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Could Distributed Ledger Shares Lead to an Increase in Stockholder-Approved Mergers and Subsequently an Increase in Exercise of Appraisal Rights?

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COULD DISTRIBUTED LEDGER SHARES LEAD TO
AN INCREASE IN STOCKHOLDER-APPROVED
MERGERS AND SUBSEQUENTLY AN INCREASE
IN EXERCISE OF APPRAISAL RIGHTS?

ALYSON BROWN*

ABSTRACT

Blockchain, the distributed ledger technology underlying cryptocurrencies like Bitcoin, is poised to revolutionize industries and processes across disciplines. In particular, government agencies and companies are looking for ways to leverage blockchain's efficiencies to facilitate safe record-keeping. Municipalities are employing blockchain-issued deeds to accurately record property ownership. Progressive legal professionals are employing blockchain-issued "smart-contracts" to more accurately record contract terms. Intellectual property attorneys and related government agencies are researching blockchain-issued copyrights and patents.

This Note examines how utilizing blockchain technology in securities trading to maintain accurate stockholder ledgers will allow for current market forces to be reflected in stockholder voting. Further, this Note seeks to address how blockchain-issued shares of stock could affect stockholder approved mergers and the exercise of appraisal rights. This Note posits that accurate stockholder ledgers will lead to an increase in stockholder approved mergers, but will not have an effect on the exercise of appraisal rights.

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INTRODUCTION

In 2008, Satoshi Nakamoto created a database of distributed ledgers leveraging peer-to-peer technology that now operates the popular cryptocurrency, Bitcoin.¹ In the decade since Nakamoto's use of distributed ledgers for cryptocurrency, legal scholars have researched the implications of blockchain technology in the finance, securities, and copyright industries.² "Blockchain technology", as used in this Note, refers to a "distributed ... ledger that, when combined with a digital transaction validation process, allows for the peer-to-peer electronic transfer of an asset without the need for an intermediary."³

This Note seeks to explore how blockchain technology can revolutionize stock trading, focusing on the use of Distributed Ledger Shares ("DLS") to increase the accuracy of a corporation's stock ledger. Specifically, this Note concentrates on the effects of stock ledger accuracy on stockholder-voted mergers and appraisal right assertion. Part I provides a brief overview of blockchain technology generally. Part II explores corporate record-keeping requirements. Specifically, it explains how the advantages of blockchain technology can be leveraged to greatly reduce inaccuracies in corporation's stock ledgers. Part III details the tangible advantages of blockchain technology and outlines how Delaware plans to capitalize on these efficiencies in stock trading. Next, Part IV introduces the governing state and federal law for obtaining stockholder approval for mergers and other corporation reorganizations, as well as dissenting stockholder appraisal rights. Further, Part IV argues that increased accuracy in stockholder lists could have an effect on increasing the rate of merger approvals. Finally, this Note suggests that implementation of DLS would not have an effect on the number of stockholders who exercise their appraisal rights.

¹ Scott J. Shackelford & Steve Meyers, *Block-by-Block: Leveraging the Power of Blockchain Technology to Build Trust and Promote Cyber Peace*, 19 YALE J.L. & TECH. 334, 338 (2017).

² *Id.* at 337.

³ Alan Cohn, Travis West & Chelsea Parker, *Smart After All: Blockchain, Smart Contracts, Parametric Insurance, And Smart Energy Grids*, 1 GEO. L. TECH. REV. 273, 277 (2017).

The magnitude of the issue of inaccurate stockholder ledgers was illuminated in a recent Delaware case involving the assertion of 49,164,415 facially valid settlement claims of a class of common stockholders in Dole Food Company (Dole), when only 36,793,758 shares of common stock were on record in the class.⁴ *In re Dole* involved a single-step merger in which the common stockholders of Dole received \$13.50 per share as consideration.⁵ The consideration was distributed to the stockholders of record on the Depository Trust Company's (DTC's) *centralized* ledger.⁶ DTC's ledger consists of the record owner of shares, not the beneficial owners.⁷ Consideration for the Dole merger was thus distributed to the *record* holders listed on the centralized ledger, not the beneficial owners.⁸

A class of Dole common stockholders filed suit against Dole's fiduciaries and ultimately settled for \$2.74 per share, plus interest.⁹ The court initially ordered that the settlement be allocated through traditional claims methods, involving a settlement administrator who mails notices and claims to potential class members.¹⁰ When A.B. Data, the Settlement Administrator, received roughly thirty-three percent more share claims than the class of calculated common stock actually held, the discrepancy was irreconcilable.¹¹ Ultimately, the court granted the class counsel's motion to modify the allocation procedure to authorize settlement distribution

⁴ *In re Dole Food Co. Stockholder Litig.*, No. 8703-VCL, 2017 WL 624843, at *1 (Del. Ch. Feb. 15, 2017). Some of these claims were rendered "facially valid" because claimants provided documentation of receipt of the merger consideration. *Id.* at *2. This is not an accurate validating document, however, because those who received merger consideration were on the record November 1, whereas, those who should have received merger consideration and this settlement were beneficial owners on November 4, the date of closing. *Id.* at *3.

⁵ *Id.* at *1.

⁶ *Id.*

⁷ *Id.* at *5. This means that during an initial public offering, shares are issued to DTC. *Id.* Then, DTC sells those shares to brokers and other intermediaries who subsequently sell the beneficial ownership rights of the shares to individuals. *Id.* at *6. Beneficial ownership rights include the right to vote and the right to receive dividends. 17 C.F.R. § 240.13d-3(a) (2011). DTC only records the record owners from the first transaction on its centralized ledger, not the later resale and trades of stock. *In re Dole Food Co.*, 2017 WL 624843, at *3.

⁸ *Id.*

⁹ *Id.* at *1.

¹⁰ *Id.*

¹¹ *Id.*

to be effectuated in the same manner as merger consideration was distributed.¹² The record owners were expected to distribute both the consideration and the settlement amounts to the correct beneficial owners.¹³ The problem in this case arose because these record owners did not maintain accurate track of the identity of the beneficial owners and therefore were unable to distribute both the consideration and the settlement amount to the correct beneficial owners.¹⁴

The court noted that the scale of the inconsistency between the class of common stockholders and those asserting their rights as common stockholders (an approximately 13 million share discrepancy) is largely a product of the depository system.¹⁵ In this case, DTC put a “chill” on the records of Dole at close of business on November 1, 2013.¹⁶ The deal closed on November 4 and consideration was distributed then.¹⁷ But, in the three-day period between “chilling” the records and closing, more than thirty-two million shares of Dole common stock were traded, with no record on DTC’s centralized ledger.¹⁸ The centralized ledger did not reflect the trades in the days preceding closing.¹⁹ Therefore, both the record owners of shares on November 1, when DTC stopped tracking trading, and the beneficial owners of shares on November 4, when the merger was effectuated, asserted their facially valid claims as members of the common stockholder class on the date of the merger.²⁰ Under the current system, obtaining accurate records of beneficial ownership is “not realistically achievable” because it would require information from hundreds of brokers, banks, and their clients.²¹ Judge Laster posited that “distributed ledger technology offers a potential technological solution (to the depository system) by maintaining multiple, current copies of a single and comprehensive stock ownership ledger.”²²

¹² *Id.*

¹³ *Id.* at *3.

