 60%, instead of the objective probability of 50%, this part will argue that for LT projects, and only for them, she will assess this probability to be even higher. For example, while the overconfident manager will assess the probability of a ST project to succeed at 60% instead of the objective 50%, the same overconfident manager will assess the probability of the LT project to succeed at 70% or 80% instead of the objective 50%. Overconfidence bias is likely to be especially high for LT projects, this part will argue, since the origins of this bias, its driving factors –such as, illusion of control, overestimation of relevance of one's skills, competition neglect, commitment to the project and lack of reference class - are aggravated by LT projects *time horizon* and *vagueness.*[170]

Managers are overconfident with respect to the likelihood of their project to succeed, partly since they believe that they can control their risk. As found in executives' survey, they typically believe with the right efforts and planning, they can significantly improve

[169] David Hirshleifer, Angie Low & Siew Hong Teoh, *Are Overconfident CEOs Better Innovators?* 67 J. OF FIN. 1457 (2012). The association of volatility and overconfidence is not limited to executives' behavior. For instance, analysts' overconfidence bias increases with uncertainty, measured by standard deviation of earnings forecast. Lucy F. Ackert & George Athanassakos, *Prior Uncertainty, Analyst Bias, and Subsequent Abnormal Returns*, 20 J. OF FIN. RES. 263 (1997).

[170] David Dunning, Judith A. Meyerowitz & Amy D. Holzberg, *Ambiguity and self-evaluation: The role of idiosyncratic trait definitions in self-serving assessments of ability*, 57 J. OF PERSON. & SOC. PSYC. 1082 (1989).

the odds of their project to succeed.[171] This *illusion of control* is so strong, the study found, that they rarely accept risk estimates as given - even with respect to pure chances events they tend to exhibit optimism.[172] A long time horizon, that long-term investments provide, fosters this illusion of control - over time solutions could be found, and obstacles overcome. Ustian, for example, was confident partly since his company almost had ten years to develop the EGR till the new environmental standards come into effect. Similarly, even after it was clear that Yahoo will not last, Marissa Mayer in her last interview suggested that several more years was all she needed, in order for her plan to succeed and for Yahoo to be saved.

Second, further increasing managers' overconfidence is their tendency to overestimate the relevance of their own skills; neglect importance of others' skills; and neglect of potential competition.[173] For long-term project it is not yet clear which skills could maximize its success.[174] Indeed, this kind of ambiguity was shown to magnify optimism: when subjects were free to come up with different traits that justify their high rating of themselves, they were highly optimistic. When they were given a list of traits, however, they rank themselves lower than they previously did.[175] For long term projects, thus, where details are lacking, managers will focus on their positive skills, traits and general advantages, even if the traits will turn out not to be relevant.

Third, managers also neglect other managers' skills, and accordingly potential competition. For long term projects, the bias is stronger since future competition is difficult to predict, when the project is initiated. Furthermore, competition neglect is exacerbated when a manager overestimates the relevance of his skills, which, as argued before, is also more likely with respect to long-term projects. In an entry game experiment, managers were more likely to enter the market with a new company when they were told that success in competition was skill driven than when it was drawn randomly.[176] Marissa Mayer, for

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[171] James G. March & Zur Shapira, *Managerial Perspectives on Risk and Risk Taking*, 33 MANAG. SCI. l404 (1987) (results from a survey). Reprinted in J. March (Ed.). *Decisions and Organizations*, New York: Basil Blackwell, 1988.

[172] *Id.; see also* Ellen J. Langer & Jane Roth, *Heads I win, Tails it's chance: The illusion of control as a function of the sequence of outcomes in a purely chance task*, 32 J. OF PERSON. & SOC. PSYCH. 951 (1975).

[173] *See* Kahneman *Id.*; Dan Lovallo & Daniel Kahneman, *Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking*, 39 MANAGEMENT SCIENCE 17, at 27 (1993) ("people also exaggerate their control over events and the importance of the skills and resources they possess in ensuring desirable outcomes ")

[174] Furthermore, even when information is available, people tend to think about future events in general form and postpone the details to a later time. *See e.g.*, Nira Liberman & Yaacov Trope, *Temporal construal*, 110 PSYCH. REV., 430 (2003) ("Construal level theory (CLT) specifically proposes that individuals use more abstract mental models, or higher level construals, to represent information about distant future events than information about near-future events."); Nira Liberman & Yaacov Trope, *Temporal Construal Theory of Time-Dependent Preferences.* In J. Carillo & I. Brocas and J. D. Carrill (Eds.), *The psychology of economic decisions: Rationality and well-being.* OXFORD UNIVERSITY PRESS. (2003).

[175] David Dunning, Judith A. Meyerowitz & Amy D. Holzberg, *Ambiguity and self-evaluation: The role of idiosyncratic trait definitions in self-serving assessments of ability*, 57 J. OF PERSON. & SOC. PSYC. 1082 (1989).

[176] Colin Camerer & Dan Lovallo, *Overconfidence and excess entry: An experimental approach,* 89 AMER. ECON. REV. 306 (1999) (finding in an experiment that overconfidence about skill leads to excessive entry).

example, overestimated the relevance of her skills – her experience with search – to Yahoo's future success, and neglected potential future competition in the app market.

Finally, there is also more direct evidence that is consistent with higher overconfidence for long-term projects. For example, college students were pretty optimistic about their first-year salaries, but became significantly less optimistic as graduation approached.[177] Similarly, students were more optimistic with respect to their performance in the midterm exam when asked at the beginning of the semester, than on the day of the exam.[178] Furthermore, subjects who were asked to predict their performance in a number of arbitrary tasks were significantly more optimistic long before the task than immediately prior to performing it.[179]

Executives' predictions are more optimistic with respect to long-term projects. A study analyzing three to five-year earnings growth forecasts among executives, finds that these long-term forecasts were highly overoptimistic, significantly exceeding actual growth rates.[180] The average long-term growth forecast predicted (15%) was five times larger than the average realized growth rate (3%). Also, consistent with their optimistic long-term beliefs, overconfident CEOs were found to specifically bargain for more options-intensive compensation packages[181] with multi-year vesting and expiration periods.[182] To sum, analysis of overconfidence origins and more direct evidence on long term overconfidence – all suggest that executive overconfidence is likely to thrive with respect to long-term projects.

