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# ACCOUNTABILITY WITH A CAPITAL "ISM": A COMPUTATIONAL SIMULATION OF THE ACCOUNTABLE CAPITALISM ACT VS. DELAWARE CORPORATE LAW

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*In 2018, U.S. Senator Elizabeth Warren proposed S.B. 3348, the Accountable Capitalism Act. This Act seeks to alter corporate behavior to balance the effects of corporate actions across several different stakeholder groups, rather than focusing on the primacy of shareholders as is conventional in many U.S. state corporate laws. It has traditionally been difficult to determine the effects of the law in advance. However, innovative work in empirical legal studies is*

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*enabling experimental evaluations of laws through participatory simulation. We implemented such a simulation to compare the effects of the Accountable Capitalism Act vs. Delaware corporate law on director behavior.*

*We deployed this simulation to 300 human participants via Amazon's crowdsourcing platform. Building on previous findings that showed that participants assigned to act as shareholder-selected directors and instructed via the Accountable Capitalism Act favored shareholders over other stakeholders in forced-choice contexts, this study found that such participants instructed via Delaware corporate law favored shareholders over other stakeholders as well. However, in a context where the alternate option was one that provided balanced benefits for several stakeholder groups, those instructed via Delaware corporate law placed significantly greater emphasis on shareholders than did those instructed via the Accountable Capitalism Act.*

*Based on the results from the human participants, we constituted 3000 "virtual boards of directors," composed of randomly selected groups of study participants assigned to different types of directorships. Results from the virtual boards of directors suggest that boards composed of shareholder-selected directors instructed via the Accountable Capitalism Act led to lower levels of disparity across different stakeholder groups than those composed of shareholder-selected directors instructed via Delaware corporate law. In addition, those composed of 60% shareholder-selected directors and 40% employee-selected directors, as specified in the Accountable Capitalism Act, led to still lower levels of disparity than those composed solely of shareholder-selected directors.*

*While these findings are based on interactive simulations rather than the real world, and based on the behavior of everyday people rather than business executives, they nevertheless provide experimental evidence that two key aspects of the Accountable Capitalism Act—the requirement for directors to consider the effects of corporate actions on various stakeholder groups, and the representation of employees on corporate boards—both produce results in line with their desired effects. Taken together, these results provide experimental support for*

*the proposition that the Accountable Capitalism Act would lead to more balanced corporate behavior than does Delaware corporate law.*

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## I. Introduction[10]

"Scholars, lawyers, judges, and policy-makers frequently need to compare corporate laws."[11] Over the past two decades, the field of empirical legal studies has explored a range of novel empirical approaches to understanding the law. One promising technique in this field is the concept of participatory simulation. Originally arising from the field of education,[12] participatory simulation has begun to be

[10] Portions of this paper are adapted from an earlier conference publication. *See generally* B. Tomlinson et al., *A Participatory Simulation of the Accountable Capitalism Act*, *in* PROCEEDINGS OF THE 2020 CHI CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS (2020), available at https://www.ics.uci.edu/~wmt/ACA_CHI.html. The instant Article is a full-length scholarly treatment that includes significant novel results.

[11] Lynn M. LoPucki, *A Rule-Based Method for Comparing Corporate Laws*, OXFORD L. FAC.: OXFORD BUS. L. BLOG (Mar. 22, 2018), https://www.law.ox.ac.uk/business-law-blog/blog/2018/03/rule-based-method-comparing-corporate-laws [https://perma.cc/36FC-H655].

[12] *See, e.g.*, Uri Wilensky & Walter Stroup, *Learning Through Participatory Simulations: Network-Based Design for Systems Learning in Classrooms*, *in* PROCEEDINGS OF THE 1999 CONFERENCE ON COMPUTER SUPPORT FOR COLLABORATIVE LEARNING 667 (Christopher M.

brought to bear on legal questions, such as the efficacy of patent systems.[13]

In this article, we use a novel participatory simulation to compare two legal frameworks: one that is currently in place, and a second that has been proposed as a complement to the first. Specifically, this paper examines the effects of elements of Delaware corporate law, the dominant legal framework for corporations in the United States, and compares them to the effects of analogous elements of the Accountable Capitalism Act,[14] a piece of legislation proposed in the U.S. Congress.

The goal of the Accountable Capitalism Act, according to a press release by the proposer of the act, Senator Elizabeth Warren, is to produce "broad-based growth that help[s] workers and shareholders alike."[15] We examine two provisions of this act in particular: the first "obligates company directors to consider the interests of all corporate stakeholders," and the second specifies that "boards of United States corporations must include substantial employee participation."[16]

We compare these two provisions with the most common state-based legal framework for corporations in the United States, Delaware corporate law. The analogous provisions in Delaware law are both focused on shareholders,[17] providing shareholders with the right to elect directors[18] and requiring directors to "act in good faith to advance the

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Hoadley & Jeremy Roschelle eds.), available at https://dl.acm.org/doi/pdf/10.5555/1150240.1150320.

[13] *See generally* Andrew W. Torrance & Bill Tomlinson, *Patent Expertise and the Regress of Useful Arts*, 33 S. ILL. U. L.J. 239 (2009).

[14] Accountable Capitalism Act, S. 3348, 115th Cong. (2018).

[15] Press Release, Elizabeth Warren, Accountable Capitalism Act One-Pager (2019), https://www.warren.senate.gov/imo/media/doc/Accountable%20Capitalism%20Act%20One-Pager.pdf.

[16] *Id*.

[17] We here conflate shareholders and stockholders for simplicity, despite some ambiguity over whether a distinction exists between the two terms. *See* Gordon Smith, *Shareholder v. Stockholder: The Delaware Canard*, THE CONGLOMERATE (May 23, 2006), https://www.theconglomerate.org/2006/05/shareholder_v_s.html [https://perma.cc/G4LU-FDS2].

[18] DEL. CODE ANN. tit. 8, § 214.

best interests of the corporation"[19] (and hence typically in the best financial interest of the shareholders).

This article presents results from a computational business simulation in which human participants play the role of directors of fictional corporations. After a brief introduction to the relevant law and their role in it and a tutorial about how the simulation works, participants are tasked with making decisions on behalf of the corporation they direct. After completing a set of twelve decisions, interleaved with several second-long periods during which the simulation unfolds based on the decisions they took, participants are then asked to answer a few questions about their experience. Throughout the process, the computational system collects data about the choices they made and what they wrote in response to the end-game questions.

The study team used the Amazon Mechanical Turk[20] online crowdsourcing platform ("AMT") to launch the study with 300 participants—100 assigned as shareholder-selected directors instructed via Delaware corporate law, 100 assigned as shareholder-selected directors instructed via the Accountable Capitalism Act, and 100 assigned as employee-selected directors instructed via the Accountable Capitalism Act.

The core findings from this study fall into three main groups. First, the study produced findings about whether participants assigned as shareholder-selected directors under different legal frameworks tended to favor the shareholders over other stakeholder groups when forced to choose. Just as previously published results from this study showed that participants assigned as shareholder-selected directors and instructed via the Accountable Capitalism Act significantly favored shareholders over other stakeholder groups, so too did such participants instructed via Delaware corporate law favor shareholders over other stakeholder

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[19] *The Delaware Way: Deference to the Business Judgment of Directors Who Act Loyally and Carefully*, DELAWARE.GOV, https://corplaw.delaware.gov/delaware-way-business-judgment/[https://perma.cc/2TX8-ZWPR].

[20] This system's name is problematic. *See* Ayhan Aytes, *Return of the Crowds: Mechanical Turk and Neoliberal States of Exception, in* DIGITAL LABOR 79 (Trebor Scholz ed., 2012). For clarity, we include the full name here, but use AMT in the remainder of the article.

groups (61.3%, p=0.0021*[21]). The fact that they exhibited this favoritism is unsurprising, since participants were (1) told that the shareholders selected them, and (2) explicitly instructed that they owed a fiduciary duty to the shareholders. However, the fact that the effect was statistically indistinguishable from the effect seen under the Accountable Capitalism Act, rather than significantly greater, was unexpected.

Second, the study produced findings about the effect of different legal frameworks on the behavior of participants assigned as shareholder-selected directors regarding whether they favored balanced choices (e.g., where each of three stakeholder groups benefited equally from a particular decision) or polarized choices (e.g., where the decision produced benefit exclusively for one stakeholder group). The study found that, as was previously found regarding shareholder-selected directors under the Accountable Capitalism Act,[22] shareholder-selected directors under Delaware corporate law strongly disfavored polarized choices favoring employees (15.0%, p<0.000001**) or the environment (14.0%, p<0.000001**) when offered a balanced alternative. However, unlike shareholder-selected directors under the Accountable Capitalism Act, shareholder-selected directors under Delaware corporate law exhibited only a weak disfavoring of shareholders (43.0%, p=0.18) when offered a balanced alternative. Their degree of favoring of shareholders was significantly greater than their preference for employees (p=0.000027**) or the environment (p=0.000012**), and significantly greater than the preference for shareholders exhibited by shareholder-selected directors acting under the Accountable Capitalism Act (p=0.0032*). While it is unsurprising that participants acting as shareholder-selected directors under Delaware corporate law would favor shareholders more so than employees or the environment, it was surprising that this effect was not stronger—that those participants still

[21] All p-values for results relating to a single observed proportion (e.g., the degree to which participants instructed via Delaware corporate law favor shareholders) were calculated using a one-proportion Z-test. All p-values for results comparing across two observed proportions (e.g., favoring of shareholders vs. favoring of employees) were calculated using a two-tailed, two-proportion z-test. The p-value used for a statistically significant result (*) was set as 0.05, and highly significant (**) at 0.001.

[22] *See supra* text accompanying note 21.

favored balanced choices rather than opting for choices that strongly favored shareholders.

Third, the study produced results about how much differently-composed boards benefit different stakeholder groups relative to each other. Based on 3000 "virtual boards of directors" that were created using randomly-selected participants of particular types, the study found that boards composed solely of shareholder-selected directors under Delaware corporate law produced the greatest disparity in outcomes for different stakeholder groups, followed by exclusively shareholder-selected boards under the Accountable Capitalism Act, followed by the 60%/40% split (the ratio proposed by the text of the Accountable Capitalism Act), which produced the most balanced outcomes.

In sum, while participants acting as shareholder-selected directors instructed via both legal frameworks favored their own stakeholder groups in forced-choice contexts, shareholder-selected directors acting under Delaware corporate law exhibited a much more significant bias toward shareholders when given the opportunity to choose a balanced approach than did directors under the Accountable Capitalism Act. These biases led to virtual boards under Delaware law taking actions that had the greatest disparity among outcomes for different stakeholder groups, and boards with both shareholder and employee representation under the Accountable Capitalism Act producing the most balanced outcomes.