¹⁴ *Id.*

¹⁵ *Id.* at *4 n.1.

¹⁶ *Id.* at *3. A “chill” locks in the stockholder’s position on the ledger.

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.* at *3.

²⁰ *Id.*

²¹ *Id.* at *4.

²² *Id.* at *4 n.1.

The problem of inaccurate tracking of stockholders extends beyond affecting the settlement claim rights discussed in *Dole*. The issue also impacts stockholder votes on mergers and, relatedly, appraisal rights because they both involve stockholders asserting ownership rights to vote, and be compensated for, their dissenting opinion.²³ If stockholder ownership is not accurately recorded, stockholders can lose the opportunity to effectively exercise their statutorily guaranteed rights.²⁴

Although Delaware law only requires corporations to maintain a list of record holders (not beneficial owners), blockchain technology could offer a solution to tracking both types of ownership.²⁵ Without the need for intermediaries to trade securities, individuals will be free to trade *both* the record and beneficial ownership easily.²⁶ Distributed ledger trading can facilitate tracking of both record and beneficial ownership through peer-to-peer transactions, all while maintaining multiple, current copies of a single and comprehensive ledger.²⁷

I. BLOCKCHAIN GENERALLY

Distributed ledgers utilize blockchain technology to facilitate a secure, transparent, and immutable transaction in real-time.²⁸

²³ Joshua Klayman, Geoffrey Peck & Mark Wojciechowski, *Why the Delaware Blockchain Initiative Matters to All Dealmakers*, FORBES (Sept. 20, 2017), <https://www.forbes.com/sites/groupthink/2017/09/20/why-the-delaware-blockchain-initiative-matters-to-all-dealmakers/2/#6072ebc05f77> [http://perma.cc/FP A6-668R]; see DEL. CODE ANN. tit. 8, § 251(c) (West 2017); DEL. CODE ANN. tit. 8, § 262(a) (West 2018).

²⁴ See, e.g., *In re Appraisal of Dell Inc.*, 143 A.3d 20, 59 (Del. Ch. 2016); *In re Appraisal of Dell Inc.*, No. 9322-VCL, 2015 WL 4313206, at *1 (Del. Ch. July 30, 2015) (both holding that beneficial owners can forfeit their appraisal rights due to complexities in the depository securities trading system).

²⁵ *In re Dole Food Co.*, 2017 WL 624843, at *5; see DEL. CODE ANN. tit. 6, § 8-207(a) (West 2018) (issuers should “treat the registered owner as the person exclusively entitled to vote, receive notifications, and otherwise exercise all the rights and powers of an owner”).

²⁶ See Reggie O’Shields, *Smart Contracts: Legal Agreements for the Blockchain*, 21 N.C. BANKING INST. 177, 181 (2017); *infra* Section III.A.

²⁷ See *In re Dole Food Co.*, 2017 WL 624843, at *4 n.1.; O’Shields, *supra* note 26, at 181.

²⁸ Harold Primm, *Developments in Banking and Financial Law: 2016: VII. Regulating the Blockchain Revolution: A Financial Industry Transformation*, 36 REV. BANKING & FIN. L. 75, 80 (2016).

Blockchain technology uses distributed ledgers to employ a decentralized database, which is replicated on each computer in the network.²⁹ Each member of the network maintains a ledger detailing the transaction history amongst the parties within the network.³⁰ Every time a new transaction occurs, a new “block” is added to the existing chain of transaction history.³¹ Because of the decentralized feature of the database, this new “block” will be recorded on all ledgers within the database.³²

Transaction security is achieved through sophisticated cryptography, which ensures that one party in the database cannot unilaterally alter the transaction history on a ledger.³³ Further, each ledger on the distributed database must reconcile with a majority of other ledgers before completing a transaction, making fraudulent transactions nearly impossible.³⁴

The successive “blocks” which create a chain bolster transparency because blockchains provide a complete transaction history.³⁵ Immutability is achieved through the validation process; requiring a consensus among a majority of ledgers within a database to legitimize a transaction.³⁶ This instantaneous transaction validation is then recorded in real-time on each ledger, adding a new “block” to the chain.³⁷

II. BLOCKCHAIN & CORPORATE RECORD-KEEPING

Delaware corporate law confers beneficial ownership rights, including voting rights, dividend rights, and the standing to sue

²⁹ ARIZ. REV. STAT. ANN. § 44-7061(E)(1) (2017).

³⁰ Andrea Pinna & Wiebe Ruttenberg, *Distributed Ledger Technologies in Securities Post-Trading: Revolution or evolution?* 9, 17 (European Cent. Bank, Occasional Paper No. 172, 2016), <https://www.ecb.europa.eu/pub/pdf/scpops/ecbop172.en.pdf> [<http://perma.cc/SB9V-TG9J>].

³¹ Primm, *supra* note 28, at 78.

³² Pinna & Ruttenberg, *supra* note 30, at 9, 17.

³³ Daniel DeConinck, *Overstock Completes First Public Stock Issuance Using Blockchain*, 36 REV. BANKING & FIN. L. 416, 427 (2017).

³⁴ *Id.*; M. Mark Heekin, *A National Mortgage Notes Registry: America's Im-mense Need for Transparency and Certainty in Mortgage Ownership and the Right to Foreclose*, 17 J. BUS. & SEC. L. 67, 107–08 (2017).

³⁵ DeConinck, *supra* note 33, at 427; Primm, *supra* note 28, at 78.

³⁶ Pinna & Ruttenberg, *supra* note 30, at 6, 12.

³⁷ *Id.*; see ARIZ. REV. STAT. ANN. § 44-7061(E)(1) (2017). For an explanation on the technological inner workings of blockchain, see generally O'Shields, *supra* note 26, at 180.

for breach of fiduciary duties to the direct, beneficial owners of shares.³⁸ Voting rights are particularly important because, by voting, stockholders are afforded the opportunity to voice their individual opinions on corporate matters.³⁹ But, under traditional share trading methods, it is extremely difficult to track the true beneficial owner of a share because of the multitude of intermediaries involved.⁴⁰

When a public company conducts an Initial Public Offering (IPO) to issue shares, a nominee of the Depository Trust Company (DTC) buys up most or all of the issued shares.⁴¹ Then, the DTC sells the shares to institutional investors at a higher rate.⁴² Individuals or other security intermediaries then may buy the shares from the institutional investors and later sell the stock downstream on stock exchanges.⁴³ Each time a share is “sold,” the security entitlements to beneficial ownership are actually *assigned* to the new buyer from the intermediary seller.⁴⁴ The DTC remains the record owner of the stock, and only records broker ownership. When brokers and intermediaries sell shares, they do not track the true beneficial owners.⁴⁵ Instead, they track the assigned ownership rights on an aggregate basis, which inaccurately reflects the real individual owners.⁴⁶ The inaccuracies of

³⁸ 17 C.F.R. § 240.13d-3(a) (2011); Andrea Tinianow & Caitlin Long, *Delaware Blockchain Initiative: Transforming the Foundational Infrastructure of Corporate Finance*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Mar. 16, 2017), <https://corpgov.law.harvard.edu/2017/03/16/delaware-blockchain-initiative-transforming-the-foundational-infrastructure-of-corporate-finance/> [http://perma.cc/RR2B-A6RP].