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[177] Shepperd, J. A., Ouellette, J. A., & Fernandez, J. K., *Abandoning unrealistic optimism: Performance estimates and the temporal proximity of self-relevant feedback*, 70 J. OF PERSON. & SOC. PSYCH., 844 (1996). Juniors' and sophomores' optimism, in contrast, did not decline over the year, suggesting that the proximity to benchmarking moments uniquely dampens optimism. *Id.*

[178] *See* Gilovich, T., M. Kerr, and V. Medvec. *The Effect of Temporal Perspective on Subjective Confidence.* 64 J. PERSON. & SOC. PSYCH. 552 (1993); *See also* Armor, D.A. & Taylor, S.E. *When Predictions Fail: the Dilemma of Unrealistic Optimism*, HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT (eds. Gilovich, T., Griffin, D.W. & Daniel Kahneman, Cambridge University Press, New York, 2002).

[179] *See* Gilovich, T., M. Kerr, and V. Medvec. 1993. *The effect of temporal perspective on subjective confidence.* 64 J. PERSON. & SOC. PSYCH. 552; *See also* David A. Armor, & Shelley E. Taylor, *When Predictions Fail: The Dilemma of Unrealistic Optimism*, HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT (eds. Gilovich, T., Griffin, D.W. & Daniel Kahneman, Cambridge University Press, New York, 2002).

[180] Linda Bamber, David Koo & Eric P. Yeung, *Managers' Forecasts of Long-Term Growth in Earnings: New Information or Wishful Thinking?* available at https://www.stern.nyu.edu/sites/default/files/assets/documents/Eric%20Yeung.pdf

[181] Mark Humphery-Jenner, Ling Lei Lisic, Vikram Nanda, & Sabatino Dino Silverie, *Executive Overconfidence and Compensation Structure*. 119 J. OF FIN. ECON. 553 (2016) [hereinafter, Humphery-Jenner et al., *Overconfidence & Compensation*]

[182] Brian D. Cadman, Tjomme O. Rusticus & Jayanthi Sunder, *Stock Option Grant Vesting Terms: Economic and Financial Reporting Determinants,* 18 REV. OF ACC. STUD. 1159 (2013).

C. Unbridled Optimism: Weak Constraints for Long-Term Investments' Optimism

The previous section has shown that optimism' origins are fostered by the long-term horizon and the vagueness of the project. This Section will show that also the constraints on overconfidence are weaker for long-term projects.

1. Managers are Less Likely to Contrast their "Inside View" with an "Outside View"

Kahneman and Tversky, who made seminal contributions to the research of overconfidence bias, found that optimism results from people tendency to adopt an "Inside View"– the view that is based solely on plans scenarios and simulations they run in their mind, while ignoring an "Outside View" – the view that is based on statistical analysis of aggregate data from similar cases.[183] The inside view is biased since simulations and plans tend to focus on success scenarios, on how projects will work, while undermining or ignoring potential obstacles (managers "rarely plan to fail").[184] For example, people who were asked to assess time of task completion in experiments, constructed forecasts that are close to the best case scenario while ignoring relevant statistics and experience.[185] As a result, most people suffer from a *Planning Fallacy* – a common bias in estimating how long it takes to complete a task.[186]

Importantly, however, unrealistic predictions could be bridled, Kahneman and Tversky found, if one contrasts her individual best-case scenario (the inside view), with a data driven analysis (the outside view) – that is ,if one conducts a reference class forecasting.[187] For example, when college students were asked to forecast their future academic performance, on average they predicted it will be better than 84%of their peers. However, when students were asked first about their entrance scores, and their peers entrance scores, their predictions were significantly less overconfident.[188] Yet, while project plans and predictions are more realistic when their construction builds on statistics

[183] *See* Amos Tversky & Daniel Kahneman, *Intuitive prediction: Biases and corrective procedures.*12 TIMS STUDIES IN MANAGEMENT SCIENCE, 313 (1977).
[184] *See* Daniel Kahneman, THINKING, FAST AND SLOW, 198-268; *See also* David A. Armor & Shelly E. Taylor, *Situated Optimism: Specific Outcome Expectancies and Self-Regulation,* 30 ADV. EXPERIM. SOC. PSYCH. 309 (1998).
[185] Buehler, R., Griffin D., & Ross, M., *Exploring the "planning fallacy": Why People Underestimate their Task Completion Times*, 67 J. OF PERSON. & SOC. PSYCH., 366 (1994); Kahneman, Daniel. THINKING, FAST AND SLOW, 250.
[186] Daniel Kahneman, THINKING, FAST AND SLOW, 250.
[187] *See* Daniel Kahneman & Dan Lovallo, *Delusions of Success: How Optimism Undermines Executives' Decisions*, 81 HARV. BUS. REV. 68 (2003) [*hereinafter* Kahneman & Lovallo, *Delusions*] *(*"The outside view is more likely to produce accurate forecasts and much less likely to deliver highly unrealistic ones")
[188] *See Id., at* 61 (this second group of students predicted on average a performance that is better than 64% of their peers).

from similar projects, people frequently ignore the outside view.[189] For example, asking the external question – how long does such projects usually take? – could result with a significantly better estimation of time of completion.[190] Yet, as Kahneman reports, in a curriculum construction project that he participated years ago, participants, including himself ignored this information, leading to a drastic underestimation of time of completion.[191] The tendency to ignore the outside view affects managers and organizations.[192] Managers are not likely to solicit such a view, and even if they do it is frequently ignored.[193] Indeed, a review of several hundred forecasts of transportation infrastructure projects' costs and demand found that not even one of them included a reference class forecast.[194]

Long-term projects, this Part argues, belong to a special class – that would benefit most from the outside view if adopted, but at the same time is the least likely to be contrasted against data.[195] The outside view would be highly valuable for long-term projects, if adopted, since these projects involve especially high level of optimism, and since optimism is highly influential in distorting their value.[196] For several reasons however, managers are not likely to contrast these long-term projects with data. First, contrasting the inside view with data does not mean merely incorporating negative scenarios to simulations.[197] Rather, to make realistic predictions, one needs to know the *distribution* of success of similar projects.[198] Thus, an outside view requires identifying a reference class – a group of similar projects – that would provide relevant data.[199] Long-term projects are many times unique, however, and therefore a reference class would be