The authors recognize that there are numerous reasons why these findings may be different from real-world contexts. Most prominently, AMT workers are not CEOs, and a simple business simulation is not the real world. Nevertheless, this study provides an example of how researchers can examine critical questions about representation on corporate boards experimentally, and the results from the study offer experimental evidence that both the requirement for employee representation and requirement to seek balance in the Accountable Capitalism Act have concrete effects on the behavior of participants acting as corporate directors. The process used here could provide a useful and efficient mechanism for understanding the impacts of proposed laws.

This study makes two main contributions to legal scholarship. First, it presents the first experimental comparison of Delaware corporate law and the Accountable Capitalism Act. Second, it offers a demonstration of the potential value of participatory simulations in empirical legal studies, providing a new method through which citizens may explore law by making decisions with legal and societal consequences, but doing so without doing actual harm to society.

While not every question can be answered with data, many can; the authors hope that efforts that, at least in part, pursue data-driven scholarship around the law could help legal systems more directly reflect the desires of the communities that they serve than do approaches that are less data-rich. These results provide significant experimental support that the Accountable Capitalism Act would likely lead to more balanced corporate behavior than does the current Delaware legal framework.

## II. Introduction to Delaware Corporate Law

### A. Why Do We Examine Delaware Corporate Law?

Corporate law in general governs the relationships among shareholders, boards of directors, creditors, and managers of corporations. Each state's corporate law dictates different incorporation processes and has different implications for the fundamental nature of corporations based in that state.[23] Therefore, the relationship between shareholders and directors largely depends on the state of incorporation. In the United States, more than two-thirds of Fortune 500 companies choose to incorporate in the state of Delaware[24] because, with an active local bar,

[23] *See generally* Faith Stevelman, *Regulatory Competition, Choice of Forum, and Delaware's Stake in Corporate Law,* 34 DEL. J. CORP. L. 57 (2009).
[24] Brett Melson, *200,000 New Delaware Companies in 2017,* DELAWAREINC (Aug. 28, 2018), https://www.delawareinc.com/blog/new-delaware-companies-2017/ [https://perma.cc/X6M5-UFFT].

statutes in Delaware are amended quickly to reflect current affairs.[25] Additionally, the well-developed body of case law in Delaware makes the rights and obligations of an entity more predictable.[26] Therefore, this article examines Delaware corporate law as representative of the current American corporate law model.

### B. How Do Shareholders Vote Under Delaware Corporate Law?

In general, when a shareholder purchases common stock in a company, the stock comes with voting rights and the benefit of fiduciary duties.[27] Delaware General Corporate Law ("DGCL") § 212(a) states that, unless otherwise provided in the charter, the default rule is one vote for each share of capital stock.[28] However, most scholars believe that American shareholders' control over the company is substantially limited to voting in or out the board of directors, although they do have the right to amend the charter or bylaws and, in theory, vote on any material changes in the nature of the company.[29] This is largely due to the impracticality of dispersed shareholders monitoring the board's behavior.[30] Investors manage their risk through diversification.[31] Therefore, when a shareholder is unsatisfied with a company's performance, most shareholders would rather just sell their stock than exercise their voting rights.[32] This issue of voting is further complicated by the existence of contingent voting rights under DGCL § 151.[33] Companies are allowed

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[25] Demetrios G. Kaouris, *Is Delaware Still a Haven for Incorporation?*, 20 DEL. J. CORP. L. 965, 973 (1995).
[26] *Id*. at 977.
[27] *See* Steven E. Bochner & Amy L. Simmerman*, The Venture Capital Board Member's Survival Guide: Handling Conflicts Effectively While Wearing Two Hats*, 41 DEL. J. CORP. L. 1, 27 (2016).
[28] DEL. CODE ANN. tit. 8, § 212.
[29] *See* Christopher John Gulinello, *The Revision of Taiwan's Company Law: The Struggle Toward a Shareholder-Oriented Model in One Corner of East Asia*, 28 DEL. J. CORP. L. 75, 93 (2003).
[30] *Id*.
[31] *See* Portia Policastro, *When Delaware Corporate Managers Turn Auctioneers: Triggering the Revlon Duty After the Paramount Decision*, 16 DEL. J. CORP. L. 187, 240 (1991).
[32] *See* Jayne Elizabeth Zanglein, *From Wall Street Walk to Wall Street Talk: The Changing Face of Corporate Governance*, 11 DEPAUL BUS. L.J. 43, 45 (1998).
[33] DEL. CODE ANN. tit. 8, § 151.

to issue different classes of stock with different voting powers—having voting powers dependent on facts ascertainable outside the charter.[34]

Shareholders can remove board members through the proxy process.[35] Although the proxy process reduces the costs of voting, it reinforces the coordination problem because shareholders rarely meet in the same room.[36] Proxy rules and processes generally advantage the incumbent board because the board has access to the company's finances.[37] Nowadays, shareholders seek to strengthen their control through institutional proxy voting advisors like Institutional Shareholder Services ("ISS").[38] These services advise shareholders on how they should vote on a particular matter and flag governance issues of particular concern.[39] ISS is influential globally,[40] and a huge number of institutional investors subscribe.[41] The ISS enables investors to collectively share information so they can vote as a bloc.[42]

Under current Delaware corporate law, some mechanisms exist to protect the rights of minority shareholders. For example, DGCL § 141(d) allows minority owners of a certain class of stock "to elect one or more directors with such term and voting powers . . . which may be greater or less than those of other directors."[43] DGCL § 214 allows a company to establish cumulative voting under the charter to protect minority shareholders.[44] Under cumulative voting, a company can have a total number of votes distributed by shareholders as they see fit.[45] This strengthens the minority shareholders' representation on the board;

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[34] *Id*.
[35] *See* J. Travis Laster, *Michelle D. Morris, How to Avoid a Collision Between the Delaware Annual Meeting Requirement and the Federal Proxy Rules*, 10 DEL. L. REV. 213, 221 (2008).
[36] *See* Rivka Weill, *Declassifying the Classified*, 31 DEL. J. CORP. L. 891, 916 (2006).
[37] *See* Camisha L. Simmons, *Lenders and Directors Beware of the Dead-Hand Proxy Put*, AM. BANKR. INST. J., Sept. 2015, at 20.
[38] *See* Sharon Hannes, *Super Hedge Fund*, 40 DEL. J. CORP. L. 163, 164 (2015).
[39] *Id*.
[40] *Id*.
[41] *See id*.
[42] *Id*.
[43] DEL. CODE ANN. tit. 8, § 141(d).
[44] *Id*. § 214.
[45] *See* JAMES D. COX & THOMAS LEE HAZEN, 2 TREATISE ON THE LAW OF CORPORATIONS § 13:22, Westlaw LAWOFCORP (database updated Dec. 2019).

otherwise, the majority just wins every seat. Under DGCL § 141(k)(2) the majority shareholders cannot remove the minority's directors without cause if there are still sufficient votes to have elected them originally.[46] In the case of a closely-held corporation, to avoid the risk that a few shareholders may gang up on another, some companies include a unanimity (supermajority) requirement in the charter under § 102(b)(4), which has the practical effect of giving a board member a veto right.[47]

### C. Business Judgement Rule and Directors' Fiduciary Duty

Under DGCL § 141(a), a company's board of directors has broad discretion to make decisions about the behavior of the corporation.[48] (Officers might typically be thought of as running the corporation, but this depends on how active the board of directors is.) Most publicly-traded companies include a provision in the charter allowing the board to amend bylaws.[49] However, a bylaw provision that would limit the board's discretion is invalid for violating DGCL § 141(a).[50] The business judgment rule is a rebuttable presumption in favor of the board applied upon judicial review of board actions.[51] The business judgment rule applies as long as there was no fraud or illegality on the part of the board, decisions were informed and made in good faith, and the board had no direct financial stake that would constitute a conflict of interest.[52] Burden is placed on the plaintiff to show violations of one of the above; if they do, then the burden shifts to the board to show that the action was still entirely fair.[53] A board, however, must be grossly negligent to fail this showing.[54]

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[46] DEL. CODE ANN. tit. 8, § 141(k)(2).
[47] *Id.* § 102(b)(4).
[48] *Id.* § 141(a).
[49] *See*, Christopher M. Bruner, *Managing Corporate Federalism: The Least-Bad Approach to the Shareholder Bylaw Debate,* 36 DEL. J. CORP. L. 1, 10 (2011).
[50] DEL. CODE ANN. tit. 8, § 141(a).
[51] *See*, Henry Ridgely Horsey, *The Duty of Care Component of the Delaware Business Judgment Rule*, 19 DEL. J. CORP. L. 971, 996 (1994).
[52] *Id.*
[53] *Id.* at 985.
[54] *Id.* at 973.

An illustration may be helpful. Imagine that the board of an automobile company decided to sell the cars it manufactured to its own workers at a "worker's discount" of 50%. Shareholders might object to this on the ground that such discounts would deny the company of potential revenue and profits, which might exert downward pressure on the company's share price. They might sue the board of directors for allowing such damaging behavior. Under the business judgment rule, a court would typically defer to the decisions of the board of directors, affording it substantial discretion. A justification by the board of directors that the worker's discount engendered worker loyalty or avoided the embarrassing spectacle of competitors' cars in the company parking lot might be sufficient to defeat the shareholders' action.

Because it is impractical for shareholders to closely monitor the board and because of the board's broad discretion under the business judgment rule, Delaware corporate law imposes fiduciary duties on the board that mandate the board to act in a manner that benefits shareholders.[55] The traditional common law approach narrowly focuses on the objective of a corporation to profit and benefit the shareholders by increasing wealth.[56] Regarding stakeholder interest, Delaware common law generally imposes a duty to act in the best interest of the shareholders, and the board can consider other stakeholders only to the extent that the consideration is rationally related to benefits that accrue to shareholders.[57] In *Revlon v. MacAndrews*, the court explicitly stated that the board *may* consider stakeholder interest to the extent that the benefit would flow to the shareholders.[58]

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[55] Myron T. Steele, *Judicial Scrutiny of Fiduciary Duties in Delaware Limited Partnerships and Limited Liability Companies*, 32 DEL. J. CORP. L. 1, 11 (2007).
[56] *Id.* at 5.
[57] *See, e.g.*, Local 1330, United Steel Workers v. U.S. Steel Corp., 631 F.2d 1264, 1279-82 (6th Cir. 1980) (holding that a corporation had no common law or contractual obligation to consider the effects of plant closures on employees or communities in which the plants were located); Metro. Life Ins. Co. v. RJR Nabisco, Inc., 716 F. Supp. 1504, 1524-25 (S.D.N.Y. 1989) (holding that a corporation did not owe fiduciary duties to bondholders); Mark E. Van Der Weide, *Against Fiduciary Duties to Corporate Stakeholders*, 21 DEL. J. CORP. L. 27, 86 (1996).
[58] Revlon, Inc. v. MacAndrews & Forbes Holdings, Inc., 506 A.2d 173, 182 (Del. 1986).