³⁹ Grant Hayden & Matthew T. Bodie, *Shareholder Democracy and the Curious Turn Towards Board Primacy*, 51 WM. & MARY L. REV. 2071, 2082 (2010) (detailing rights of stockholders to elect boards of directors, vote on mergers and sale of substantially all of a corporation’s assets, vote to amend charter, and add proposals to proxy ballots).

⁴⁰ Stephen Fox, *Recent Cases Demonstrate Need for Blockchain*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Aug. 8, 2017), <https://corpgov.law.harvard.edu/2017/08/08/recent-cases-demonstrate-need-for-blockchain/> [http://perma.cc/S3RC-379U]; Tinianow & Long, *supra* note 38.

⁴¹ Klayman et al., *supra* note 23.

⁴² *Id.*

⁴³ Tinianow & Long, *supra* note 38.

⁴⁴ Fox, *supra* note 40; *id.* at 38.

⁴⁵ Tinianow & Long, *supra* note 38.

⁴⁶ *Id.*

tracking true beneficial owners are compounded by multiple levels of intermediary intervention in the trading of a single share.⁴⁷ This “depository system” can abridge important stockholder privileges, like voting and appraisal rights, due to the compounded tracking inaccuracies.⁴⁸

A. Corporate Record-Keeping Requirements

The problem of inaccurate records is significant because of the statutory record-keeping requirements in each state.⁴⁹ Corporations are required to maintain records of: articles of incorporation, amendments filed with the state, corporate bylaws, annual reports, names and addresses of directors and officers, names and addresses of stockholders, and meeting minutes.⁵⁰

In Delaware, corporations are required to maintain a complete list (called a stock ledger)⁵¹ of stockholders entitled to vote, in alphabetical order, including the address of each stockholder and the number of shares registered to him.⁵² In addition, corporations must record transfers of stock in accordance with other

⁴⁷ *Id.* A recent Delaware case highlights the magnitude of the inaccurate tracking problem. *In re Dole Food Co., Stockholder Litig.*, No. 8703-VCL 2015 WL 5052214, at *1 (Del. Ch. Aug. 27, 2015). For an in-depth discussion of *Dole* and the stockholder tracking issue, see Klayman et al., *supra* note 23.

⁴⁸ *In re Dole Food Co. Stockholders Litig.*, 2017 WL 624843, at *4 n.1 (citing *In re Appraisal of Dell Inc.*, 143 A.3d 20, 59 (Del. Ch. 2016)); *In re Appraisal of Dell Inc.*, No. 9322-VCL, 2015 WL 4313206, at *3–7 (Del. Ch. July 30, 2015) (holding that beneficial owners forfeit their appraisal rights due to the depository system).

⁴⁹ Nellie Akalp, *How to Keep Proper Corporate Records*, ENTREPRENEUR.COM (Jan. 19, 2017), <https://www.entrepreneur.com/article/287676#> [<http://perma.cc/3UDG-XUSF>]. This Note will focus on Delaware Law, as more than 50 percent of all publicly traded companies chose to incorporate in the state. JEFFERY W. BULLOCK, 2013 ANNUAL REPORT OF DELAWARE DIVISION OF CORPORATIONS, 2 (2013), https://corpfiles.delaware.gov/Corporations_2013%20Annual%20Report.pdf [<https://perma.cc/8WU7-F9HF>].

⁵⁰ *Id.*

⁵¹ DEL. CODE ANN. tit. 8, § 219(c) (West 2017) (“[S]tock ledger’ means one or more records administered by or on behalf of the corporation in which the names of all of the corporation’s stockholders of record, the address and number of shares registered in the name of each such stockholder, and all issuances and transfers of stock of the corporation are recorded.”).

⁵² *Id.* § 219(a).

securities laws.⁵³ Accurate stock ledgers are significant because they facilitate ownership, voting, appraisal, and dividend rights of stockholders.⁵⁴

B. Increased Accuracy Using Blockchain

The Delaware Blockchain Initiative (DBI) advocated for the amendment to Delaware Corporate Law to permit DLS in an effort to solve the problem of inaccurate record-keeping, specifically the inaccurate tracking of stockholders.⁵⁵ DLS allow for precise tracking of share ownership because of the transaction-history recording function of each “block” added to a blockchain.⁵⁶ The Delaware Court of Chancery has even pointed to distributed ledger technology as a solution to the inaccurate stock ownership tracking problem.⁵⁷

When an IPO is conducted using DLS, the Delaware Division of Corporations can cryptographically sign and transfer the authorized share to the corporation.⁵⁸ These original shares would serve as the first “blocks” on the corporation’s stock ledger blockchain.⁵⁹ Then, any subsequent transfers of shares are validated by a consensus of a majority of the network’s participants.⁶⁰ Once validated, the transfer will be recorded as a new “block” and added to the transaction history for that share.⁶¹ This process allows for *direct* share ownership and a perfect record of those stockholders, in a format easily accessible to the corporation.⁶² Because of the finite number of authorized shares, a perfect record of those issued, and an accurate transaction history, DLS could solve the problem of inaccurate stockholder lists.⁶³

⁵³ DEL. CODE ANN. tit. 8 § 160 (West 2018); *see* DEL. CODE ANN. tit. 8 § 106 (governing the transfer of investment securities).

⁵⁴ Klayman et al., *supra* note 23.

⁵⁵ Tinianow & Long, *supra* note 38.

⁵⁶ Pinna & Ruttenberg, *supra* note 30, at 3, 6–7.

⁵⁷ *In re Dole Food Co. Stockholder Litig.*, No. 8703-VCL, 2017 WL 624843, at *4 n.1 (Del. Ch. Feb. 15, 2017) (“Distributed ledger technology offers a potential technological solution by maintaining multiple, current copies of a single and comprehensive stock ownership ledger.”).

⁵⁸ *See* Tinianow & Long, *supra* note 38.

⁵⁹ *See* Heekin, *supra* note 34, at 107–08.

⁶⁰ *See* Pinna & Ruttenberg, *supra* note 30, at 7.

⁶¹ *See* Heekin, *supra* note 34, at 107–08.

⁶² *See* Fox, *supra* note 40; Tinianow & Long, *supra* note 38.

⁶³ *See* Fox, *supra* note 40; S.B. 69, 149th Gen. Assemb. (Del. 2017).