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[189] *See* Kahneman & Lovallo, *Delusions, supra* note 187; Dan Lovallo and Daniel Kahneman, *Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking*, 39 MANAG. SCI. 17 (1993).
[190] Daniel Kahneman, THINKING, FAST AND SLOW, 250.
[191] *Id.*
[192] *See* Kahneman & Lovallo, *Delusions, supra* note 187.
[193] *See* Kahneman & Lovallo, *Delusions, supra* note 187, at 77 ("Even when companies bring in independent consultants to assist in forecasting, they often remain stuck in the inside view. If the consultants provide comparative data on other companies or projects, they can spur useful outside-view thinking. But if they concentrate on the project itself, their analysis will also tend to be distorted by cognitive biases.")
[194] *See* Bent Flyvbjerg, Nils Bruzelius & Werner Rothengatter, MEGAPROJECTS AND RISK: AN ANATOMY OF AMBITION (Cambridge University Press 2003); Bent Flyvbjerg, Mette K. Skamris Holm & Søren L. Buhl, *What Causes Cost Overrun in Transport Infrastructure Projects?* 24 TRANS. REV. 3 (2004); Bent Flyvbjerg, Mette K. Skamris Holm, and Søren L. Buhl, 2005, *How (In)accurate Are Demand Forecasts in Public Works Projects? The Case of Transportation*, 71 J. OF THE AMER. PLANN. ASSOC., 131 (2005).
[195] *Cf.* Kahneman & Lovallo, *Delusions, supra* note 189, at 68 ("The outside view's advantage is most pronounced for initiatives that companies have never attempted before—like building a plant with a new manufacturing technology or entering an entirely new market. It is in the planning of such de novo efforts that the biases toward optimism are likely to be great. Ironically, however, such cases are precisely where the organizational and personal pressures to apply the inside view are most intense. ")
[196] *See* discussion *infra* Part III.B.
[197] Daniel Kahneman, THINKING, FAST AND SLOW.
[198] *Id.*
[199] *See* Kahneman & Tversky, *Intuitive Prediction, supra* note 183.

less obvious, or highly subjective.[200] Furthermore, that managers construct the long-term investment around their unique skills, would make them even more skeptic that a relevant reference class exists.[201] Marissa Mayer was raised on Google tradition of relying heavily on data. Yet, when it came to marketing and consumer preferences, which she was known to have a great hunch for (Mayer is credited for Google's clean design of its search screen) data driven analysis was replaced with intuition and snap judgment.

> Reared in Google's data-obsessed culture, Mayer tended to require countless tests about user preferences before making an important product decision. But when it came to media strategy, she seemed perfectly comfortable going with her gut.[202]

More generally, Kahneman and Tversky found that more than any other factor, the *main reason* to ignore the outside view, is the *strength of the story* the manager can tell, and particularly its *coherence*. A good, coherent story, they found, will outweigh *any statistical evidence.*[203] And a good coherent story, as Kahneman explains, is especially available, when you know little:

> You build the best possible story from the information available to you, and if it is a good story, you believe it. Paradoxically, it is easier to construct a coherent story when you know little, when there are fewer pieces to fit into the puzzle.[204]

For long-term projects, since little information is available, managers are free to construct alternative scenarios, all of which could be designed to be perfectly coherent, and highly overconfident. Armstrong for example, constructed a great story for Patch – the local news platform. But the story was so good that Armstrong was not interested in numbers or data. Looking back at his career at AOL, in a recent interview after he became the CEO of Oath, Armstrong describes his main mistake in being excessively focused on

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[200] *See* Kahneman & Lovallo, *Delusions, supra* note 187, at 68 ("Of course, choosing the right class of analogous cases becomes more difficult when executives are forecasting initiatives for which precedents are not easily found. …Imagine that planners have to forecast the results of an investment in a new and unfamiliar technology.")

[201] *See* Kahneman & Tversky, *Intuitive Prediction, supra* note 183, at 2-3 ("The tendency to neglect distributional information and to rely mainly on singular information is enhanced by any factor that increases the perceived uniqueness of the problem.")

[202] *See* Nicholas Carlson, *What Happened When Marissa Mayer Tried to Be Steve Jobs*, THE NEW YORK TIMES MAGAZINE (Dec. 17, 2014), http://www.nytimes.com/2014/12/21/magazine/what-happened-when-marissa-mayer-tried-to-be-steve-jobs.html.; *See also* Miguel Heft, *The Last Days of Marissa Mayer?* FORBES (Dec. 14, 2015), available at https://www.forbes.com/sites/miguelhelft/2015/11/19/the-last-days-of-marissa-mayer/#3c0ca487141f ("Some of her most senior executives say the data-driven approach she honed at Google seemed to give way to snap judgments. Early in her tenure she demanded that a landing page ad on Yahoo Mail be removed simply because she didn't like the user experience.").

[203] *See* Daniel Kahneman, THINKING, FAST AND SLOW (p. 264) ("confidence is determined by the coherence of the story one has constructed, not by the quality and amount of the information that supports it."). In a line of experiments Tversky and Kahneman found that coherency has significant, if not the most significant, influence on predictions.

[204] Daniel Kahneman, THINKING, FAST AND SLOW, at 201.

Patch as an opportunity, while ignoring feedback and data, and the lessons he learned from this experience:

> …what you need to do is listen to the best judgment you possibly can and try to look at the best data you possibly can. Then there's gonna be some unknowns…inside the corporation, there's a lot of non-reality that happens…The judgment changed and the mistake I made was going exactly what you said, too bullish down a path without making sure those early positive metrics were actually coming true in all the other markets. We should have tightened down on it earlier.[205]

2. Lack of Clear and Immediate Feedback

Long-Term projects' optimism is less bridled also since they lack a clear and immediate feedback. The mere expectation of a clear and immediate feedback, it was found, reduces optimism in making predictions.[206] In one experiment, for example, participants were asked to assess the likelihood of testing positive to a serious medical condition. Assuming that they receive the results in 3-4 weeks participants were overoptimistic, assessing a less than average likelihood. Yet, close to the end of the experiment, after these participants learned that results would be available in a few minutes, they abandoned their optimism, assessing an average likelihood instead.[207]

For long-term projects, however, the feedback is vague, noisy, and far away in the future.[208] Real profits will realize only years from now, and currently investors pay only a limited attention to information that affects long-term earnings.[209] Furthermore, over a long-duration, managers would have plenty of opportunities to attribute failure to exogenous events that are not in their control. *Attribution Bias* thus further weakens the power and discipline of a long-term project feedback.[210] The feedback is less intimidating,

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205 *See* Full transcript: Oath CEO Tim Armstrong on Recode Media (Sep 3, 2017), available at https://www.recode.net/2017/9/3/16243970/transcript-oath-ceo-tim-armstrong-aol-patch-verizon-yahoo-recode-media

206 David A. Armor, & Shelley E. Taylor, *When Predictions Fail: the Dilemma of Unrealistic Optimism*, HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT (eds. Gilovich, T., Griffin, D.W. & Daniel Kahneman, Cambridge University Press, New York, 2002).