### D. Companies' Strategic Choices Under Delaware Corporate Law

Under Delaware corporate law, the Delaware Supreme Court has upheld the notion that shareholder benefits are still the primary concern of the board of directors.[59]

> Having chosen a for-profit corporate form, the craigslist directors are bound by the fiduciary duties and standards that accompany that form. Those standards include acting to promote the value of the corporation for the benefit of its stockholders . . . . Directors of a for-profit Delaware corporation cannot deploy a rights plan to defend a business strategy that openly eschews stockholder wealth maximization—at least not consistently with the directors' fiduciary duties under Delaware law.[60]

Judge Strine notes that corporations may be able to change the shareholder supremacy default when he writes:

> It may well be the case that a certificate of incorporation that said that a for-profit corporation would put other constituencies' interests on par with stockholders would, in view of § 101(b) [noting that corporations may be formed for 'any lawful business or purposes'], be respected and supersede the corporate common law. But, in the case of silence, the idea that directors can subordinate stockholder interests to other interests of the directors' choosing is strained and at odds with the structure of our overall statute.[61]

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[59] *Id.*
[60] eBay Domestic Holdings, Inc. v. Newmark, 16 A.3d 1, 34-35 (Del. Ch. 2010).
[61] Leo E. Strine Jr., *The Dangers of Denial: The Need for a Clear-Eyed Understanding of the Power and Accountability Structure Established by the Delaware General Corporation Law*, 50 WAKE FOREST L. REV. 761, 783 (2015).

There might be some room for the board to take into account other stakeholders' benefit. To start with, despite a board's fiduciary duty, nothing in the body of corporate law in Delaware technically limits a board from considering anything *temporarily*. In fact, under DGCL § 122, shareholders can expressly provide for the power of the board to account for ethical or philanthropic considerations.[62] Furthermore, under DGCL § 141(a), the board has broad discretion subject to the charter.[63] Therefore, a company can provide for consideration of non-shareholders in the charter. One proposing consideration of stakeholder interest could argue taking any stakeholder benefits into account benefits the company in the long run. Sometimes a board is explicitly authorized to consider non-monetary factors in the decision-making process. For example, under *Citizens United v. FEC*, corporations have first amendment rights to express political opinions, and the government cannot chill their political speech.[64] Culture is another factor a board might consider. In *Paramount Communications, Inc. v. Time, Inc.*, the preservation of *Time*'s culture of journalistic integrity was part of the Board's long-term strategy to maximize shareholder value.[65] The substantial difference, however, is that these cases base their rationale on the premise that these non-monetary factors nevertheless benefit shareholders in the long run.

One of the most essential strategic choices a board faces is whether to distribute their profits as dividends or to reinvest. Under Delaware corporate law, mechanics exists to ensure distribution of dividends, which, on the flip side, limits reinvestment. Under DGCL § 170, unlike interest payments on debt, which are fixed by contract, dividends are discretionary even for preferred stock.[66] However, preferred stockholders sometimes implement mechanisms to ensure the issuance of dividends. For example, some shareholders would enter into a shareholder's agreement under DGCL § 218(c) to form a contract that

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[62] DEL. CODE ANN. tit. 8, § 122.
[63] *Id.* § 141(a).
[64] Citizens United v. FEC, 558 U.S. 310, 365 (2010) ("We return to the principle . . . that the Government may not suppress political speech on the basis of the speaker's corporate identity.").
[65] *See* Paramount Commc'ns, Inc. v. Time, Inc., 571 A.2d 1140, 1149-52 (Del. 1989).
[66] DEL. CODE ANN. tit. 8, § 170.

requires all votes be cast in favor of certain shareholders' nominees in the event that dividends are not paid.[67] Others force a penalty provision that triggers contingent voting rights when dividends are not paid.[68]

Delaware has made attempts to account for stakeholders. For example, DGCL §§ 361 to 368 provide for a new type of corporation, a benefit corporation, which is a for-profit firm, but whose board is required to consider not just shareholders' financial interests, but also the environment and society in its actions.[69]

## III. Stakeholder Representation on Corporate Boards

There have been relatively few theoretical or empirical studies on the Accountable Capitalism Act since its recent proposal, despite numerous in-depth theoretical studies on stakeholder participation. Theoretical studies have discussed the rationale of long-term benefit of stakeholder participation and different failed proposals in American history.[70] These studies, however, are largely based on the European codetermination model. Since the European corporate law model differs considerably from its counterpart in America,[71] these studies bear only reference value. The findings of this simulation have filled a gap in empirical studies on the Accountable Capitalism Act.

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[67] *Id.* § 218(c).
[68] PAUL J. GALANTI, 18 INDIANA PRACTICE, BUSINESS ORGANIZATIONS § 20.10, Westlaw INPRAC (database updated Oct. 2020).
[69] DEL. CODE ANN. tit. 8, §§ 361-68.
[70] *See, e.g.*, Julian Constain, *A New Standard for Governance: Reflections on Worker Representation in the United States*, 24 FORDHAM J. CORP. & FIN. L. 409 (2019); Karen Bradshaw, *Agency Engagement with Stakeholder Collaborations, in Wildfire Policy and Beyond*, 51 ARIZ. ST. L.J. 437, 440 (2019); J. Haskell Murray*, Adopting Stakeholder Advisory Boards*, 54 AM. BUS. L.J. 61, 63 (2017); Alicia E. Plerhoples, *Social Enterprise as Commitment: A Roadmap*, 48 WASH. U. J.L. & POL'Y 89, 92 (2015); Amir N. Licht, *The Maximands of Corporate Governance: A Theory of Values and Cognitive Style*, 29 DEL. J. CORP. L. 649 (2004); Van Der Weide, *supra* note 57, at 66.
[71] *See generally* Sofie Cools, *The Real Difference in Corporate Law Between the United States and Continental Europe: Distribution of Powers*, 30 DEL J. CORP. L., 697 (2005).

### A. Theoretical Studies

#### 1. The Accountable Capitalism Act

As one of the few scholars who has closely examined the Accountable Capitalism Act since its proposal, Brett McDonnell has suggested that having employees elect representatives to the board of directors can change corporate as well as director behavior through information sharing and creating incentives.[72] McDonnell suggests that when employees elect directors from the population of employees themselves, those representatives will have direct knowledge about what and how decisions affect their fellow employees.[73] Furthermore, the collective behavior of the board will inevitably be affected because these employee-selected directors are motivated to take into account their own interests.[74] Therefore, the Accountable Capitalism Act "address[es] the separation of benefit from control directly."[75]

Furthermore, when there is no incentive benefit of employee voting, directors may not take into account employees' or other stakeholders' benefit despite their awareness of such interest.[76] McDonnell proposes that with employees possessing voting rights, directors will be more likely to convey information of concern to employees and account for their interest in solicitation of votes.[77] He also notes that these changes of behavior are theoretically different in public companies, as those companies bear more short-term pressure from the market.[78]

In examining the German codetermination system, O'Connor similarly proposed that it "restrains opportunistic conduct" by corporations because employees can hold directors accountable in the future for

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[72] *See* Brett H. McDonnell, *From Duty and Disclosure to Power and Participation in Social Enterprise*, 70 ALA. L. REV. 77, 82 (2018).
[73] *Id.*
[74] *Id.*
[75] *Id.*
[76] *Id.* at 102.
[77] *Id.*
[78] *Id.* at 118.

implicit employment arrangements.[79] The concept of codetermination was first created and adopted in Europe.[80] Germany is the first and perhaps most typical example of a worker-representation corporate structure.[81] Their Codetermination Act of 1976 mandates that companies with more than 2000 employees have employees appoint one half of their directors.[82] Different than American corporations, German companies have a separate supervisory board that oversees corporate behaviors.[83] Therefore, the workforce is, to some extent, granted a veto power in the running of company business.

Despite these positive enforcements that he believes will lead companies to "more effectively and consistently consider and give weight to the interests of" other stakeholder groups, McDonnell pointed out the potential increased cost of collective action and conflicts.[84] Specifically, employees must be able to make collective moves and devise a way to cast their vote in a manner that will sway the board's decision-making process.[85] He believes this is the reason why, compared to other stakeholders such as consumers and the environment, employees may benefit more from a codetermination corporate structure.[86]

McDonnell's concern with collective action cost is particularly relevant in the context of Delaware corporate law. Scholars have already noted that shareholders have less control over corporate behavior than directors, especially at present under the business judgment rule. In his paper examining the effectiveness of the Accountable Capitalism Act, Julian Constain pointed to the fact that many European codetermination legal frameworks are premised on the existence of powerful labor

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[79] *See* Marleen A. O'Connor, *The Human Capital Era: Reconceptualizing Corporate Law to Facilitate Labor-Management Cooperation*, 78 CORNELL L. REV. 899, 937 (1993).
[80] *Id.* at 902.
[81] *Id.* at 963.
[82] Hans-Joachim Mertens & Erich Schanze, *The German Codetermination Act of 1976*, 2 J. COMP. CORP. L. & SEC. REG. 75, 75 (1979).
[83] O'Connor, *supra* note 79, at 936.
[84] McDonnell, *supra* note 72, at 102-03.
[85] *Id.*
[86] *Id.* at 104.

unions.[87] Labor unions in the United States, however, cannot be said to be as effective as their counterparts in Europe.[88]

### 2. Other Models of Stakeholder Participation

Murray proposed the adoption of a stakeholder advisory board as a form of stakeholder participation in 2017.[89] Murray argues that socially conscious firms will function better with an advisory board consisting of stakeholders who also have some corporate governance power in addition to directly providing information about stakeholder needs to the board of directors.[90] Modeled after the existing forms in Germany and Japan, Murray proposed a two-tier board system where the stakeholder advisory board includes representatives from all the major corporate stakeholder groups.[91] Under this model, stakeholder representatives on the advisory board have a proper purpose for accessing books and records and will meet with the board of directors on a regular basis to engage in face-to-face dialogue regarding the issues facing the stakeholder groups. Stakeholder representatives will create regular reports to communicate with their respective groups and share progress. Murray proposed that stakeholder representatives should also have selective power in the form of proxy access rights, stakeholder proposal rights, and voting rights in change of control and board election situations. The major concern about this model is that directors will be self-seeking, although derivative lawsuits would still be available in those situations to check misbehaving directors.[92]