III. BLOCKCHAIN & STOCK TRADING

Blockchain technology can improve securities trading efficiencies by enabling a distributed ledger platform for secure, transparent, and immutable trading transactions.⁶⁴ For example, without the need for intermediaries to verify the validity of a transaction with an unknown buyer or seller, trading can be effectuated peer-to-peer instantaneously.⁶⁵ By using blockchain technology, a securities trader can be sure that the transaction is both valid and unchangeable, due to the immutability characteristic of distributed ledgers.⁶⁶ In addition, the transparency provided by multiple ledgers tracking every transaction facilitates more trust in the security being traded, and less need for asset verification.⁶⁷ An individual can more efficiently buy or sell securities using blockchain with the full confidence that the transaction is valid and unchangeable, without the use of an intermediary, thus decreasing transaction time and costs.⁶⁸

A. Delaware's Implementation of Blockchain Technology

Delaware was the first state to announce its support for implementation of distributed ledger technology in securities trading.⁶⁹ Formed in May 2016, the DBI supported an amendment to Delaware Corporate Law to accommodate distributed ledger offerings and trading of shares.⁷⁰ In July 2017, Delaware amended its Corporate Law to permit the use of blockchain technology to create and maintain corporate records, including

⁶⁴ See DeConinck, *supra* note 33, at 426.

⁶⁵ See *supra* Part I.

⁶⁶ See Pinna & Ruttenberg, *supra* note 30, at 10–11.

⁶⁷ See Heekin, *supra* note 34, at 107–08.

⁶⁸ See *infra* Section III.A.

⁶⁹ Marco A. Santori, *Governor Jack Markell Announces Delaware Blockchain Initiative*, GLOBAL DEL. BLOG (June 10, 2016), <https://global.delaware.gov/2016/06/10/delaware-to-create-distributed-ledger-based-share-ownership-structure-as-part-of-blockchain-initiative/> [<https://perma.cc/BRG9-4YFU>].

⁷⁰ Meri Weiss, *Delaware Moves Toward Blockchain Technology*, HARV. BUS. SERV. BLOG (June 19, 2017), <https://www.delawareinc.com/blog/Delaware-moves-toward-blockchain-technology/> [<https://perma.cc/ABB3-HGVH>].

distributed ledger shares (DLS).⁷¹ These DLS are recorded and transferred on a decentralized ledger.⁷²

Corporations opting to incorporate using DLS can benefit from the core efficiencies of blockchain technology by eliminating unnecessary intermediaries in the securities market and accurately tracking share ownership.⁷³ DLS can leverage the two main innovations of blockchain technology: accurate tracking of transfers of property and direct property ownership transfers from peer-to-peer.⁷⁴

Although Delaware is the first state to use blockchain technology for securities trading, other states have begun efforts to leverage blockchain efficiencies for other purposes.⁷⁵ Congress

⁷¹ S.B. 69, 149th Gen. Assemb. (Del. 2017). This act is intended to provide specific statutory authority for Delaware corporations to use networks of electronic databases for the creation and maintenance of corporate records, including the corporation's stock ledger; "[the stock ledger] must enable a corporation to prepare the list of stockholders specified in Sections 219 and 220 ... and, as required by Section 159, it must record transfers of stock as governed by Article 8 of Subtitle I of Title 6." *Delaware Senate Bill 69 Summary*, LEGISCAN, <https://legiscan.com/DE/bill/SB69/2017> [<https://perma.cc/6PR8-MZV4>].

⁷² See Weiss, *supra* note 70.

⁷³ See Fox, *supra* note 40; Ryan Surujnath, Note, *Off the Chain! A Guide to Blockchain Derivatives Markets and the Implications on Systemic Risk*, 22 FORDHAM J. CORP. & FIN. L. 257, 260 (2017) ("[A]t their core, blockchains are about trust and transparency among unknown peers in the absence of mutually agreed upon intermediaries."); Tinianow & Long, *supra* note 38.

⁷⁴ See O'Shields, *supra* note 26, at 181.

⁷⁵ Jeffrey Neuburger, *Arizona Passes Groundbreaking Blockchain and Smart Contract Law—State Blockchain Laws on the Rise*, NEW MEDIA & TECH. L. BLOG (Apr. 20, 2017), <https://newmedialaw.proskauer.com/2017/04/20/arizona-passes-groundbreaking-blockchain-and-smart-contract-law-state-blockchain-laws-on-the-rise/> [<https://perma.cc/4D39-6MUB>]; see, e.g., H.B. 2417, 53rd Leg., Reg. Sess. (Ariz. 2017) (clarifying the enforceability of "smart contracts" and electronic signatures executed utilizing blockchain technology); H.B. 1481, 29th Leg. (Haw. 2017) (establishing a "working group" to advise on the use of blockchain technology in identity and access management, healthcare, legal services, financial services, manufacturing, and tourism); Legis. Doc. 950, 128th Leg., Reg. Sess. (Me. 2017) (using blockchain technology in conjunction with paper ballots in elections); S.B. 398 79th (Nev. 2017) ("recognizing blockchain technology as a type of electronic record for the purposes of the Uniform Electronic Transactions Act"); H.868, 88th Gen. Assemb. (Vt. 2016) (stating that under the Vermont Rules of Evidence, blockchain-based records will be considered "business records"); Illinois Department of Innovation & Technology, Illinois Blockchain Initiative (created to explore innovations presented by Blockchain

has even employed the Congressional Blockchain Caucus to explore how blockchain can “improve identity management, asset tracking and ownership, healthcare records management, intellectual property rights, and much more.”⁷⁶ While federal law regulates securities trading, state law governs corporations pursuant to the internal affairs doctrine.⁷⁷ Accordingly, individual states will have to amend their corporate legislation to allow for blockchain-enabled corporate record-keeping of stock ledgers.⁷⁸

IV. ACCURATE STOCKHOLDER LISTS & MERGER APPROVALS

At common law, mergers and other business combinations required a unanimous stockholder vote to approve the transaction.⁷⁹ Through the evolution of state corporate law, statutory mergers today can be effectuated with less than unanimous stockholder approval.⁸⁰ Under Delaware law, two or more corporations may merge into a single surviving corporation, by way of a proper merger agreement.⁸¹ First, the Boards of Directors of each company

and distributed ledger technology), <https://illinoisblockchain.tech/> [<https://perma.cc/J3BV-HSUT>].

⁷⁶ Congressmen Jared Polis & David Schweikert, *Congressional Blockchain Caucus*, <https://www.congressionalblockchaincaucus.com/> [<https://perma.cc/AQ P6-EAR7>].

⁷⁷ Timothy P. Glynn, *Communities and Their Corporations: Toward a Stakeholder Conception of the Production of Corporate Law*, 58 CASE W. RES. L. REV. 1067, 1075, 1078 (2008) (defining the internal affairs doctrine as “a horizontal choice-of-law rule that provides that the law of the state of incorporation governs the relationship between the firm, its shareholders, and firm management.”).

⁷⁸ See Akalp, *supra* note 49 (noting that states vary in their record-keeping requirements).