Armor and Taylor 2002; (Shepperd, 2000; K. M. Taylor & Shepperd, 1998) (finding optimism is sensitive to timing of expected feedback); Stocken's 2000; Einhorn (1980)

207 Taylor, K. M., & Shepperd, J. A. *Bracing for the worst: Severity, testing and feedback as moderators of the optimistic bias.* 24 PERSON. & SOC. PSYCH. BULL., 915 (1998).

208 Armor & Taylor, *Id.*

<u>(Shepperd, 2000; K. M. Taylor & Shepperd, 1998) (finding optimisim is sensitive to timing of expected feedback); Stocken's 2000; Einhorn (1980)</u>

209 *See* DellaVigna & Pollet, supra note 33.

210 *See e.g.,* Dale T. Miller & Michael Ross, *Self-Serving Biases in the Attribution of Causality: Fact Or Fiction?* 82 PSYCH. BULLET. 213, 213-215 (1975); Norman T. Feather & JG Simon, *Attribution of Responsibility and Valence of Outcome in Relation to Initial Confidence and Success and Failure of Self and Other*, 18 J. PERSON. & SOC. PSYCH., 173 (1971).

since managers know, whether consciously or not, that so many things that will happen could be responsible to a project failure, if it occurs.

3. Limited Learning

While lack of learning is a problem with respect to any project, managers' persistence and stubbornness in the face of new relevant information, is both particularly salient, and especially damaging with respect to long-term projects. For long-term projects, by the time information arrives, managers are highly invested in the project success, their options are tied to long-term performance, and their career trajectory will be highly affected by its prospects. High motivation, it was found, impedes learning and exacerbates overconfidence. People motivated to reach a result search their memory for facts beliefs that support it, and ignore negative information.[211] For example, people who were promised a refund for finishing tax early showed higher optimism with respect to time to complete their reports. [212] Also, in the forgoing cases, motivation and commitment hindered learning. The culture of blind commitment to the project at Navistar was so strong, that some interpreted the small size of Ustian office, as a message that engineers are not welcome to discuss progress and obstacles, but rather are expected to solve them on their own:

> The CEO kept tight counsel, literally. His office was small, as was an adjoining conference room, limiting meetings to four or five people ("He didn't like having people who he considered extraneous in his meetings," says the former executive), and since the engine development was done in a facility 45 minutes away, the actual engineers too infrequently had a seat at the table.[213]

And Mayer and Armstrong both let go of top executives who were skeptical about their long-term plans.

Second, even though the initial business plan for long-term projects is based on very little information, and thus is likely to have low predictive power, due to an *Anchoring bias*, later assessments of the project are highly influenced by an initial assessments, plans, or even arbitrary numbers they are provided with.[214] In a Rand study of major companies

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[211] *See e.g.*, Kunda, Z. *The Case for Motivated Reasoning*, 108 PSYCH. BULL., 480 (1990).

[212] *See e.g.,* Buehler, R., Griffin, D., & MacDonald, H. *The Role of Motivated Reasoning in Optimistic Time Predictions,* 23 PERSON. & SOC. PSYCH. BULL. 238 (1997); *See also Marks*, R. W. *The Effects of Probability, Desirability, and "Privilege" on the Stated Expectations of Children*. 79 J. OF PERSONALITY 332 (1951) (kids were more likely to predict that they draw a particular card from a mixed pack when they stood to gain a point for each card.)

[213] *See* Joann Muller, *Death By Hubris? The Catastrophic Decision that Could Bankrupt A Great American Manufacturer*, FORBES (August 2, 2012), available at https://www.forbes.com/sites/joannmuller/2012/08/02/death-by-hubris-the-catastrophic-decision-that-could-bankrupt-a-great-american-manufacturer/#37a35fe06fbb

[214] Kahneman & Lovallo, *Delusions, supra* note 187, at 74 ("This intuitive and seemingly unobjectionable process has serious pitfalls, however. Because the initial plan will tend to accentuate the positive—as a proposal, it's designed to make the case for the project—it will skew the subsequent analysis toward

costs turned out to be double than initially assessed, and performance less half anticipated.[215] Anchoring on an uniformed plan could result in significant costs since anchoring persists even when the initial numbers are clearly wrong.[216]

Third, for long-term projects, where most of the relevant information is revealed gradually, *asymmetric updating*–people tendency to ignore negative information and embrace positive news–is also especially damaging. Asymmetric treatment of positive and negative news was replicated in numerous experiments, as well as in neuroscience studies, based on functional magnetic resonance imaging (MRI).[217] Participants estimated their likelihood of experiencing particular adverse life events such as Parkinson's disease, Alzheimer's disease, car theft or robbery, before and after they were presented with the average probability of these events for people in their socio cultural environment.[218] Updating beliefs in response to information was remarkably asymmetric - brain activity showed failure of the frontal lobe regions to code for errors, when coding would have reduced individual's optimism (increase probability for adverse event). [219]

Inventor's assistance program in Canada provided inventors with an objective assessment of the commercial prospects of their invention. After receiving a projection of failure, which as the organization track record suggest are highly accurate, only half of the inventors abandoned their project. Persistence was associated with high individual optimism and resulted in average losses.[220]

Fourth, another source of asymmetric updating, attribution bias–namely, the tendency to take credit for success, and attribute failure to bad luck– is stronger for long-term investments – since the long time-horizon typically would present multiple opportunities for managers, to attribute failure to exogenous events.[221]

Finally, evidence supports the notion that executives' overconfidence of managers' resistance to feedback with respect to long-term investment. Overconfident CEOs, which

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overoptimism"); Ariely, D., Lowenstein, G., & Prelec, D. (2003). *Coherent arbitrariness: Stable demand curves without stable preferences.* 118 QUART. J. OF ECON., 73 (2003); Amos Tversky & Dan Kahneman, *Judgment under Uncertainty: Heuristics and Biases*. 185 SCIENCE 1124 (1974)

[215] Merrow, E.W., Chapel, S.W., and Worthing, C., *Review of Cost Estimation in New Technologies: Implications for Energy Process Plants*, 1979, RAND Corp., Santa Monica, CA (USA).

[216] Timothy D. Wilson, Christopher E. Houston, Kathryn M. Etling & Nancy Brekke, *A New Look at Anchoring Effects: Basic Anchoring and its Antecedents*, J. OF EXPERIM. PSYCH. (1996) (warning participants of an anchoring effect did not help them avoid it)*;* Fritz Strack & Thomas Mussweiler, *Explaining the enigmatic anchoring effect: Mechanisms of selective accessibility*, 73 J.OF PERSON. & SOC. PSYCH. 437 (1997) (anchoring effect were found even though initial numbers were clearly wrong).