## B. Empirical Studies

The authors could not locate any empirical studies directly addressing the Accountable Capitalism Act. Julian Constain discussed a 2014 study that "found links between quasi-parity codetermination and job

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[87] *See* Constain, *supra* note 70, at 427.
[88] *Id.*
[89] *See* J. Haskell Murray, *Adopting Stakeholder Advisory Boards*, 54 AM. BUS. L.J. 61, 64 (2017).
[90] *Id.*
[91] *Id.* at 94.
[92] *Id.* at 99-106.

security."[93] Specifically, Constain noted that companies with a quasi-parity codetermination framework had a thirteen-percent difference in employment compared to firms without it.[94] Constain also pointed out that empirical studies on the effectiveness of German codetermination often reached conflicting conclusions.[95]

There have not been numerous empirical studies on the European codetermination model. Felix FitzRoy and Kornelius Kraft explored the impact of two kinds of board level worker codetermination on the productivity of firms.[96] In Germany, companies with 500–2,000 employees are required to allow employees to elect one third of their supervisory boards.[97] FitzRoy and Kraft found that the move toward worker codetermination after 1976 seems to have only slightly increased productivity in the affected firms.[98] The one-third codetermination also had a positive productivity coefficient in one specification.[99] FitzRoy and Kraft's result rejects the critical view that the move towards codetermination was primarily re-distributional.[100] To the contrary, Felix Hörisch's study demonstrates that higher levels of codetermination in western welfare states are associated with more equally distributed income levels.[101] Based on this result, Felix Hörisch concluded that codetermination is a political institution which improves distributive justice.[102]

## IV. Participatory Simulations

This research builds on substantial previous work in the design of participatory simulations. Participatory simulations are "role-playing activities aimed at exploring how complex dynamic systems evolve

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[93] Constain, *supra* note 70, at 430.
[94] *Id.* at 430-31.
[95] *Id.* at 430.
[96] *See generally* Felix R. FitzRoy & Kornelius Kraft, *Co-Determination, Efficiency, and Productivity* (Inst. for the Study of Lab., IZA Discussion Paper No. 1442, 2004).
[97] Gesetz über die Drittelbeteiligung der Arbeitnehmer im Aufsichtsrat [DrittelbG] [Third Participation Act], July 1, 2004, BUNDESGESETZBLATT JAHRGANG [BGBL I] at 974, § 1 (Ger.).
[98] FitzRoy & Kraft, *supra* note 96, at 19.
[99] *Id.*
[100] *Id.* at 13, 15, 19.
[101] Felix Hörisch, *The Macro-Economic Effect of Codetermination on Income Equality* 15 (Universität Mannheim, Working Paper No. 147, 2012).
[102] *Id.* at 20.

over time."[103] Researchers have used non-interactive simulations to enact many different hypothetical scenarios, from wars,[104] to fires,[105] to natural resource constraints,[106] to groups of people working collaboratively.[107] Agent-based modeling has been employed in a range of fields, particularly in economics and policy analysis.[108]

Participatory simulations move beyond purely computational simulations by enabling human decision-making to influence the outcome of the simulation in real time. This human participation is particularly relevant in contexts where humans may behave in ways that are irrational,[109] unpredictable, or otherwise not easily simulated. Participatory simulation is most well-known in its capacity as a tool for

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[103] Wilensky & Stroup, *supra* note 12, at 668.
[104] *See* Robert C. Rubel, *The Epistemology of War Gaming*, 59 NAVAL WAR COLL. REV., Spring 2006, at 108.
[105] *See, e.g.*, Richard Bukowski & Carlo Séquin, *Interactive Simulation of Fire in Virtual Building Environments*, *in* PROCEEDINGS OF THE 24TH ANNUAL CONFERENCE ON COMPUTER GRAPHICS AND INTERACTIVE TECHNIQUES 35 (1997), available at https://doi.org/10.1145/258734.258757.
[106] Nicolas Becu et al., *Participatory Simulation to Foster Social Learning on Coastal Flooding Prevention*, 98 ENV'T MODELLING & SOFTWARE 1, 1 (2017); C. Legrand et al., Participatory Simulation for Coordination Awareness Concerning Small Water Infrastructure and Drought Adaptation Planning in Semi-Arid Mozambique (2014) (presented at the 15th WaterNet/WARFSA/GWP-SA Symposium), available at https://agritrop.cirad.fr/574932/1/document_574932.pdf.
[107] Nathan Bos et al., *In-Group/Out-Group Effects in Distributed Teams: An Experimental Simulation*, *in* PROCEEDINGS OF THE 2004 ACM CONFERENCE ON COMPUTER SUPPORTED COOPERATIVE WORK 429, available at https://dl.acm.org/doi/10.1145/1031607.1031679.
[108] *See generally* Keari Bell-Gawne et al., *Meaningful Play: The Intersection of Video Games and Environmental Policy*, 5 WORLD FUTURES REV. 244 (2013); Eric Bonabeau, *Agent-Based Modeling: Methods and Techniques for Simulating Human Systems*, 99 PROC. NAT'L ACAD. SCI. U.S.A. 7280 (2002); LYNNE HAMILL & NIGEL GILBERT, AGENT-BASED MODELLING IN ECONOMICS (2015); AMY R. POTEETE, MARCO A. JANSSEN & ELINOR OSTROM, WORKING TOGETHER (2010); STEVEN F RAILSBACK & VOLKER GRIMM, AGENT-BASED AND INDIVIDUAL-BASED MODELING: A PRACTICAL INTRODUCTION (2012); Matteo G. Richiardi, *The Future of Agent-Based Modeling*, 43 E. ECON. J. 271 (2017); Joseph E. Stiglitz & Mauro Gallegati, *Heterogeneous Interacting Agent Models for Understanding Monetary Economies*, 37 E. ECON. J. 6 (2011).
[109] *See generally* DAN ARIELY, PREDICTABLY IRRATIONAL: THE HIDDEN FORCES THAT SHAPE OUR DECISIONS (2010).

a variety of educational goals[110] in fields such as ecology,[111] biodiversity,[112] sustainable cities,[113] and coastal flooding.[114] Previous work has also broadened the concept of participatory simulation to contributory simulation, in which participants make "informed, critical changes to the underlying scientific model."[115] In addition to their educational value, participatory simulations have substantial potential for examining the effectiveness of various societal institutions, such as procedures for disaster evacuation.[116] Researchers have explored how interactive systems can support community engagement with local

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[110] *See* Eric Klopfer et al., *Using Palm Technology in Participatory Simulations of Complex Systems: A New Take on Ubiquitous and Accessible Mobile Computing*, 14 J. SCI. EDUC. & TECH. 285 (2005); *See also* Chengjiu Yin et al., *Developing and Implementing a Framework of Participatory Simulation for Mobile Learning Using Scaffolding*, 16 J. EDUC. TECH. & SOC'Y 137 (2013).

[111] Tom Moher et al., *WallCology: Designing Interaction Affordances for Learner Engagement in Authentic Science Inquiry*, *in* PROCEEDINGS OF THE SIGCHI CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEM 163 (2008), available at https://dl.acm.org/doi/pdf/10.1145/1357054.1357082?casa_token=0Bo8gd_9FroAAAAA:DIQ29x-WD0xgvLTXii32JMCZzUNkm0SQ5d264WnG8HQQeUOkBufWTFXBIpe6XriM8HOrK0ih_w39tn0.

[112] Michelle Lui, *Designing Immersive Simulations for Collective Inquiry*, *in* CHI '12 EXTENDED ABSTRACTS ON HUMAN FACTORS IN COMPUTING SYSTEMS 943 (2012), available at https://dl.acm.org/doi/pdf/10.1145/2212776.2212871.

[113] Vishesh Kumar & Mike Tissenbaum, *City Settlers-Participatory Games to Build Sustainable Cities*, *in* PROCEEDINGS OF THE 18TH ACM INTERNATIONAL CONFERENCE ON INTERACTION DESIGN AND CHILDREN 660 (2019), available at https://dl.acm.org/doi/pdf/10.1145/3311927.3325343?casa_token=nJv4c6sYHakAAAAA:Ko1NugSJxAM-CjddM0S6rsYnFo0JGUElXQCn8zmmLjq-fu8ecpDqwR4Skixoqzuw0F2kppa0GPy2GN0.

[114] Becu, *supra* note 106.

[115] *Id.*; Stefan Kreitmayer et al., *From Participatory to Contributory Simulations: Changing the Game in the Classroom*, *in* PROCEEDINGS OF THE SIGCHI CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS 49 (2012), available athttps://dl.acm.org/doi/pdf/10.1145/2207676.2207685?casa_token=bAWVnEhDihgAAAAA:TEjLm0e7iKOd1-UNqKGm0IhmjfrHHD75p1B-37Y5gorbKX2eIQBwEdBzoCI_pRQ6gv2ycuIaDisOoZU.

[116] Eurico Doirado et al., *Everscape: The Making of a Disaster Evacuation Experience*, *in* CHI '12 EXTENDED ABSTRACTS ON HUMAN FACTORS IN COMPUTING SYSTEMS 2285 (2012), available at https://dl.acm.org/doi/pdf/10.1145/2212776.2223790.

governments,[117] behavior change in the healthcare context,[118] and teens' financial literacy.[119] Various types of stakeholder modeling,[120] including participatory simulations, have been used to investigate decision-making processes of agents, including implementations in city logistics[121] and the healthcare sector.[122] Participatory simulation has been incorporated into simulation research[123] and theoretically linked to crowd work.[124] Over the past several years, there has been growing interest in similar approaches in a range of disciplines,[125] particularly in the field of empirical legal studies.[126] Nevertheless, the use of participatory, computer-based simulation to test hypotheses about human institutions, such as government and the law, is still in its infancy.

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[117] Eric Corbett, *Trust and Community Engagement in Digital Civics: Exploring Opportunities for Design*, *in* PROCEEDINGS OF THE 2018 CONFERENCE ON DESIGNING INTERACTIVE SYSTEMS 367, available at https://dl.acm.org/doi/pdf/10.1145/3197391.3205384?casa_token=nSg_ZTLfh4kAAAAA:P10N5lTGlKFw5SESN6juNLqGymnwksSWGxYN-OU7B8Pw6Keytvk2JROef4wNs0kO4obuyntMj2EYf-E.