⁷⁹ *Voeller v. Neilston Warehouse Co.*, 311 U.S. 531, 535 n.6 (1941) (“At common law, unanimous shareholder consent was a prerequisite to fundamental changes in the corporation”).

⁸⁰ For a historical overview of the development of stockholder voting rights on corporate combinations, see generally Nelson Ferebee Taylor, *Evolution of Corporate Combination Law: Policy Issues and Constitutional Questions*, 76 N.C. L. REV. 687, 695 (1998).

⁸¹ DEL. CODE ANN. tit. 8, § 251(a) (West 2017). Note that not all statutory mergers must be submitted to stockholder vote. See DEL. CODE ANN. tit. 8, § 251(f)–(h) (West 2017) (proscribing the situations in which a Board of Directors is not required to present the merger agreement to stockholder for approval). For the purposes of this Note, “merger” refers to those business reorganizations which require stockholder approval pursuant to DEL. CODE ANN. tit. 8, § 251 (West 2017).

must adopt a resolution approving such agreement, which states the material terms and effects of such a merger.⁸² Then, the agreement must be submitted to the stockholders of both corporations at an annual or special meeting.⁸³ It is significant to note that notice of the time, place, and purpose of the meeting is sent to those stockholders on the company's stock ledger at least *twenty days before* the meeting.⁸⁴ The merger is approved if, at the meeting to consider the agreement, a majority of stockholders of outstanding stock in the corporation who are entitled to vote, vote in favor of the merger.⁸⁵

In addition to the right to vote on certain mergers, stockholders are also entitled to appraisal rights.⁸⁶ Appraisal rights are extended to those stockholders who: own shares on the date of the vote, own the shares through the effective date of the business reorganization, and did not vote in favor of the merger.⁸⁷ Because of the depository system, the record holder of shares who is recorded in the official stockholder list is usually not the beneficial owner of the shares, entitled to dissenters' appraisal rights.⁸⁸ The record owner of shares, DTS, will vote in bulk on the merger for all of their recorded shares.⁸⁹ DTS does not differentiate between the individual stockholders votes because the shares are held in "fungible bulk" among many others.⁹⁰ This creates a problem because in order to exercise appraisal rights, a stockholder must

⁸² *Id.* § 251(b). All resolutions should state the terms and conditions of the merger, how the merger will be carried out, and what consideration will be paid to the constituent stockholders. *Id.* § 251(b)(1)–(2), (5)–(6). For mergers, resolutions must also state amendments to the certificate of incorporation. *Id.* § 251(b)(3). For consolidations, resolutions must include the certificate of incorporation of the resulting corporation. *Id.* § 251(b)(4).

⁸³ *Id.* § 251(c).

⁸⁴ *Id.*

⁸⁵ *Id.*; see Celia R. Taylor, "A Delicate Interplay": Resolving the Contract and Corporate Law Tension in Mergers, 74 TUL. L. REV. 561, 577 (1999) ("Final shareholder approval concludes the approval stage and the mechanics of the merger will then be implemented.").

⁸⁶ DEL. CODE ANN. tit. 8, § 262(a) (West 2018).

⁸⁷ *Id.*

⁸⁸ Robert S. Reder & Stanley Onyeador, *Delaware Chancery Disqualifies Lead Petitioners in Dell Appraisal Who Inadvertently Voted "FOR" Management Buyout*, 69 VAND. L. REV. EN BANC 279, 286 (2016).

⁸⁹ *Id.*

⁹⁰ *Id.*

have voted against a merger.⁹¹ If the record holder votes shares in bulk without determining which shares are for or against the merger, a stockholder can forfeit their appraisal rights by “inadvertently voting in favor of the merger due to complexities created by the depository system.”⁹²

Under a new regime of blockchain facilitated peer-to-peer stock trading, the issue of inaccurate stockholder votes on mergers and inadvertent forfeiture of appraisal rights can be remedied.⁹³ Stockholder votes are taken in real-time, by the true beneficial owners of stock.⁹⁴ Approving stockholders can be sure that their vote is counted, and dissenting stockholders will have accurate proof that they voted against the reorganization.⁹⁵ The effects of this timely, more accurate system of stockholder voting could increase the rate of merger approvals and make it easier to assert appraisal rights.

Current Delaware law requires that a merger agreement be submitted to stockholders at least twenty days prior to the date of the meeting to approve the merger.⁹⁶ However, due to the high volume of stock trading that occurs between announcement of a merger, stockholder vote, and subsequently, the closing of the deal, the stockholders who receive the agreement twenty days prior to voting are not the same beneficial owners of the target stock twenty days later.⁹⁷ Because DLS allow for accurate tracking of beneficial stockholders, those who acquire shares during the twenty-day

⁹¹ DEL. CODE ANN. tit. 8, § 262(a) (West 2018).

⁹² *In re Dole Food Co. Stockholder Litig.*, No. 8703-VCL, 2017 WL 624843, at *11 n.1 (Del. Ch. Feb. 15, 2017); see *In re Appraisal of Dell Inc.*, 143 A.3d 20, 59 (Del. Ch. 2016) (holding that the complexities created by the depository system can force beneficial owners to forfeit appraisal rights).

⁹³ *In re Dole Food Co.*, 2017 WL 624843, at *11 n.1.

⁹⁴ See DeConinck, *supra* note 33, at 426–27; Primm, *supra* note 28, at 78–80.

⁹⁵ See Reade Ryan & Mayme Donohue, *Securities on Blockchain*, 73 BUS. LAWYER 85, 97–98 (2018) (explaining how securities traded on distributed ledgers maintain a record of definitive ownership). If the definitive owners vote, their voting record will be accurately recorded as well. *Id.* at 94, 100.

⁹⁶ DEL. CODE ANN. tit. 8, § 251(c) (West 2017).

⁹⁷ See *In re Dole Food Co. Stockholder Litig.*, 2017 WL 624843, at *3 (thirty-two million shares traded in the three days before closing of the merger); Isfandiyar Shaheen, *Stock Market Reaction to Acquisition Announcements Using an Event Study Approach*, FRANKLIN & MARSHALL C. DEPT ECON. (May 5, 2006) (“Announcements of mergers and acquisitions immediately impact a target company’s stock price, as induced reaction in the stock market cause investors to revise expectations about the company’s future profitability.”).

pre-vote period should also be given the merger agreement.⁹⁸ In addition, on the day of the vote, the true beneficial owners of the shares will be able to express their opinion for or against the merger agreement.⁹⁹

This scenario, where the true post-announcement, pre-closing beneficial owners of shares vote for a merger, will result in the heightened probability that a merger is approved. Essentially, the market forces¹⁰⁰ after a merger is announced that influence the voting behavior of stockholders are now reflected on an accurate stockholder ledger.¹⁰¹ As discussed in-depth below, the general market force is from stockholders who bought shares after the merger announcement and support the consummation of that merger.¹⁰² DLS allow these market forces to determine the outcome of the actual vote because the corporation will have access to an accurate stockholder list on the day of the vote.¹⁰³ This increased approval rating can be explained by evaluating the three types of voting stockholders whose ownership has been accurately tracked in real time.¹⁰⁴ The accurate stockholder list, coupled with the updated transaction history of shares, allows for the market forces to have a real effect on stockholder voting.¹⁰⁵

This Section will evaluate the expected voting behaviors of three types of stockholders: those who owned target stock before the merger announcement and plan to continue being stockholders (“X stockholders”), those who bought target stock after the merger announcement (“Y stockholders”), and those who owned target stock

⁹⁸ See DEL. CODE ANN. tit. 8, § 251(c) (West 2017).