[217] Sharot et al., supra note 34, at 1475 (2011) ("highly optimistic individuals exhibited reduced tracking of estimation errors that called for negative update in right inferior prefrontal gyrus.")

[218] *Id.*

[219] *Id.*, at 1477-78.

[220] Thomas Astebro, *The Return to Independent Invention: Evidence of Unrealistic Optimism, Risk Seeking or Skewness Loving?* 113 ECON. J. 226, 229 & tbl.1 (2003).

[221] *See e.g.*, Dale T. Miller & Michael Ross, *Self-Serving Biases in the Attribution of Causality: Fact or Fiction?* 82 PSYCH. BULLET. 213, 213-225 (1975); Norman T. Feather & JG Simon, *Attribution of responsibility and valence of outcome in relation to initial confidence and success and failure of self and other*, 18 J. PERSON. & SOC. PSYCH., 173 (1971).

were found to have weak inclination to amend material errors in their forecasts in light of corrective feedback, were especially not responsive when the feedback related to forecasts with long time horizon.[222]

IV. Implications

A. Biases Interact in Capital Markets

As the forgoing parts established, managers suffer from an overlooked long-term bias. This long-term bias, adds to the short-term pressures they face from market and investors. Managers thus face both pressure, and as a result, in capital markets – biases interact. While this interaction probably does not always result in optimal investments, by interacting, short-term bias and long-term bias, limit each other's influence and costs, sometimes even to the point that they wash out.

Our framework, thus, does not rule out short-term biases in the market, quite the contrary. The long-term bias we introduce helps in explaining the survivorship of short-term bias in efficient capital markets with professional investors and fund managers. In particular, once one introduces long-term bias it becomes clear why costly mechanism to limit short-term bias have not developed – given that market interaction limits costs on both sides, savings from additional mechanism would be limited, and not likely to outweigh the costs of changing current investment and compensation structures.

Our Framework also helps in explaining some other puzzling data. For example, take the findings of a positive market response to the announcement that a hedge fund activist entered the company stock.[223] The result, which was confirmed in numerous studies, suggests that investors view the intervention as valuable. Critics of hedge fund activism, however, have argued that this result suggests that investors are also short-sighted, that is, they are happy to receive higher payouts in the short-term, while ignoring the long-term consequences.[224] This interpretation is logical only if financial markets are not capable of pricing the long-term effect of activism, an assumption that is hardly justifiable.[225]

Furthermore, the market response varies significantly across firm, and is sometimes negative.[226] Why would the same investors then, respond negatively to hedge funds intervention in some firms and positively in others. If investors are short sighted, they should consistently respond positively to increased payouts. Under this Article's account, there is no need to assume that capital markets are not efficient. Rather, the positive market response could reflect market satisfaction with ceasing an undesirable long-term project

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[222] Guoli Chen, Craig Crossland & Luo Shuqing, *Making the Same Mistake All Over Again: CEO Overconfidence and Corporate Resistance to Corrective Feedback*, 36 STRAT. MANAG. J. 1513 (2015)

[223] *See* Brav et al., *supra* note 10.

[224] *See supr*a Part II.

[225] *See e.g.*, Bebchuk et al., *supra* note 7, at 1123 ("For hedge fund activism to reduce the wealth of shareholders in the long term, it must be the case that (i) the elevated stock-price levels following 13D filings represent inefficient market pricing that fails to perceive the expected long-term costs of the intervention")

[226] Coffee & Palia, *supra* note 10.

that was driven by management long-term bias. This type of market response reflects predicted long-term gains, and thus, is consistent with market efficiency. In addition, the account here predicts that market response might vary across firms, activists, and investments – depending on the extent of long-term bias and short-term bias that are involved in any particular situations. [227] Investors would respond positively when they think that management is being overconfident in its investment, and that the activist intervention could limit these investments. Similarly, in cases in which they support management vision and long-term plans, and believe the activist is motivated solely by short term liquidity needs, they would respond negatively to the activist intervention announcement.

B. Short-Termism Limits Overconfident Investments

1. Limits Overinvestments

Short-termism has been a constant concern of corporate America's policy makers, lawyers, academics, business and legal commentators. Under conventional wisdom short-term gains always come at the expense of superior long-term investments and growth, and accordingly impose significant inefficiency costs on firms and investors. As leading corporate Lawyer Martin Lipton harshly warns:

> "In what can only be considered a form of extortion, activist hedge funds are preying on American corporations to create short-term increases in the market price of their stock at the expense of long-term value. "[228]

Yet, as this Article has shown managers have incentives to overinvest in long-term investments. As a result, the widely held assumption that short-term pressure always come at the expense of long-term performance and growth should be reconsidered. Short-term pressures could limit overconfident long-term investment, and consequently improve long-term performance and growth. Thus, the finding that hedge fund activism has led to less investment in R&D, which was considered as one of the strongest pieces of evidence against hedge fund activists, by itself does not suggest that activism is either damaging or valuable to shareholders. [229] Rather, it raises an empirical question – what type of investments are less likely to go through due to activism – desirable or undesirable ones. If R&D level was excessive due to long-term bias, and activism reduces inefficient overestimated investments then short termism contributes to long-term profitability and growth.[230] Consistent with this option, two recent studies find that while activism reduces

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[227] Barzuza & Talley, *supra* note 20.

[228] *See* Lipton, *Important Questions, supra* note 4.

[229] *See* Coffee & Palia, *supra* note 10, at 576.

[230] Coffee & Palia acknowledge the potential argument that R&D level was excessive. Yet, they argue, since managers are compensated for long-term performance they have no incentives to overinvest. *See* Coffee & Palia, *supra* note 10, at . Yet, overconfidence is not cured by incentive-based compensation. Since

investment in R&D and CAPEX in general, it also leads to increased returns on assets, and higher output measures, such as more patent registrations and citations.[231]

Activists' pressure to increase payouts might be motivated by short-term bias, due to pressure from their investors and needs for liquidity.[232] Or, sometimes the pressure to distribute money could be directly related to the concern of overinvestment in long-term projects, as in the case of the Patch.[233] Regardless of the motivation, however, the pressure that activists hedge funds exert to increase payouts, limits the long-term bias.

Indeed, it has been argued before that short-termism could play a role in limiting overinvestments. Yet, the argument that managers overinvest relied, it was argued, on an argument that is dated since it does not take into account modern executive compensation structures. The common overinvestment theory - empire building – is an agency theory, under which managers have personal benefits from increasing the size and scope of their firms, which they achieve via investments and acquisitions. To begin with, the argument goes, by purchasing other companies, managers can arguably increase their own compensation. Second, they increase their visibility and importance. Third, they increase their diversification. Yet, as Coffee and Palia argue, executive compensation today ties compensation to firm performance. Thus, if empire building harms the company, executives won't pursue it.