[118] Christina Kelley et al., *Design Features in Games for Health: Disciplinary Expert Perspectives*, *in* PROCEEDINGS OF THE 2017 CONFERENCE ON DESIGNING INTERACTIVE SYSTEMS 69, available at https://dl.acm.org/doi/10.1145/3064663.3064721.

[119] John Zimmerman et al., *Teens, Parents, and Financial Literacy*, *in* PROCEEDINGS OF THE 2016 CONFERENCE ON DESIGNING INTERACTIVE SYSTEMS 312, available at https://dl.acm.org/doi/abs/10.1145/2901790.2901889.

[120] Alexey Voinov & Francois Bousquet, *Modelling with Stakeholders*, 25 ENV'T MODELLING & SOFTWARE 1268 (2010).

[121] Nilesh Anand et al., *Validation of an Agent Based Model Using a Participatory Simulation Gaming Approach: The Case of City Logistics*, 71 TRANSP. RSCH. PART C: EMERGING TECHS. 489 (2016).

[122] Simone Nyholm Andersen & Ole Broberg, *A Framework of Knowledge Creation Processes in Participatory Simulation of Hospital Work Systems*, 60 ERGONOMICS 487 (2017); Eloise O'Donnell et al., *Participatory Simulation Modeling to Inform Public Health Policy and Practice: Rethinking the Evidence Hierarchies*, 38 J. PUB. HEALTH POL'Y 203 (2017).

[123] Paul Guyot, Alexis Drogoul & Shinichi Honiden, *Power and Negotiation*, *in* PROCEEDINGS OF THE 5TH INTERNATIONAL JOINT CONFERENCE ON AUTONOMOUS AGENTS AND MULTIAGENT SYSTEMS 27 (2006), available at https://dl.acm.org/doi/pdf/10.1145/1160633.1160636.

[124] Matthew Berland & William Rand, *Participatory Simulation as a Tool for Agent-Based Simulation*, *in* PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON AGENTS AND ARTIFICIAL INTELLIGENCE 553 (2009), available at https://www.researchgate.net/publication/221539715_Participatory_Simulation_as_a_Tool_for_Agent-based_Simulation.

[125] *See generally* Poteete, Janssen & Ostrom, *supra* note 108.

[126] Torrance, *supra* note 13; s*ee also* Andrew W. Torrance & Bill Tomlinson, *Property Rules, Liability Rules, and Patents: One Experimental View of the Cathedral*, 14 YALE J.L. & TECH. 138 (2011).

In addition, as the research described here focuses on the design of participatory simulations to design social institutions, this work is similar to meta-design, defined by Fischer and Giaccardi as "defining and creating social and technical infrastructures in which new forms of collaborative design can take place."[127] However, it does not fall squarely into Fischer and Giaccardi's definition because "users" of social institutions may not be empowered to engage in meaningful co-creation of the institutions that they are working within, except through the indirect routes of voting and advocacy.

## V. Description of DirectorSim Game

To interrogate the relationship between Delaware corporate law and the Accountable Capitalism Act, the research team developed a simple interactive business simulation.[128] This simulation focused on two elements that differ across the two legal frameworks: the set of stakeholders that directors are expected to consider in their decision-making process, and which sets of stakeholders are empowered to select directors.

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[127] Gerhard Fischer & Elisa Giaccardi, *Meta-Design: A Framework for the Future of End-User Development*, *in* 9 END USER DEVELOPMENT 427, 427 (Lieberman et al. eds., 2006).

[128] All code for this system is open source and available at https://github.com/wmt-at-ics-uci-edu/corporate-simulation [https://perma.cc/9M74-X25M].

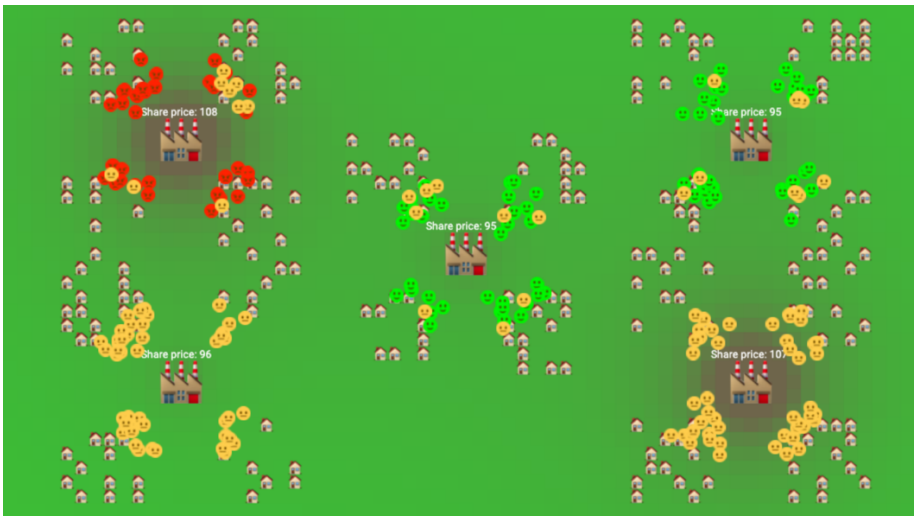


Figure 1: The simulated business world. There are five corporations, with the human participant controlling the one in the middle. The share price is displayed over each corporation. The happiness of the employees is displayed by the color and expression of the face icons around each corporation. The background changes color as the ground around each corporation becomes more or less polluted.

### A. Hypotheses

To explore the different effects of these two legal frameworks, we developed five hypotheses:

- Hypothesis 1 ("H1"): Participants instructed to act as shareholder-selected directors under Delaware corporate law will place greater emphasis on shareholders than on other stakeholder groups when forced to choose between them.

- H2: Participants instructed to act as shareholder-selected directors under Delaware corporate law will place greater emphasis on shareholders, when forced to choose, than do those under Accountable Capitalism Act.

- H3: Participants instructed to act as shareholder-selected directors under Delaware corporate law will prefer polarized approaches that benefit only shareholders over balanced approaches that benefit all stakeholder groups.

- H4: Participants instructed to act as shareholder-selected directors under Delaware corporate law will exhibit a greater preference for polarized approaches that benefit only shareholders than do those under Accountable Capitalism Act.

- H5: Boards of directors instructed by the Accountable Capitalism Act will produce decisions that balance the interests of different stakeholder groups more effectively than those instructed by Delaware corporate law.

### B. Summary

The overarching structure of the participatory simulation is as follows: a participant visits a website, where they are shown a tutorial in the form of a series of slides. The tutorial teaches them about the role of corporate directors, assigns them to be a certain type of director (for example, shareholder-selected or employee-selected), and provides a summarized version of the Accountable Capitalism Act. Next, the tutorial introduces them to the major visual elements of the simulation—the participant's corporation (represented by a factory icon with a share price above it), as well as several competitor corporations; 250 workers (represented by small faces that may be smiling, neutral, or frowning); 250 worker houses; and the background of the world, which varies from green to brown based on the level of pollution at a given location. After the tutorial, the simulation begins. Participants are shown approximately six seconds of the visualization unfolding (see Figure 1), followed by a popup asking them to decide how the corporation should act in a given situation (see Figure 2). The decision popup presents a brief summary of their job as director and the law that applies to them, and asks them to choose between two possible choices, represented by charts showing how much each of three stakeholder groups (shareholders, employees, and environment) would be favored by either choice. The simulation pauses while they make their decision, so that they have as much time as they need to decide on a course of action. Once they select a choice, the visualization continues, showing them the effects of their decision. After twelve rounds of decision-followed-by-visualization, the decision

cycle ends, and participants are asked to answer several questions about their experience.

### C. World

The "world" of the business simulation consists of a variety of components: corporations, individuals, houses, and the environment.

There are five corporations in the world, with autonomous corporations in each corner, and the participant-directed corporation in the center (see Figure 1). The participant-directed corporation behaves in whatever manner the participant dictates through their decisions. Each of the four autonomous corporations follows a different computationally determined strategy, one favoring shareholders, one favoring employees, one favoring the environment, and one taking a balanced strategy. Whenever the participant is asked to make a decision, the other four corporations evaluate the same two choices and choose the one that most closely matches their strategy.

Corporations each have a share price, a value that represents how well the corporation is providing value to shareholders. This value is displayed above the corporation's icon. Share price is directly affected by the decisions the directors make. A low value in the "Share Price" column of a decision chart (see Figure 2) causes share price to fall, while a high value causes share price to increase.

Each corporation has fifty individuals working for it—forty workers and ten directors—each represented by a face icon that can be smiling, neutral, or frowning. Each individual has a value for their happiness, with zero representing low happiness and one representing high happiness. All individuals are green and smiling when their happiness is high, yellow and with a neutral facial expression when medium, or red and frowning when low. In the current simulation, happiness is solely dictated by income. We recognize that this is an impoverished model of happiness. In a future version of this simulation, the team plans to implement more complex relationships among income, environmental quality, and other factors, as well as a more engaging

experience for participants.[129] In the current system, employee income is based on the decisions the directors of that corporation make. Director income is based on the corporation's share price.

Although there are ten individuals displayed as directors per corporation in the visualization, the single human participant makes all decisions that affect the corporation's behavior. The directors in the visualization simply serve to provide a visual indicator that a subset of individuals have happiness based on share price rather than employee wage.

Additionally, there are 250 houses in the world. Each house is home to one individual. Individuals move from their home to their corporation and back every three seconds. Houses are mapped into the world so that the individuals work for the corporation nearest their house. For this reason, fifty houses surround each corporation, one house per individual working for the corporation, forming a "company town" surrounding each firm.

The background of the world starts off green, but each region turns shades of green and brown based on the level of pollution at that location. Corporations that make decisions with low values for "Environmental Benefit" introduce pollution into their surrounding regions. Each region can absorb and recover from a certain amount of pollution per time step; therefore, if a corporation starts making decisions with a high value in the "Environmental Benefit" column, the environment around them will gradually self-repair.

### D. Tutorial

The purpose behind the tutorial is to clarify the various aspects of the simulation. The tutorial starts by initially describing the purpose of the study. As the participant clicks the "next" button and is led through the sequence of the tutorial, they are informed about their role as a director within the context of the world. In addition to this, the participant learns

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[129] *See generally* Bonnie Nardi et al., *Productive Play: Beyond Binaries*, 2 ARTIFACT 60 (2008); KATHERINE ISBISTER, BETTER GAME CHARACTERS BY DESIGN: A PSYCHOLOGICAL APPROACH (2006).

about the specific law that applies to them. Following this, the tutorial takes the participant through the rest of the system, step by step, showing the share price, the number of houses, the role of happiness amongst the workers, and how pollution affects the workers.

