Chapter 3

Theory of the firm

Chapter Outline

Environmental, social, and governance (ESG) investing at its core seeks to contribute assets to companies which are pursuing ESG goals, or to influence companies to do so. But some question to what degree companies should pursue nonfinancial goals. One of the most important writings on the purpose of a firm is Milton Friedman's "The social responsibility of business is to increase its profits" (Friedman, 1970). The majority of corporate executives, boards, and investment managers still agree with Friedman's view but after 50 years, many others think that this is not the whole answer. In this chapter, we will discuss Friedman's important paper and go on to look at competing views.

The social responsibility of business is to increase its profits

First, Friedman takes issue with discussions of the "social responsibilities of business." He points out that this is too vague, that inanimate constructs like corporations don't have responsibilities. It is people, proprietors, or corporate executives, who have responsibilities, and their fundamental responsibility is to conduct their business activities in accordance with the desires of their owners/employers. This means they will undertake "to make as much money as possible while conforming to the basic rules of society, both those embodied in law and those embodied in ethical custom" (Friedman, 1970). He notes that some corporations, for example, hospitals, might have an additional objective of providing certain levels of service. His point here is that the firm's managers are responsible to the owners of the corporation. These employees are free to support charitable or social activities on their own time, with their own income and wealth but have no basis to take it upon themselves to divert corporate resources to these purposes. Such an action would be taking money from others. It would reduce shareholder returns or

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if these expenditures were funded by raising sales prices, it would siphon off customers' money. Shareholders and customers are, of course, always free to spend their own money on any cause as they see fit and, in this view, these are the appropriate sources of funding for charitable and social causes. A related question is to what extent corporate charitable acts might "crowd out" private contributions. One way to view employee spending on social activities is that they would be "taxing" shareholders and customers, and employees would be deciding on their own where "expenditures" of these tax dollars should go. But, Friedman points out, we have established elaborate governmental procedures to determine taxes and expenditures: democratic elections; elaborate checks and balances; executive, legislative, and judicial arms; federal, state, and local powers; important constitutional protections; and massive regulatory procedures. Imperfect as it may be, all this apparatus would be overturned or circumvented by a business manager, self-selected or appointed by a board of directors, who deems themselves simultaneously legislator, government executive, and jurist in pursuit of a specific social goal. Friedman goes further to consider that the corporate executive is hired to be an agent in promoting the interests of the owners of the corporation. To the extent that the executive departs from that goal in an attempt to further social purposes, then they become (unelected, unnominated, and unconfirmed) de facto public employees. Further questions arise as to how does the employee know how much to spend and how to spend it? How do they know what action to take to meet a specific social goal? What are the appropriate cost shares to assign to employees, shareholders, and customers? Many who support corporations' social activism do so only to the extent that their own preferences are aligned with those specific activities. However, they are less supportive or even critical of corporate activism which is at odds with their beliefs. So, it is not corporate social responsibility per se that they support, but instead it's the backing of specific causes that are important to them.

Friedman goes on to address the complaint that political and legislative processes are often too slow to address pressing social problems. He finds this argument objectionable in principle in that those who make this assertion have failed to persuade a majority of fellow citizens of their position and are nonetheless seeking to make an undemocratic claim of their validity. This argument also applies to activist stockholder proposals whereby a minority seek to impose their desire for favored causes on the company when those causes have consistently failed to attract support of a majority of the holders. And this is not a sterile debate from the 1970s. For example, large institutional investors are currently engaged with gun manufacturers on the issues of firearm manufacturing, sales and safety. As recently as March 2018, gunmaker American Outdoor Brands Corporation (formerly Smith and Wesson) posted a reply to these investors on its company website (Monheit and Debney, 2018):

"We do not believe that our stockholders associate the criminal use of a firearm with the company that manufactures it. We do believe, however, that there would be far greater reputational and financial risk to our company if we were to manufacture and market products containing features that consumers of our products do not desire, or if we were to take political positions with which consumers of our products do not agree." Though the company respects the current national gun-control debate, "the solution is not to take a politically motivated action that has an adverse impact on our company, our employees, our industry, our shareholders, the economies we support and, significantly, the rights of our law-abiding customers, but results in no increase in public safety." The company does, however, support greater enforcement of current laws and efforts to improve background checks.