The long-termism approach, however, is not an opportunistic, agency cots theory, and thus is not subject to this criticism. Since it is driven by overconfidence, incentive-based compensation does not mitigate long-termism, quite the contrary. Overconfident managers who genuinely but mistakenly believe in the desirability of their long-term investments, are encouraged to invest more if their compensation is tied to firm value.[234] Indeed, these managers typically negotiate a compensation package that is sensitive to firm value.[235]

Furthermore, as the following section will show, the pressure to increase payouts limits overconfident investments more than investments that are not motivated by overconfidence.

2. Pressure Increase Payouts – Overconfident Managers Love Internal Funds

A main reason for the criticism against activist hedge funds has been the pressure they exert to increase shareholder payouts. Due to these pressures, it is argued, firms invest

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overconfident managers believe in their long-term projects, long term compensation will incentivize them to invest more rather than less, in those long-term projects. See Malmendier & Tate, *Investment, supra* note 158.

[231] *See* Brav et al., *The Real Effects, supra* 10; Brav et al., *Activism Innovation, supra* note 10.

[232] *See e.g*., Ben-David et al., *supra* note

[233] *See* discussion *supra* Section III.A.2

[234] Ulrike Malmendier & Geoffrey Tate, *CEO Overconfidence and Corporate Investment,* 60 J. OF FIN. 2661, 2697 (2005) [hereinafter Malmendier & Tate, *Investment*] ("Specifically, standard incentives such as stock- and option-based compensation are unlikely to mitigate the detrimental effects of managerial overconfidence.")

[235] *See* Humphery-Jenner et al., *Overconfidence & Compensation, supra* note 181.

significantly less in R&D and other long-term investments. The payouts of S&P 500 companies, reached 90% of their income.[236] And accordingly, investment in R&D declined. Hedge funds pressure, it is argued, is motivated by their needs for liquidity and the pressure that they face from their investors.

If, however, as a result of long-termism managers overinvest, distributing more money to shareholders, could curb these overinvestments. To be sure, increased payoffs could also limit desirable investments. Yet, importantly–the pressure to increase payouts disproportionally limits those investments that are driven by overconfidence. As recent studies in behavioral finance found, overconfidence thrives on the availability of cash flow within the firm.[237] If there is money available within the company, overconfident managers are more likely to use it for investments.[238] If the money is not available, so that they have to raise capital or debts, they are less likely to invest, presumably since they believe that their company is undervalued, and external finance is thus too costly.[239] Forcing managers to distribute internal funds, thus, disproportionally reduce overconfident investments.

Furthermore, there is evidence to suggest that the pressure to increase payouts will limit the most problematic investments. For example, value destroying acquisitions, by overconfident managers, are more likely and more harmful, when they are financed from internal funds.[240] Similarly, the inclination to overinvest from internal funds is stronger when managers cannot rely on internal finance.[241] This pressure thus, affects overconfident CEOs more than it does CEOs that are not overconfident. Indeed, in the three case studies this Article reviewed – Yahoo, AOL and Navistar – the companies were generating significant cash flow, and the long-term investments were financed by these cash flows. The Activists hedge funds, accordingly, demanded that the managers distribute some of these cash flow to shareholders rather than reinvest it.

Furthermore, one way to understand the pressure to increase payouts is that they push managers to invest from external funds rather than from internal funds. That is, to send them to raise capital in the market for their investments. Only if they pass the market test for these investments they should pursue them. Indeed, consistent with these interpretation, Fried and Wang found that while firms payout more than 90% of cash flow, they also issued new equity in significant value.[242] In particular, they find that after these issues are taken into account, the net payouts to shareholders, are around 41%, less than half of the total payouts.[243]

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[236] *See* William Lazonick, *Profits Without Prosperity*. 92 HAR. BUS. REV. 46 (2014)
[237] Malmendier & Tate, *Investment, supra* note 38.
[238] Malmendier & Tate, *Investment, supra* note 38.
[239] *Id.*
[240] *See* Malmendier & Tate, *Acquisitions, supra* note 39 (finding that overconfident CEO are likely to make value destroying acquisitions, and the effect is stronger "if they have access to internal financing.")
[241] *See* Malmendier & Tate, *Investment*, supra note 38 (finding that overconfident CEOs "overinvest when they have abundant internal funds, but curtail investment when they require external financing." and that this "sensitivity of investment to cash flow is strongest for CEOs of equity-dependent firms, for whom perceived financing constraints are most binding.")
[242] Fried & Wang, *supra* note 40.
[243] *Id.*

As the following section shows, the long-termism bias also has implications to the type of acts that could limit overinvestment.

3. Independent & Activist Directors – Monitoring to Limit Overconfidence

Long-termism, since it is driven by overconfident, underscores the need in effective and engaged directors.[244] Board members could provide an immediate feedback that should constraint overconfidence and long-termism. Studies on the passage of SOX, and the requirement to implement majority of independent directors found that this change has affected firms with overconfident managers. In those firms, whose managers were classified as overconfident, investment declined significantly, and firm performance has increased.[245] Independent directors thus, limited investment in projects that were overestimated by management.[246]

Activists increasingly nominate members to firms' boards, more and more via settlements with firms' management. These board members, this Article suggests, could have a role in limiting overconfident, undesirable investments. Recent evidence is indeed supportive of activists' directors adding value to firms.[247] To begin with, when activists gain board representation they hold stock in the target for a median of 3 years. Second, the study finds long-term improvement in operating performance–during the five years following activism, returns on assets (ROA) increased in 2% in average – for these firms.[248] The authors then conclude that:

> "the relatively long-term holding period in cases where activists become directors, positive stock market effect, and long-term operating performance improvements seem inconsistent with activist directors being short-termist."[249]

Also consistent with at least an aspiration to improve long-term investments on activists side: Board settlements frequently ask to establish a strategic committee, that will constantly review and shape the firm's long-term strategy.

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[244] Malmendier & Tate, *Investment, supra* note 38, at 36 ("the results confirm the need for independent and vigilant directors")

[245] *See* Banerjee et al., *supra* note 42.

[246] *See* Coffee & Palia, *supra* note 10, at 576 (surveying studies that find that hedge fund activism is associated with a decline in R&D investment).

[247] *See* Ian Gow, Sean Shin & Suraj Srinivasan, *Activist Directors: Determinants and Consequences*, HBS Working Paper 14-120 June 26, 2014, available at https://www.hbs.edu/faculty/Publication%20Files/14-120_451759fe-d298-4072-81d1-b007fd4d5bc0.pdf

[248] *Id*., at 3.