### E. Law

In the tutorial and on each decision popup, there is a brief summary of the relevant section of Delaware corporate law or the Accountable Capitalism Act. For ease of understanding, the relevant legal text was reduced to a summary of less than 100 words in each case. This summarization was done in collaboration with a law professor to ensure that the legal meaning was preserved. In addition, various other simplifications were introduced, such as reducing the number of factors that directors must consider under the Accountable Capitalism Act from seven to three. Despite these simplifications, every effort was taken to retain the spirit of the laws.

The summary of Delaware corporate law presented to participants was as follows:

> Directors owe a fiduciary duty of loyalty and duty of care to the corporation and its shareholders. Directors must act in good faith to advance the best interests of the corporation. The corporation may undertake any lawful business by any lawful means. Directors must exercise good-faith efforts to ensure that the corporation complies with laws applicable to its operations (such as environmental, labor, and criminal laws). Directors are prohibited from using their positions to advance their own personal interests.

The summary of the Accountable Capitalism Act presented to participants was as follows:

> Directors shall manage the corporation in a way that balances the financial interests of its shareholders with the best interests of persons that are materially affected

> by the conduct of the corporation. In doing so, directors shall consider the effects of any action or inaction on the shareholders of the corporation; the employees of the corporation; and the environment. Directors shall not be required to give priority to a particular interest or factor [for example, shareholders, employees, or the environment] over any other interest or factor.

### F. Experimental Parameters

The website's URL includes a parameter to specify whether the participant is assigned to be a shareholder-selected director ("SSD") or employee-selected director ("EmSD"), and a second parameter to specify whether the participant was shown instructions based on the Accountable Capitalism Act or based on Delaware corporate law.

### G. Interface

After clicking through each slide of the tutorial, participants are asked to make a series of decisions between two choices, each represented by a bar chart. Each chart has one bar showing how beneficial that chart will be for share price, one bar for how beneficial it will be for employee wage, and one bar for how beneficial it will be for the environment (see Figure 2). The value of all three bars in any given chart always sums to 1.0. That means that there is an inherent trade-off between the three stakeholder groups. While this is not an accurate representation of the real world, where there is not always a zero-sum game among different stakeholders and all possible actions do not have the same total "value," the team chose to represent decisions in this way in order to be able to force hard choices on the participants. Ultimately, hard choices reveal where decisions are most important and where differences in opinion are most prominent.

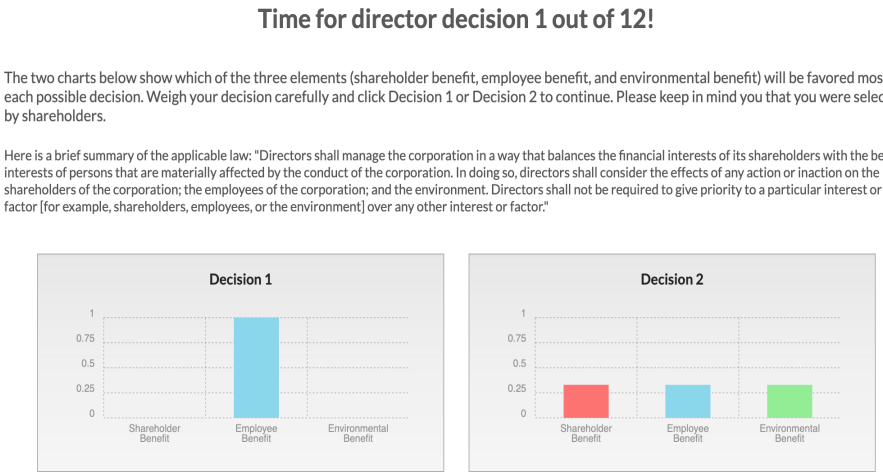


Figure 2: This screen was presented to participants periodically to require them to make decisions about which action their corporation should take.

Every player is given the same set of decisions between two charts; however, the simulation randomizes both the order in which the decisions are delivered, as well as the order in which the choices in each decision are presented. Therefore, it avoids order effects in both cases. Each choice, displayed to participants as a bar chart (see Figure 2), can also be presented as three numbers, representing shareholder benefit, employee benefit, and environmental benefit. For example, (1.0, 0.0, 0.0) would represent a choice with the highest possible value for shareholders and the lowest possible value for both employees and the environment.

There were several main types of decisions presented to each participant. There were three "balance" decisions, each of which asked participants to choose between a strongly polarized chart, e.g., (1.0, 0.0, 0.0) favoring one of the three stakeholders versus a balanced chart (0.34, 0.33, 0.33). There were three "forced choice" decisions, one between each pair of the three stakeholders: shareholders vs. employees, shareholders vs. environment, and employees vs. environment. In each of these forced choices, the chart for one choice had 0.8 for one stakeholder and 0.1 for each of the other two, e.g. (0.8, 0.1, 0.1); the chart for the other choice had 0.8 for a different stakeholder and 0.1 for the other two, e.g. (0.1, 0.8, 0.1). In addition, there were six other

decisions, three of the form (0.5, 0.5, 0.0) vs. (0.5, 0.0, 0.5), and three of the form (0.5, 0.25, 0.25) vs. (0.34, 0.33, 0.33).

Given space considerations, all analyses in this paper are based on the three "forced choice" and the three "balance" decisions.

### H. End of Game Questions

After completing all twelve decisions, the participants were asked several questions: "Please describe how you made your decisions. What factors did you consider when choosing between the two possibilities?"; "Did you notice your decisions having any impact on the simulation? If so, what effects did your decisions have?"; and "Did the simulation change how you thought about how to respond to the choices you needed to make as a director of a corporation? Why or why not?" Participants were also given a free entry text box for any other thoughts they might have had.

For each question, participants were required to write at least 100 characters of response. In addition, after the free-response questions, there were questions gathering demographic data involving country of residence, age, and gender. Gender was collected in line with best practices in human-computer interaction.[130]

## VI. Evaluation Methodology

To assess whether the hypotheses described above were borne out by the data, the team conducted a series of experiments using human participants via AMT, Amazon's online crowdsourcing platform. In AMT, requesters (such as the research team) can post small jobs (called "Human Intelligence Tasks" or "HITs") to a public website, and people around the world can choose to complete the HITs in exchange for payment. There are typically several thousand workers available at any given time to complete the HITs. [131]

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[130] *See* Katta Spiel et al., *How to Do Better with Gender on Surveys*, INTERACTIONS, July-Aug. 2019, at 62.

[131] Djellel Difallah et al., *Demographics and Dynamics of Mechanical Turk Workers*, *in* PROCEEDINGS OF THE 11TH ACM INTERNATIONAL CONFERENCE ON WEB SEARCH AND DATA

### A. Qualifying Quiz

To ensure that participants had read and understood the relevant law, the team deployed a short qualifying quiz through the AMT interface, where workers were asked to read the summary of the Accountable Capitalism Act and answer a few (relatively simple) questions about what they had read, as a preliminary task. For example, participants were asked "Which of the following elements are directors required to balance under the laws described above (select all that apply)?", with three answers derived directly from the text and two plausible-but-fake answers. Workers who earned a perfect score were then invited back for the actual experiment. The purpose behind this process was to ensure the competence of the workers and high-quality work.

### B. Pilot Studies

We conducted three pilot studies to refine the experimental procedures. In line with Kittur et al.,[132] we sought to make the HITs as easy to do correctly as it would be to do it at random. In the first pilot, the qualifying quiz was deployed as a separate HIT from the main study. However, when the team deployed the experiment to the workers who had succeeded on the qualifying quiz, they found that very few of those workers participated in the second HIT. We had set the pilot study's level of pay at a rate that was aiming for (and later confirmed to be) at least $15 per hour, which is a relatively high pay rate for AMT, so the team decided that it must be the structure of the qualifying quiz followed by a time lag followed by the actual experiment that was causing low turnout.

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MINING 135, 135 (2018), available at https://www.ipeirotis.com/wp-content/uploads/2017/12/wsdmf074-difallahA.pdf.

[132] Aniket Kittur, Ed H. Chi & Bongwon Suh, *Crowdsourcing User Studies with Mechanical Turk*, *in* PROCEEDINGS OF THE SIGCHI CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS 453, 456 (2008), available at https://dl.acm.org/doi/pdf/10.1145/1357054.1357127?casa_token=4Y3UqwVLuCQAAAAA:c-ujyuoh6BHGOPRfUp8j6cswnMtmXUjGgXXteef-8SSXqurS4SRZfiphusrYW5Z6KEYJvl4GKUhGz7A.

In the second and third pilot studies, the team instead implemented both the quiz and the actual experiment in the same HIT (the quiz in AMT followed by a link out to the simulation website), deciding to simply discard the data from those who received less than a perfect score. Over the course of these pilots, the team also revised various aspects of legal wording and interface design.

### C. Fair Payment/Treatment

To determine the appropriate rate of pay for the final study, the team drew on research by Silberman et al.[133] We wanted to ensure that our wage came out to $15 per hour. To concretely establish how long the study would take, the team recorded a time stamp when participants clicked the first slide of the tutorial, and another one when they submitted the demographics. We also added several minutes to provide time for workers to take the brief quiz in AMT. We identified the average time to be approximately 17.6 minutes, so the team set the pay at $4.40 per completion of HIT. Results from the workers' free response questions validated that the rate of pay was reasonable, including quotes such as "I thought it was a very good experiment and the pay was very good"; "I also felt compensation was fair when compared to other tasks on MTURK"; and "thanks for the generous hit! It pays very well for the time needed."

In addition, to ensure fair treatment of the workers, the team responded to all queries received as soon as possible. The team believes they were able to resolve all issues to the satisfaction of the workers who contacted them.

### D. Runs Conducted

To assess the five hypotheses listed above, we deployed three experimental conditions. We recruited 100 participants to each of the following three conditions, for a total of 300 participants.[134]

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[133] M.S. Silberman et al., *Responsible Research with Crowds: Pay Crowdworkers at Least Minimum Wage*, 61 COMMC'NS ACM 39 (2018).

[134] A version of the description of results from the SSD/ACA and EmSD/ACA participants appeared earlier in a conference publication. *See generally* Tomlinson et al., *supra* note 10.