⁹⁹ See *id.*; *supra* Part IV.

¹⁰⁰ “Market forces,” as referenced in this Note, refer to the trading behaviors of institutional investors who are interested enough to make informed trading decisions. Jeffrey Manns & Rover Anderson IV, *The Merger Agreement Myth*, 98 CORNELL L. REV. 1143, 1155 (2013). This Note does not predict the trading behaviors of disinterested individual investors, who may be rationally apathetic. Market forces in this Note further assume that DLS use a *private* blockchain in which the stockholders cannot see the trades or votes of other stockholders.

¹⁰¹ See Ryan & Donohue, *supra* note 95, at 98 (explaining how securities issued on a blockchain ledger give issuer almost real-time data as to the *accurate* record holders of its securities).

¹⁰² See *infra* Section IV.D.

¹⁰³ See Ryan & Donohue, *supra* note 95, at 98.

¹⁰⁴ See *id.* at 98.

¹⁰⁵ See *id.*; see also Fox, *supra* note 40.

before the merger announcement but do not plan on remaining as stockholders (“Z stockholders”). This Note presumes the efficient market hypothesis in predicting security trading behaviors.¹⁰⁶ “Economic theory broadly assumes that the semi-strong efficient market hypothesis applies to stock prices. This well-established framework asserts that stock prices immediately incorporate all publicly available information about the issuer which implies that the information ... is incorporated into the stock price on the trading day of the disclosure.”¹⁰⁷ The expected voting behaviors of X, Y, and Z stockholders rely on this semi-strong version of the Efficient Market Hypothesis, meaning that their trading behaviors are based on incorporating the information of a merger announcement.¹⁰⁸

A. X Stockholders

X stockholders were owners of the target company stock prior to the merger announcement. The acquiring company offers a premium in either cash or stock to be traded for the target stockholders’ shares.¹⁰⁹ In response to a merger announcement, the demand for target company shares increases, causing the stock to trade at a premium on the market.¹¹⁰ Because X stockholders have chosen to forgo the premium they could realize by selling on the market, they are indicating a belief that the merger consideration is more valuable than the market premium offered.¹¹¹ It follows that these X stockholders will vote in favor of the merger because they want to realize the benefits of forgoing the market premium and actually receive the merger consideration.¹¹²

¹⁰⁶ Efficient Market Hypothesis is especially relevant in the merger context because institutional investors, “specialize in investing in merger target companies and rapidly acquire ... target company shares after the merger announcement.” Manns & Anderson, *supra* note 100, at 1155.

¹⁰⁷ *Id.* at 1147 n.8.

¹⁰⁸ *See id.* at 1155.

¹⁰⁹ *See* Shaheen, *supra* note 97, at 3–4, 27.

¹¹⁰ *See* Manns & Anderson, *supra* note 100, at 1154.

¹¹¹ *See id.* at 1160, 1170 (explaining that merger announcements have a strong positive impact on target company share price, usually up to a price just below the consideration to be paid in the merger).

¹¹² *See id.* at 1147 (“Markets understand that the decision to merge appears driven by the hope ... for greater potential returns for the combined company and the target company’s shareholders’ desire for the takeover premium.”).

Another group of X stockholders (X'), may have forgone selling on the market because they believe that the value of the target company's stock without merging will be greater than both the premium offered on the market and the merger consideration.¹¹³ Therefore, such group of X stockholders may vote against the merger to realize the highest value from their stock.¹¹⁴ However, due to the influence of the Y stockholders explained below, it would be irrational to be an X' stockholder because the merger will most likely be approved and such X' stockholder would receive the consideration that such stockholder has already deemed insufficient.¹¹⁵ Because of this reality, stockholders with an X' mentality will either become normal X stockholders who vote in favor of the merger and receive consideration, Z' stockholders who plan to vote against the merger and subsequently assert appraisal rights, or sell on the market, losing the effect of their vote entirely.¹¹⁶

In summary, X stockholders are owners of the target company stock before the merger announcement.¹¹⁷ Due to their belief that the merger consideration is superior to the premium market price, they have foregone selling their shares.¹¹⁸ To receive the consideration, the merger must be approved and therefore, X stockholders will vote in favor of the merger.¹¹⁹

B. Y Stockholders

Y stockholders bought the target company stock after the merger announcement. As discussed, in response to merger announcements, target stock demand increases and so does the market price.¹²⁰ Y stockholders paid a premium on the market

¹¹³ See, e.g., STEPHEN M. BAINBRIDGE, *MERGERS AND ACQUISITIONS* 43 (3d ed. 2012) (explaining a valid reason to want a merger is that the sum of the whole is worth more than the individual parts). X' stockholders take the opposite view, believing that the value of the individual company is worth more.

¹¹⁴ See, e.g., *id.*

¹¹⁵ See *infra* Sections IV.A–C.

¹¹⁶ See *In re* Appraisal of Dell Inc., 143 A.3d 20, 59 (Del. Ch. 2016).

¹¹⁷ See Manns & Anderson, *supra* note 100, at 1154.

¹¹⁸ This belief is supported by the trend of target company share prices rising to a level just below the offered consideration to be paid in the merger. See *id.* at 1160.

¹¹⁹ See *id.* at 1147 (explaining the target stockholder's desire for the takeover premium offered as consideration).

¹²⁰ See *id.*

for the target company stock, indicating that they think the merger consideration is more valuable than even the premium price they paid for the stock itself.¹²¹ Because the Y stockholders chose to become equity owners of the target company after the merger is announced, they were necessarily called to action by the merger prospect itself.¹²² To gain value over the premium price paid, these Y stockholders will vote in favor of the merger to receive the consideration.¹²³

There may be some stockholders (Y') who bought target company stock after the merger announcement but who do not want the merger to be effectuated, signifying a belief that target stock will be worth more if the target stays independent.¹²⁴ Y' stockholders may take the merger announcement as an indicator that target stock is undervalued, and be willing to pay a premium to realize a portion of that value, with the opportunity for it to increase more.¹²⁵ However, to capture the arbitrage spread, the merger needs to be effectuated so the stockholder can be liquidated or given more valuable stock as consideration.¹²⁶ This means that a rational Y' stockholder will either sell to another eager Y stockholder who wants to benefit from the merger consideration, or they will

¹²¹ *See id.* at 1155 (discussing the acquisition of target shares post-merger announcement by hedge funds and institutional investors who specialize in investing in target companies seeking to exploit arbitrage opportunity).

¹²² *See id.* at 1147.