[249] *Id.*, at 4.

C. Policy Implications

1. Weak Case for Proposed Regulations – including Rules to limit Hedge Funds Activists, and Eliminate Quarterly Reporting

The significant concerns with respect to short-termism have lead policy makers, Judges, Academics, and practitioners – including those that usually object any form of regulation in corporate law– to advocate regulatory changes to curb short termism and encourage long-termism. For example, soon Congress will consider the proposed Brokaw Act, that would limit hedge funds profits from investments and activism. [250] The concern of short-term bias, as expressed by co-sponsoring Senator Tammy Baldwin (D-Wis.) is the direct and almost sole motivation for the Act: "We cannot allow our economy to be hijacked by a small group of investors who seek only to enrich themselves at the expense of workers, taxpayers and communities."[251] The proposed Brokaw Act will direct the SEC to amend section 13(d) reporting rules in several respects.[252] Most notably, the amendment will shorten hedge funds reporting window to investors, after they purchase 5% of the company stock to four days.[253] Under federal laws any investor who buys more than 5% of a firm's shares is obliged to file a 13D disclosure form that reports the investor identity, ownership, whether the investor has an intention to take over the company, and other relevant details. Under the current 13D, investors have a 10-day window to file a 13D from the day they become a beneficial owner (that is when they own more than 5%). When a 13D is filled, is when the market learns that the firm was targeted by a hedge fund activist, which typically triggers a significant positive market response. Thus, hedge fund managers typically purchase more shares within the 10-day window when the price hasn't gone up yet. Shortening the window to 4 days could limit the amounts of shares that hedge funds can buy in pre-announcement market price, and in turn their overall profits from activism. Second the amendment will broaden the act applicability to cover short positions and derivatives.[254] Third, the amendment will broaden the definition of group to include "wolf pack" coordination among hedge funds in purchasing an initial block.[255] Similarly, the concern of short-term bias and its effects on long-term growth has led to proposals to eliminate the requirement that firms will make their performance public every quarter. In a recent publication the conference board called to replace quarterly reports and guidance with long-term, possibly a 1-year guidance.[256]

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[250] BROKAW ACT, S. 1744, 115TH CONG. (2017), available at https://www.baldwin.senate.gov/imo/media/doc/Brokaw%20Act%20Bill%20Text.pdf; an earlier version was submitted in 2016 but was not voted on. *See* BROKAW ACT, S. 2720, 114TH CONG. (2016).

[251] *See* Danna Borak & David Benios, *Democrats Take Aim at Activist Investors*, WSJ (March 17, 2016), available at https://www.wsj.com/articles/democrats-take-aim-at-activist-investors-1458251491

[252] See Brokaw Act, supra note 250.

[253] *Id.*, at 2.

[254] *Id.*, at 8.

[255] *Id.*, at 12-13.

[256] Martin Lipton, *Legal & General Calls for End to Quarterly Reporting*, http://corpgov.law.harvard.edu/2015/08/19/legal-general-calls-for-end-to-quarterly-reporting/

Since market mechanism seems to limit costs on both sides, the case for regulating short-termism, this Article suggests, is highly doubtful. Advocates of these policies acknowledge potential costs that typically are associated with regulation.[257] Furthermore, the analysis here suggests that curbing short-termism could result in higher and costlier long-term bias. Thus, eliminating quarterly reporting, for example, could result in increased long-term bias, on top of the significant costs that would result from lack of transparency to shareholders. If at all, our analysis suggests, regulation should be directed at facilitating and improving biases interaction, with the goal of minimizing the costs of long-termism and short-termism.

2. Directors' Fiduciary Duties

Judges of Delaware courts have frequently pronounced concerns with respect to short-termism and its effect on management. Accordingly, to discourage short-termism, in a precedential decision, Vice Chancellor Laster has modified the framework for directors' fiduciary duties-to require that directors will "manage for the long-term".[258] Under Delaware law, directors typically get the deference of the business judgement rule (BJR) – if they were sufficiently informed and not conflicted – the court will not judge the wisdom of their business decisions with a hindsight. While directors' fiduciary duties were always understood to require them to act to maximize firm value, the exact time horizon to act for, was presumed to be in their discretion.[259] Yet, under Laster's long-term rule, a director that acts to maximize short term value may be considered conflicted. Moreover, a director who is nominated by an investor with a short-term horizon, would be considered a-priory as being in a conflict of interests with the company and its shareholders.[260] Since "a different

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[257] See Suresh Nallareddy, Robert Pozen & Shivaram Rajgopal, *Consequences of Mandatory Quarterly Reporting: the UK Experience.* Unpublished manuscript 2016, Columbia University, Duke University, and Massachusetts Institute of Technology, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2817120

[258] In re Trados Inc. S'holder Litig., 73 A.3D 17, 37 (DEL. CH. 2013) ("Focusing on long-term investments rather than short-term gains is the proper role of managers, board members and investors. The goal of corporate law is the promotion of long-term value via supporting long term investments.") *Op. Cit. 50*. ("the blockholder director's duties to the corporation require that the director manage for the long term, while the blockholder director's duties to the investor require that the director manage for an exit."). *See also* In Re Rural/Metro Corporation S'Holders Litig., 102 A.3D 205, 253 (DEL. CH. 2014)

[259] While Laster draws his decision from what he views as a long-standing duty to maximize long term value, many view the decision as precedential under Delaware law. *See e.g.*, Jack Bodne, Leonard Chazen & Donald Ross, Covington & Burling LLP., *VC Laster, Fiduciary Duties and the Long-Term Rule*, LAW 360 (March 11, 2015), available at https://www.cov.com/-/media/files/corporate/publications/2015/03/vc_laster_fiduciary_duties_and_the_long_term_rule.pdf ("The notion that directors are required to maximize value over the long term and that directors who represent stockholders with short-term investment horizons necessarily face a conflict of interest…represent a significant change in the law").

[260] *Id*., at 50.

investment time horizon" by itself, Laster decides, could result in an inference of conflict of interest, by Delaware courts.[261]

A determination of conflict of interests, not only strips directors from the protection of the BJR, but it also results in the highest standard of review applied by Delaware courts – the entire fairness standard (EF). Under this standard, which is typically reserved to direct conflict of interest contexts such as self-dealing, the director has the burden to prove the fairness of the transaction and the fairness of the price. The standard is difficult to meet, and a determination of conflict of interest results in a real risk that the director will be found to breach her duty of loyalty to shareholders. Furthermore, while Delaware law provides additional layers to protect directors from monetary liability for a breach of duty of care, it does not award these protections if the director was found to breach her of duty of loyalty. The long-term rule however, could expose directors that were nominated by activists hedge fund, to high risk of liability.