- Shareholder-Selected Directors instructed via Accountable Capitalism Act text ("SSD/ACA")

- Shareholder-Selected Directors instructed via Delaware corporate law text ("SSD/Delaware")

- Employee-Selected Directors instructed via Accountable Capitalism Act text ("EmSD/ACA")

The 300 participants completed the study within approximately 24 hours of its placement on AMT.

Hypotheses H1 and H2 were assessed by comparing how SSD/ACA, SSD/Delaware, and EmSD/ACA participants responded to the three "forced choice" decisions. Hypotheses H3 and H4 were assessed by comparing how SSD/ACA, SSD/Delaware, and EmSD/ACA participants responded to the three "balance" decisions. Hypothesis H5 assessed via a multi-stage process in which we (1) assembled three thousand "virtual boards of directors," each composed of various combinations of specific SSD/ACA, SSD/Delaware, and EmSD/ACA participants; (2) used those participants' responses to conduct "virtual votes" on each of the "forced choice" and "balance" decisions; and (3) used the outcomes of those votes to determine how the corporate behavior specified by each of these differently-composed boards benefitted the three stakeholder groups relative to each other.

## VII. Results

### A. Excluded Data

The study team excluded two subsets of the data collected from this analysis. First, as described in the Qualifying Quiz section above, participants who scored less than 100% on the initial quiz were excluded. We discarded their data to ensure that participants had read

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However, the SSD/Delaware results; the comparisons between SSD/Delaware and SSD/ACA; and the results from this set of virtual boards of directors are all novel here.

and understood the law in question. This helped provide a higher level of participant expertise throughout the study. Second, several participants did not write original content in their end-of-game questions as requested, but rather pasted blocks of text from various internet articles or copied other participants. Since these participants were not engaging with the study in good faith, all their data were excluded. Some individuals fell into both excluded categories (i.e., poor performance on the quiz as well as copying of internet content). In total, after these exclusions, data from 273 participants were included in the study.

### B. Demographics

The team collected demographics about the study population in line with best practices described above. The average age of participants included in the analysis was 39 years. This is substantially younger than the average age of many boards of directors (62 years).[135] Fifty-six percent of participants were men, 43% women, and 1% non-binary or preferred not to describe (one participant in each category). This is a bit more balanced than the 80% of men and 20% of women on corporate boards of directors.[136] Regarding country of residence, 86% of participants were from the United States, 12% from India, and 2% from other countries (one participant each from Italy, New Caledonia, Thailand, and South Africa).

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[135] Annalisa Barrett & Jon Lukomnik, *Age Diversity Within Boards of Directors of the S&P 500 Companies*, HARV. L. SCH. FORUM ON CORP. GOV. (April 6, 2017), https://corpgov.law.harvard.edu/2017/04/06/age-diversity-within-boards-of-directors-of-the-sp-500-companies/ [https://perma.cc/BS4M-XZRF].

[136] *2020 Women on Boards*, GENDER DIVERSITY INDEX 4 (2018), https://2020wob.com/wp-content/uploads/2019/10/2020WOB_Gender_Diversity_Index_Report_Oct2019.pdf. Non-binary people are not mentioned in this report.

## C. Results

### 1. Delaware directors favor shareholders over other stakeholders, when forced to choose.

The study confirmed H1, the hypothesis that participants assigned as shareholder-selected directors under Delaware corporate law (SSD/Delaware) will place greater emphasis on shareholders when forced to choose between shareholders and a different stakeholder group. As reported elsewhere,[137] participants assigned as shareholder-selected directors under the Accountable Capitalism Act (SSD/ACA) tended to favor shareholders over other stakeholders (61.8%, p=0.0016*), while SSD/Delaware participants exhibited a preference for shareholders over other stakeholders in 61.3% of the cases (p=0.0021*). See Table 1 for details.

These findings are supported by participants' quotes. An SSD/Delaware participant wrote: "I always did what would be best for the share price at the expense of other elements. If two options had the same impact on that, I tended to do what would help the employees the most. I disregarded the environmental element." A different SSD/Delaware participant wrote: "I made my decisions based on my fiduciary duty to the company and its shareholders. That means I prioritized the company first, the employees second, and the environment third. My decisions reflected those priorities."

[137] *See* Tomlinson et al., *supra* note 10.

| Director type/ legal framework | Other stakeholder type | % prefer own stakeholder group | Sample | P-value |
|---|---|---|---|---|
| SSD/Delaware | Employees | 60.2 | 93 | 0.049* |
| SSD/Delaware | Environment | 62.3 | 93 | 0.017* |
| SSD/Delaware | Both | 61.3 | 186 | 0.0021* |
| SSD/ACA | Employees | 59.6 | 89 | 0.071 |
| SSD/ACA | Environment | 64.0 | 89 | 0.0080* |
| SSD/ACA | Both | 61.8 | 178 | 0.0016* |

Table 1: Shareholder-selected directors tend to prefer shareholders over both employees and the environment when forced to choose between them. Rows 4-6 from previously published work.[138]

### 2. Delaware directors and ACA directors favor shareholders about the same amount when forced to choose between shareholders and other stakeholders.

The study rejected H2—that when forced to choose, directors under Delaware corporate law would exhibit stronger preferences for shareholders over other stakeholder groups than ACA directors do. Findings from the study showed no statistically significant difference between how Delaware and ACA directors made such decisions. SSD/Delaware directors' average preference for shareholders over the other two stakeholders was 61.3%, while SSD/ACA directors' average preference was 61.8% (p=0.92). See Table 2 for more details.

[138] *See id.* at 7.

| Stake-holder | SSD/Delaware % prefer shareholders | SSD/ Delawar e sample size | SSD/ACA % prefer shareholders | SSD/ ACA sample size | P-value |
|---|---|---|---|---|---|
| Employees | 60.2 | 93 | 59.6 | 89 | 0.93 |
| Environment | 62.4 | 93 | 64.0 | 89 | 0.81 |
| Both | 61.3 | 186 | 61.8 | 178 | 0.92 |

Table 2: Instruction by the ACA versus instruction by Delaware law does not appear to impact the degree to which shareholder-selected directors favor shareholders in forced-choice decisions.

### 3. Delaware directors strongly prefer balanced approaches over employees and the environment, but do not statistically prefer balanced approaches over shareholders.

While the previous two sections dealt with forced-choice contexts where directors were required to choose between an option that favored one stakeholder group and another that favored a different stakeholder group, this section addresses how directors behaved when asked to decide between a choice strongly favoring one stakeholder group and a choice that benefited all three stakeholder groups evenly. Previous research offered that SSDs under the ACA strongly favored balanced choices over polarized choices. Here, H3 hypothesized that SSDs under Delaware corporate law would not be constrained by the ACA's demand for balance, and instead would select shareholder-only decisions over balanced decisions. However, we found that SSDs under Delaware corporate law were slightly less likely (although not to a statistically significant degree) to choose an option exclusively favoring shareholders over a balanced option. See Table 3 for details.

Nevertheless, SSD/Delaware directors overall were much more likely to prefer shareholders over balance than they were to prefer employees (p=0.000027**, see Table 4) or the environment (p=0.000012**, see Table 5) over balance.

The fact that Delaware directors preferred balance could arise from two separate forces. The first force would be their interest in supporting the shareholders as much as possible (which in two of the three "balance" questions could most effectively be achieved by choosing a balanced option, since the alternative would be a choice strongly polarized toward employees or toward the environment). For example, an SSD under Delaware law wrote: "I made my decisions based on my fiduciary duty to the company and its shareholders. That means I prioritized the company first, the employees second, and the environment third. My decisions reflected those priorities." A second force that could push such directors toward balance would be a desire for balance itself. Another SSD under Delaware law wrote: "My decisions were based both on the instructions that were given regarding my responsibility as a director, and my personal moral beliefs." Given these quotes, it appears that both forces were in play for various participants.

| **Director type/ legal framework** | **Stakeholder type** | **% prefer stakeholder over balance** | **Sample** | **P-value** |
|---|---|---|---|---|
| SSD/ACA | Shareholders | 22.5 | 89 | <0.000001** |
| SSD/ACA | Employees | 15.7 | 89 | <0.000001** |
| SSD/ACA | Environment | 18.0 | 89 | <0.000001** |
| SSD/Delaware | Shareholders | 43.0 | 93 | 0.18 |
| SSD/Delaware | Employees | 15.0 | 93 | <0.000001** |
| SSD/Delaware | Environment | 14.0 | 93 | <0.000001** |

Table 3: Directors under both legal frameworks exhibited a strong tendency to choose balance over particular stakeholder groups (as evidenced by low values in the third column) except for SSD/Delaware, who show only a weak (and not statistically significant) preference for balance over shareholders (row 4, column 3).

| SSD/Delaware % prefer shareholders over balance | SSD/Delaware sample | SSD/Delaware % prefer employees over balance | SSD/ Delaware sample | P-value |
|---|---|---|---|---|
| 43.0 | 93 | 15.0 | 93 | 0.000027** |

Table 4: SSD/Delaware are biased toward shareholders more than toward employees.

| SSD/Delaware % prefer shareholders over balance | SSD/Delaware sample | SSD/Delaware % prefer environment over balance | SSD/ Delaware sample | P-value |
|---|---|---|---|---|
| 43.0 | 93 | 14.0 | 93 | 0.000012** |

Table 5: SSD/Delaware are biased toward shareholders more than toward environment.

### 4. Delaware directors place greater emphasis on shareholders over balanced approaches than did ACA directors.

The study confirmed H4, finding that SSD/Delaware directors were much more likely to prefer balance over shareholders than SSD/ACA directors were (43.0% vs. 22.5%, p=0.0032*), even though they were statistically similar with regard to their level of preference of employees (15.0% vs 15.7%, p=0.90) or the environment (14.0% vs 18.0%, p=0.46) over balance. These findings support the proposition that Delaware corporate law and the ACA would lead to different kinds of director behavior, and therefore different kinds of corporate behavior. See Table 6 for more details.

Quotes from the end-of-game questions support these quantitative results. For example, an SSD under Delaware law wrote: "I only took into account the shareholder's wants. I wanted to get the share price as high as possible. I was hired by the corporation's shareholders, so it was my duty to."[139] Conversely, an SSD under the ACA wrote: "I tried to balance allocations evenly between the three priorities. When I wasn't able to, I tried to make up any deficits later."