¹²³ *See id.*

¹²⁴ Otherwise, Y' stockholders would not have bought the target stock at such a market premium without the intent to receive the takeover premium consideration. Compare BAINBRIDGE, *supra* note 113, at 46 (“[t]he successful bidder typically pays a premium of 30–50 [percent] ... over the pre-bid market price of the target’s stock.”), with Manns & Anderson, *supra* note 100, at 1160, 1170 (explaining that merger announcements have a strong positive impact on target company share price, usually up to a price just below the consideration to be paid in the merger). Z' stockholders would be willing to pay this market premium and forego the takeover premium. *See* Manns & Anderson, *supra* note 100, at 1172–73.

¹²⁵ *But see id.* at 1147 (explaining that the decision to merge is motivated by an expectation of future potential returns of the combined company, not the target individually).

¹²⁶ *See* Shaheen, *supra* note 97, at 6. An arbitrage spread is the difference between the consideration and the current market price. Investors seeking to capture the spread must buy the target stock at a discount to the consideration offered, and then liquidate those shares after the merger is effectuated. *Id.*

vote in favor of the merger themselves, effectively acting as regular Y stockholders.¹²⁷

In summary, Y stockholders bought target company stock for a premium on the market after the merger is announced.¹²⁸ Like X stockholders, Y stockholders believe that the merger consideration is superior to the premium market price.¹²⁹ To receive that superior consideration, the merger must be approved and therefore Y stockholders will vote in favor of the merger.¹³⁰

C. Z Stockholders

Z stockholders owned target stock before the merger announcement, but do not want to continue as target stockholders. Instead of selling their shares on the market for a premium, Z stockholders hold onto their shares. This retention of shares indicates a belief that either the merger consideration is worth more than the premium market price, the value of the target stock will be worth more than both the consideration and the market premium if the company stays independent, or that the fair market value of the stock will be worth more than the both the consideration and the market premium.¹³¹ The latter group, Z' stockholders, plan to assert appraisal rights and receive the fair market value.

¹²⁷ See Manns & Anderson, *supra* note 100, at 1147 (expressing stockholder desire for takeover premiums); Shaheen, *supra* note 97, at 6 (discussing capturing the arbitrage spread).

¹²⁸ See Manns & Anderson, *supra* note 100, at 1147.

¹²⁹ See *id.*; *supra* Section IV.B.

¹³⁰ See Manns & Anderson, *supra* note 100, at 1147 (explaining the target stockholder's desire for the takeover premium offered as consideration).

¹³¹ See BAINBRIDGE, *supra* note 113, at 46 (“[T]he successful bidder typically pays a premium of 30–50 [percent] ... over the pre-bid market price of the target's stock.”); Manns & Anderson, *supra* note 100, at 1170 (explaining that merger announcements have a strong positive impact on target company share price, usually up to a price just below the consideration to be paid in the merger); David A. Katz, *Shareholder Activism in the M&A Context*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Mar. 27, 2014), <https://corpgov.law.harvard.edu/2014/03/27/shareholder-activism-in-the-ma-context/> [https://perma.cc/YMR5-9L72] (discussing the high success rate of obtaining a higher price than merger consideration in appraisal litigation in Delaware in the past).

Z stockholders who believe that the merger consideration is worth more than the premium market price are effectively X stockholders and will vote in favor of the merger.¹³²

Z stockholders who believe that the value of the target stock is worth more than the premium market price and the consideration if the company stays independent, will vote against the merger to realize such value.¹³³ Z stockholders will have to effectively evaluate the probability of the merger being denied in order to rationally decide to vote against the merger in hopes of higher realized value as a stockholder of the independent target company.¹³⁴ If the Z stockholder concludes that the merger will not be effectuated, the decision to remain a target stockholder and vote against the merger is justified.¹³⁵ However, the risk of retaining the target company shares and losing out on the market premium is high, because if the merger is approved, the Z stockholder will be left to either accept the consideration or become a Z' stockholder attempting to assert appraisal rights.¹³⁶

These outcomes completely depend on the voting behavior of the other stockholders.¹³⁷ As discussed in the previous sections, a majority of X and Y stockholders will vote in favor of the merger to realize the value they pursued originally.¹³⁸ In light of the mass quantity of market activity surrounding the announcement of a merger, Z stockholders should be cautious due to the flux of Y

¹³² See Manns & Anderson, *supra* note 100, at 1160; *supra* Section IV.A.

¹³³ Otherwise, if they vote in favor of the merger, they will receive the consideration which Z stockholders have determined doesn't maximize their stockholder value. This belief is contrary to the usual behavior of target stockholders who desire a takeover premium paid as consideration. See Manns & Anderson, *supra* note 100, at 1147.

¹³⁴ See *id.* (explaining the target stockholder's desire for the takeover premium offered as consideration).

¹³⁵ If the merger is not effectuated, then target stockholders will not receive the consideration, which is inadequate anyways according to Z stockholder calculations. See *id.*

¹³⁶ But see Katz, *supra* note 131 (discussing the high success rate of obtaining a higher price than merger consideration in appraisal litigation in Delaware in the past).

¹³⁷ See Manns & Anderson, *supra* note 100, at 1147 (assuming the semi-strong Efficient Market Hypothesis).

¹³⁸ See *supra* Sections IV.A–C.

stockholders entering the voting pool.¹³⁹ The X and Y affirmative voting pool will most likely outnumber the Z group of stockholders, because any rational target stockholder owning shares on the day of the merger will vote in favor of it.¹⁴⁰ Therefore, Z stockholders who vote against the merger will be left to take the consideration or assert appraisal rights, neither outcome being ideal for their calculation of maximization of value.¹⁴¹ Z stockholders who do not want to become Z' stockholders asserting appraisal rights, will be forced to accept the merger consideration. If they are going to accept the consideration, they are now effectively X stockholders who will vote in favor of the merger.¹⁴²

Z stockholders who believe that the fair market value of target stock will be worth more than the consideration and the market premium, Z' stockholders, will vote against the merger to realize this value.¹⁴³ Stockholders are entitled to assert appraisal rights if they vote against the merger.¹⁴⁴ The rational Z' stockholder must believe that the time and effort necessary to assert appraisal rights will yield more value than receiving the consideration from the merger.¹⁴⁵ Z' stockholders have already foregone realizing a gain from the market premium by not selling on the market before the merger is consummated.¹⁴⁶ Appraisal litigation is risky and can be very expensive.¹⁴⁷ Therefore, the

¹³⁹ See, e.g., *In re Dole Food Co. Stockholders Litig.*, No. 8703-VCL, 2017 WL 624843, at *8 (explaining that thirty-two million shares were traded in the three days before closing of the merger).

¹⁴⁰ Assuming rational stockholder action under the Efficient Market Hypothesis in the merger context. See Manns & Anderson, *supra* note 100, at 1155.

¹⁴¹ See *id.* at 1147 (expressing stockholder desire for takeover premiums); Shaheen, *supra* note 97 (discussing capturing the arbitrage spread).

¹⁴² See Manns & Anderson, *supra* note 100, at 1160.