<u>The analysis here suggests that directors could contribute to shareholder value by limiting long-term bias. Indeed, studies on independent directors found that, independent directors that were mandated by SOX and the listing standards contributed especially to firms with overconfident managers. After these directors joined the board, these firms reduce investments, and improved performance and value.</u>

<u>Delaware courts should apply fiduciary duties in a way that will not put directors who monitor overconfidence at risk. More nuanced approach, for example, could ask whether the directors genuinely believed that this is the right way to maximize value</u>

3. Incentive Based Compensation

In addition to regulating hedge funds, and other sources of short termism, executive compensation, it has been argued, should be changed to better tie managers' wealth to the firm long-term performance. One commentator argued that

> "The most effective way to curb short-termism would be to lengthen the time horizons in the compensation packages of asset managers and corporate executives."[262]

Long-term compensation, it is argued, would align managers incentives with the long-term shareholders. Furthermore, long-term compensation it is believed, also prevents executives from overinvesting.[263] Yet, creating long term incentives would actually

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[261] *See* Laster & Zeberkiewicz, *supra* note 14, at 49.

[262] *See* Robert Pozen, *Curbing Short-termism in Corporate America: Focus on Executive Compensation* (BROOKINGS INSTITUTION 2014) (advocating restrictions on selling stock and options, and long-term bonuses for executives); *see also* Martin Lipton & Sebastian V. Niles , *The Spotlight on Boards 2017,* HARV. L. SCHOOL. F. ON CORP. GOVERNANCE & FIN. REG. (January 29, 2017), available at https://corpgov.law.harvard.edu/2017/01/29/the-spotlight-on-boards-2017-2/ ("Determine executive compensation to encourage and reward executives for accomplishing business goals in furtherance of the company's long-term strategy").

[263] *See* Coffee & Palia, *supra* note 10.

exacerbate the bias of overconfident managers who tend to believe that their long-term investments will succeed.[264] Indeed, overconfident CEOs show higher demand for incentive-based compensation than CEO that are not overconfident.[265] Yet, it was found that these managers who hold on to their option all the way till expiration, lose money from not exercising them earlier – that is, their predictions turned out to be unrealistic.[266]

4. Just Say No?

Finally, the analysis has implications to Delaware courts approach to takeover cases – in the particular circumstances in which the company is not for sale. If managers have a long-term plan for the company, that a hostile bidder might interrupt, Delaware courts have allowed managers to resist the hostile bid forever, regardless of how high the price the bidder offering to shareholders. Delaware courts also decided that managers do not have to convince the court that their long-term plan will result in higher better value for shareholders than the bidder's offer. Rather, as long as they are sufficiently informed and genuinely believe that their long-term plan will eventually result in higher gains for shareholders, they are allowed to "Just Say No" to the bidder.[267] If managers choose to just say no, the result is that they block the bidder. Thus, shareholder do not have the option to sell their shares in a premium to the bidder even if they do not believe in management' long-term plan. The Delaware Supreme court though, accepted the argument that shareholders might mistakenly sell their shares in a high premium, since they do not understand that the value of the long-term plan is higher.[268]

Our analysis suggests however that some managers systematically overestimate the value of their long-term investments. Thus, there is also a concern that managers will mistakenly block a igh premium offer to shareholders, in order to protect a long-term plan that will never achieve the same value as the offer did. Thus, shareholder desire to tender, which reflects their view that the manager overestimates the value of her project, at the very least, should be given some weight.

5. Dual Class IPO

Our analysis also helps in explaining, and has implications for, another important increasing trend – companies that conduct their IPO with a dual class stock structure. A dual-class, under which some shares - typically the ones belong to the founders – have significantly more votes than the company's common stock, result in separation of ownership and control. Founders have sufficient votes to control the firms but since they

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[264] *See e.g.,* Malmendier & Tate, *Investment, supra* note 38, at 36 ("Specifically, standard incentives such as stock- and option-based compensation are unlikely to mitigate the detrimental effects of managerial overconfidence.")

[265] *See* Humphery-Jenner et al., *Overconfidence & Compensation, supra* note 181.

[266] *See e.g.,* Malmendier & Tate, *Investment, supra* note 38.

[267] *See e.g., Paramount Communications, Inc. v. Time Incorporated,* FED. SEC. L. REP. (CCH) ¶ 94, 514; AFF'D, 571 A.2D 1140 (DEL. 1989).

[268] *Id.*

own only a small fraction of the firm cash flow they bear only a partial part of the consequences of their decisions.

Scholars have come with explanations as to why dual class stock may increase value.[269] The founder chooses a dual class structure to limit short-term focused investors from intervening in her long-term project.[270] Our analysis suggests however, that while at times the founder is right at her assessment, at other times, the choice of dual class is motivated by her optimism with respect to her long-term investments. Thus, on the one hand, investors who are aware of their own biases might view dual class as a valuable commitment mechanism to avoid a short-term pressure. On the other hand, dual class might be traded at discount as the founder opinions of the firm prospect are different from investors' opinions. Yet, if the founder genuinely believes that investors are wrong, and that they will intervene in her project due to their short-term bias, we might stick with the dual-class even if this choice would result in a discount to the IPO price.

V. Conclusion

A significant literature has accumulated about short-term bias. This Article, is the first to argue that managers also suffer from a long-term bias. Analyzing extensive literature on overconfidence, and three illustrative cases – Yahoo, AOL and Navistar - the Article has shown that long-term projects are prone to overestimation. The high upside they offer is especially tempting to optimist managers; the long-term horizon and vagueness of the initial plan exacerbate the origins of over confidence – illusion of control, overestimation of relevance of one's skills, competition neglect and commitment to the project; and the factors that constraint overconfidence – clear and immediate feedback, benchmark data and learning – are lacking.

Since long-term projects are prone to overconfidence, and in turn to overestimation, managers might prefer them over superior short-term projects or gains. In our framework long-term bias interacts with short term-bias. Hedge fund activists pressure managers to distribute funds - sometimes due to their short-term bias, and sometimes in order to prevent them from investing in long term investments that they overestimated – limit overconfident investments in long-term projects.

Our framework has implications for data interpretation and policy. At the very least it suggests great cautiousness in treating short-termism with regulation, as is currently offered by many. On top of the typical costs associated with regulation, curbing short termism could lead to an increase in costs of long termism bias.

[269] *See* Goshen & Hamdani, *supra* note **Error! Bookmark not defined.**.
[270] *Id.*