[139] Some participants' comments were lightly edited for grammar and punctuation.

| Stakeholder | SSD/ACA % prefer stakeholder over balance | SSD/ ACA sample | SSD/Delaware % prefer stakeholder over balance | SSD/ Delaware sample | P-value |
|---|---|---|---|---|---|
| Shareholders | 22.5 | 89 | 43.0 | 93 | 0.0032* |
| Employees | 15.7 | 89 | 15.0 | 93 | 0.90 |
| Environment | 18.0 | 89 | 14.0 | 93 | 0.46 |

Table 6: While SSDs instructed via Delaware corporate law exhibit a weak preference for balance over a polarized choice favoring shareholders, they are nevertheless significantly more likely to make the polarized shareholder choice than those instructed via the ACA.

### 5. Virtual boards of directors as constituted by the ACA balance different stakeholder groups more effectively than those constituted by Delaware corporate law.

Using the results from the AMT participants, the authors created 3000 virtual boards of directors. These virtual boards confirmed H5, the hypothesis that boards of directors instructed by the ACA will produce decisions that balance the interests of different stakeholder groups more effectively than those instructed by Delaware corporate law. This was true for both aspects of the ACA that we studied: the requirement that directors consider the effects of corporate actions on various stakeholder groups and the requirement that there be employee representation on corporate boards.

The process for assembling the virtual boards of directors was as follows. Each virtual board had 10 members. Each board was assigned a particular composition of different director types, e.g., 60% SSD/40% EmSD. Directors of each type were selected at random to populate the board in line with that composition. So, for example, in the 60% SSD/40% EmSD case, the board was composed of 6 randomly selected participants assigned to be SSDs and 4 randomly selected participants assigned to be EmSDs. The actual choices made by each participant in response to each of the six relevant decisions (i.e., the three "balance"

decisions and the three "forced choice" decisions described above) were then assembled into a "virtual vote," with the majority winning. So, for example, if seven of the ten participants in that particular virtual board selected a shareholder-favoring choice (0.8 for shareholders, 0.1 for employees, 0.1 for the environment) over an employee-favoring choice (0.1 for shareholders, 0.8 for employees, 0.1 for the environment), then the outcome of that decision was for the virtual corporation to take an action that resulted in 0.8 benefit for shareholders and 0.1 each for employees and the environment. Ties were broken by averaging the results from both possible outcomes. The outcomes from the six decisions were then averaged to yield the virtual board's overall benefit for each of the three stakeholder groups. This process was repeated 1000 times for each of the three conditions, reflected in the five rows in Table 7. So, for example, row 1 reflects 1000 different virtual boards; because ninety-three shareholder-selected directors were included in the study (100 participants minus those excluded for the reasons described above), the average SSD-assigned participant appeared in approximately eleven different virtual boards (1000/93) in that row.

Since the nature of the questions limited the range of possible outcomes (for example, no set of decisions would lead to a result that completely favored any one stakeholder group), the team compared each result to the maximum disparity across stakeholders that was possible in the system. In this technique, the team calculated the maximum and minimum benefits that could have resulted from a given board's choices. Specifically, the six decisions were as follows, with each triplet representing the impact on shareholders, employees, and the environment, respectively:

- (0.8, 0.1, 0.1) vs (0.1, 0.8, 0.1)
- (0.8, 0.1, 0.1) vs (0.1, 0.1, 0.8)
- (0.1, 0.8, 0.1) vs. (0.1, 0.1, 0.8)
- (1.0, 0.0, 0.0) vs (0.34, 0.33, 0.33)
- (0.0, 1.0, 0.0) vs (0.33, 0.34, 0.33)
- (0.0, 0.0, 1.0) vs (0.33, 0.33, 0.34)

Therefore, the maximum average benefit that could possibly have accrued to any stakeholder group was: (0.8 + 0.8 + 0.1 + 1.0 + 0.33 +

0.33)/6 = 0.56. Similarly, the minimum average benefit that could have accrued to any stakeholder group was: (0.1 + 0.1 + 0.1 + 0.0 + 0.0 + 0.33)/6 = 0.105. Combining these two, the maximum disparity that could possibly have come to exist between two stakeholder groups was 0.56 - 0.105 = 0.455.

The team then calculated the actual disparity that occurred across the averaged outcomes of all 1000 virtual boards of directors for each condition (e.g., 60% SSD/40% EmSD), by subtracting the lowest stakeholder outcome from the highest stakeholder outcome. This actual disparity was then divided by the maximum possible disparity to arrive at the percentage of maximum disparity, which is displayed in the last two columns of Table 7. The next to last column displays the percentage of maximum disparity when only the outcomes for shareholders and employees were considered. The last column displays the percentage of maximum disparity when the outcomes for all three stakeholder groups (shareholders, employees, and the environment) were considered.

To summarize the findings: the first row, representing 1000 boards composed of 100% participants assigned as SSDs under Delaware corporate law, led to the greatest disparity across all three stakeholder groups of the three conditions studied, with 32% of the maximum possible disparity across the two human stakeholder groups (i.e., shareholders and employees), and 53% disparity across shareholders, employees, and the environment. The next row shows how much disparity arose from virtual boards of directors composed of 100% SSDs under the ACA, representing the effect of the ACA language requiring directors to consider the effects on corporate actions on various stakeholder groups: 15% of the maximum disparity across shareholders and employees and 39% of the maximum disparity across shareholders, employees, and the environment.

The last row, involving virtual boards composed of 60% SSDs and 40% EmSDs, and thus reflecting both the ACA requirement of stakeholder consideration as well as the effect of employee representation, led to the lowest observed disparity among stakeholders: 8.3% considering only human stakeholders, and 33% across all stakeholders. These levels suggest that employee representation reduces disparity by 45% (15% vs.

8.3%) across the two human stakeholder groups and 15% (39% vs. 33%) across all three stakeholder groups below the levels resulting from 100% SSDs under the ACA.

In total, switching from instruction by Delaware corporate law to instruction by the Accountable Capitalism Act led to a 74% reduction in disparity (32% vs. 8.3%) across the two human stakeholder groups (shareholders and employees), and a 38% reduction in disparity (53% vs. 33%) across all three stakeholder groups (shareholders, employees, and environment).

| **Board Composition/ legal framework** | **Outcome for share-holders** | **Outcome for employees** | **Outcome for environment** | **% max disparity (human)** | **% max disparity (all)** |
|---|---|---|---|---|---|
| 100% SSD/ Delaware | 0.46 | 0.32 | 0.21 | 32 | 53 |
| 100% SSD/ ACA | 0.41 | 0.35 | 0.24 | 15 | 39 |
| 60% SSD, 40% EmSD/ACA | 0.39 | 0.37 | 0.24 | 8.3 | 33 |

Table 7: Results from 3000 "virtual boards of directors," including 1000 comprised of randomly selected shareholder-selected directors instructed under Delaware corporate law, 1000 comprised of shareholder-selected directors under the Accountable Capitalism Act, and 1000 comprised of 60% shareholder-selected directors and 40% employee-selected directors under the ACA. In sum, ACA decreased the disparity of outcomes across different stakeholder groups by 74% (32% vs. 8.3%) when considering only human stakeholders (shareholders and employees), and by 38% (53% vs. 33%) when considering all three stakeholder groups (shareholders, employees, and the environment).

## VIII. Implications for Future Legislation

As stated in the previous section, the results of this simulation indicate that the Accountable Capitalism Act will likely have the intended result regarding board representation and board decision-making processes when compared to Delaware corporate law. In this section, we explore

certain areas of law on this topic that other scholars could further examine.

### A. Broader Stakeholder Representation

This study's findings suggest that both elements of the ACA that were studied—the requirement that 2/5 of large corporations' directors be selected by employees rather than shareholders,[140] and that those directors be required to consider the effects of the corporation's actions on a variety of stakeholder groups—can plausibly be expected to affect director behavior. While this is perhaps unsurprising, it nevertheless points to an important interdependency between the two. If the goal is that directors consider all stakeholder groups on equal footing (which may or may not be the intention of the ACA), then both parts are necessary. Given that there are seven stakeholder groups listed in the ACA and that only one (employees) is required to have representation on the board (at least 40%), it is likely that the ACA will result in shareholders enjoying the largest fraction of representation on corporate boards (since the authors anticipate that, even under the ACA, shareholders will continue to select the majority of directors), employees having the next-highest level of representation, and the other five stakeholder groups seeing lesser representation. If equal representation of the seven stakeholder groups is desired, then it may be necessary to provide that directors are appointed by representatives of each of the groups—environment-selected directors, community-selected directors, customer-selected directors, etc.

### B. Providing a Forum for Argument

The existence of the ACA simulation platform provides two substantial benefits by its nature as an open-source software project. First, the nature of such a computational system provides empirical repeatability that is often lacking in legal scholarship. Much legal scholarship relies on precedent and theoretical arguments; empirical legal studies is a relatively young field. Second, being open source (with all code available on GitHub) allows interested parties to "open the box" and see

[140] We note that employees may sometimes also be shareholders.

how the software works. This allows for arguments of a different nature than those typically possible in legal scholarship. Being able to offer up the system so that others might revise it, extend it, or contest it creates the possibility of engaging with policy in an empirical, collaborative way and provides a form of evidence that is often lacking in legal scholarship and policy discourse. While data do not necessarily provide conclusive answers to many types of questions, data nevertheless are frequently useful in supporting certain kinds of decision-making.

## IX. Conclusions

This article presents research that explores potential effects of Delaware corporate law and the Accountable Capitalism Act on the behavior of corporate directors. Data were gathered via an interactive, computer-based simulation, deployed to several hundred human participants through Amazon's Mechanical Turk online crowdsourcing platform. Results from this study provide evidence that the Accountable Capitalism Act may impact director behavior and thereby lead to changes in the behavior of corporations.

Specifically, the study found that participants assigned to act as shareholder-selected directors instructed via Delaware corporate law favor shareholders more than those instructed via the Accountable Capitalism Act, particularly in decisions where the alternative is an option that is equally beneficial to several stakeholder groups. We used these results to assemble "virtual boards of directors" and found that both facets of the Accountable Capitalism Act that we studied—the requirement for directors to consider the effects of corporate actions on various stakeholder groups and the requirement of employee representation on corporate boards—had tangible implications for corporate behavior. That is, the directions participants were given regarding the actions they were supposed to take as well as the information about which stakeholder group had selected them both affected their behavior.

This study therefore provides support for the proposition that the Accountable Capitalism Act would likely lead to the outcomes for

which it is designed, and—importantly—that both aspects we studied are necessary for those outcomes.

This study contributes concrete evidence regarding the relative effects of Delaware corporate law and the Accountable Capitalism Act and provides a demonstration of the potential value of participatory simulation in empirical legal studies. If the goal of the law is to achieve certain societal outcomes, then participatory simulation may be a useful tool in the toolbox of approaches by which effective laws may be developed and evaluated.