¹⁴³ Fair market value as determined by a court in appraisal right perfection litigation. Katz, *supra* note 131 (discussing the high success rate of obtaining a higher price than merger consideration in appraisal litigation in Delaware in the past).

¹⁴⁴ See *supra* Part IV; DEL. CODE ANN. tit. 8, § 262(a) (West 2018).

¹⁴⁵ See Katz, *supra* note 131.

¹⁴⁶ See Manns & Anderson, *supra* note 100, at 1147 (discussing target stockholder desire for the takeover premium reflected in the rising price of target shares after a merger is announced).

¹⁴⁷ See Katz, *supra* note 131 (discussing the high success rate of obtaining a higher price than merger consideration in appraisal litigation in Delaware in the past).

pool of Z' dissenting voters will be small, as most target stockholders will be looking for a guaranteed realization of value.¹⁴⁸

In summary, Z and Z' stockholders owned target stock before the merger announcement and wish to remain target stockholders after the merger vote. The only way to remain stockholders of an independent target company is to vote against the merger.¹⁴⁹ However, due to the high probability that large numbers of X and Y stockholders will vote in favor of the merger, and the low probability that the fair market value awarded by a court realizes an actual gain, Z stockholders will also be incentivized to vote in favor of the merger to receive the guaranteed consideration.¹⁵⁰

D. Merger Approval

The ability of a target company to accurately track the beneficial ownership of its shares will undoubtedly lead to more precise voting by the true owners of stock, as reflected on a precise stock ledger.¹⁵¹ This accuracy allows market forces that drive stockholder activity surrounding the announcement of a merger to become evident in the actual stockholder vote.¹⁵² To summarize, on the day of the vote, target stockholders are either pre-announcement stockholders, who have not sold their shares, or post-announcement share acquirers, who paid a premium to

¹⁴⁸ *See id.* It is unclear whether high success rates were due to suits being brought in only the most egregious of circumstances or whether courts are sympathetic to the dissenting stockholder asserting appraisal rights in general. *Id.* In either case, it is still prohibitively expensive to initiate and prevail in appraisal right perfection litigation. *Id.*

¹⁴⁹ Otherwise, "if a quorum is present, the merger will be approved if more votes are cast in favor of the plan of merger than against it." BAINBRIDGE, *supra* note 113, at 160.

¹⁵⁰ *See Manns & Anderson, supra* note 100, at 1147 (expressing stockholder desire for takeover premiums); Shaheen, *supra* note 97, at 6 (discussing capturing the arbitrage spread).

¹⁵¹ *See In re Dole Food Co. Stockholder Litig.*, No. 8703-VCL, 2017 WL 624843, at *4 (Del. Ch. Feb. 15, 2017); Ryan & Donohue, *supra* note 95, at 100 (explaining how securities traded on distributed ledgers maintain a record of definitive ownership).

¹⁵² *See In re Dole Food Co. Stockholder Litig.*, 2017 WL 624843, at *11 n.1 (explaining that thirty-two million shares were traded in the three days before closing of the merger); Ryan & Donohue, *supra* note 95, at 98.

become stockholders.¹⁵³ Because the majority of rational actors in both of those groups will be motivated to vote in favor of the merger, more stockholder-approved mergers will be effectuated using DLS.¹⁵⁴

E. Exercise of Appraisal Rights

The problem enumerated in *Dole* extends to the loss of appraisal rights for some stockholders due to inaccurate tracking of beneficial owners who voted against a merger.¹⁵⁵ However, by using DLS and therefore having an accurate stockholder ledger, companies will be able to track which of the true beneficial owners vote in favor or against the merger.¹⁵⁶ In theory, this accurate tracking of beneficial owner votes will make it easier to perfect appraisal rights, as one of the required elements is proof of voting *against* the merger.¹⁵⁷ But, practically this will not increase the exercise of appraisal rights because of the market forces discussed in the previous Section.¹⁵⁸

On voting day, the rational stockholder will vote in favor of the merger to receive the consideration.¹⁵⁹ Z' stockholders are the only group which may vote against the merger to receive "fair market value" through the appraisal process.¹⁶⁰ But, as discussed, it would be extremely risky to count on the time and expense of appraisal litigation to be outweighed by such a large "fair market value" premium as to make the perfection of appraisal rights worth it.¹⁶¹ Accordingly, appraisal rights litigation probably will

¹⁵³ See Manns & Anderson, *supra* note 100, at 1147.

¹⁵⁴ See *supra* Sections IV.A–C.

¹⁵⁵ See, e.g., *In re Appraisal of Dell Inc.*, 143 A.3d 20, 59 (Del. Ch. 2015); *In re Appraisal of Dell Inc.*, No. 9322-VCL, 2015 WL 4313206, at *1 (Del. Ch. July 13, 2015) both holding that beneficial owners can forfeit their appraisal rights due to complexities in the depository securities trading system).

¹⁵⁶ See Ryan & Donohue, *supra* note 95, at 100 (explaining how securities traded on distributed ledgers maintain a record of definitive ownership). If the definitive owners vote, their voting record will be accurately recorded as well. See *id.* at 94.

¹⁵⁷ See DEL. CODE ANN. tit. 8, § 262(a) (West 2018); Reder & Onyeador, *supra* note 88, at 286.

¹⁵⁸ See *supra* Part IV.

¹⁵⁹ See Katz, *supra* note 131.

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

not increase from historical levels as a consequence of accurate stockholder ledgers.¹⁶²

CONCLUSION

Blockchain technology has the potential to revolutionize the securities trading world through DLS. One potential result of leveraging blockchain for DLS is that corporations would be able to maintain an up-to-date, accurate stockholder ledger at all times. Further, this means that when corporations submit proxies to stockholders to vote on, the true beneficial owners of the shares will receive these proxies and their votes will be counted.¹⁶³ This innovation of accurate stockholder lists is significant to stockholder approved mergers because, in using DLS, the true owners of shares will vote for or against the proposed transaction.¹⁶⁴ This Note posits that the market forces already in play surrounding the announcement of a merger can be reflected in the vote using accurate stockholder lists that are current up to the date of the vote. Because these market forces can be reflected in the vote using DLS, more stockholder approved mergers will be effectuated.¹⁶⁵ In addition, increased accuracy of stockholder lists will not cause an increase in the perfection of appraisal rights due to the prohibitive costs of such litigation.¹⁶⁶

¹⁶² *Id.*

¹⁶³ DEL. CODE ANN. tit. 8, § 262(a) (West 2018); see Ryan & Donohue, *supra* note 95, at 97.

¹⁶⁴ DEL. CODE ANN. tit. 8, § 262(a) (West 2018); see Ryan & Donohue, *supra* note 95, at 97.

¹⁶⁵ See DEL. CODE ANN. tit. 8 § 262(a) (West 2018); Katz, *supra* note 131.

¹⁶⁶ See *In re Appraisal of Dell Inc.*, 143 A.3d 20, 59 (Del. Ch. 2015); Katz, *supra* note 131.