After Friedman, a second influential paper is "Theory of the firm: managerial behavior, agency costs and ownership structure" (Jensen and Meckling, 1976). This paper provides a useful explanation for many corporate activities from the "agency-principal" perspective. In this model the principals (shareholders) cede decision making authority to agents (boards of directors and corporate managers). This delegation creates a generic problem which arises in many different arenas. The issue is that it is difficult for the principals to ensure that the agents act strictly in accordance with the best outcomes for the principals. Jensen and Meckling's analysis forms a basis for subsequent discussions of how to mitigate the agency problem using strategies such as establishing appropriate incentives for the agent and developing, at a cost, adequate monitoring solutions. Applying these concepts in the context of a firm's socially responsible actions, agent activities, and expenses not designed to enhance shareholder value would cause a loss of welfare to the principals.

Profit maximization has the virtue of being relatively simple, easy to understand, and easy to measure. Having other social purposes as goals leads to a risk of unintended, adverse outcomes. For example, here's one observer's interpretation of the demise of the failed blood testing company, Theranos:

> *I just finished reading John Carreyrou's "Bad Blood," the story of the fraud at Theranos Inc. and his work to uncover it. Theranos—in Carreyrou's view, and the view of federal prosecutors—issued tens of thousands of blood-test results to real patients using technology that it knew didn't work, endangering those patients' lives. There are a lot of passages in the book about Theranos founder Elizabeth Holmes inspiring and cajoling her employees to work harder, to get with the mission, to override their moral objections to faking the technology and push ahead.* ***None of those passages mention shareholder value or profit maximization. They mention Holmes's vision of revolutionizing health care to save lives and treat cancer patients. If you want to inspire people to do terrible things, it is very useful to sell them on a grand vision, a higher purpose, a noble mission*** *(emphasis added).*

Levine (2018).

Most of this chapter's discussion centers on the shortcomings of firms which focus only on maximizing profits or shareholder value. Levine's observations regarding Theranos point out the other side of the coin: a company may use a cloak of a grand vision while engaging in socially undesirable activities and being unprofitable at the same time.

Actions taken solely to effect social goals shouldn't be confused with similar actions which on the surface might seem to be altruistic, but in fact are designed to further corporate profitability. For example, an employer might provide amenities to a community such as paying for cleaning subways or ridding highways of litter. These "good will" activities can enhance the company's reputation and make it easier to attract employees or enhance a brand's image. But they are not germane to the question of a firm's more pervasive social responsibility. This kind of activity, promoting the company as environmentally or socially responsible but with little commitment, is sometimes called "greenwash."

Friedman's theory is based on an idealistic belief in the inherent value of freedom of individual choices and of democratic government principles. He rejects the imposition ("coercion") of artificial and ill-defined "social responsibility" as subversive of these institutions. This continues to be the position of many even in today's age of increased sensitivity to social issues. For example, Phil Gram and Mike Solon (Gramm and Solon, 2018) write the following in the Wall Street Journal on July 19, 2018: "...Arguments for imposing political and social objectives on business often are little more than rationalizations for forcing businesses to abide by values that have been rejected in Congress and the courts...America created the world's most successful economy by allowing private wealth to serve private economic objectives rather than political ones. The politicization of business decisions threatens to bring the massive inefficiencies of government into the private sector, cheating investors, workers and consumers in the process."

Maximize shareholder welfare, not market value

While Friedman's views are widely held, competing ideas have received increased attention. Some writers have taken the view that the modern corporation is as much a political adaptation as it is an economic or technological construct. Prior to the development in the 1970s of the view of the corporation as a nexus of contracts, particularly between shareholders and board members, there were interpretations of the firm as having corporate responsibilities to a wider group of constituents. Stakeholders are not just owners but also employees, customers, and the public at large. Another important stream of research looks at the firm from the point of view of property rights. Still others take issue with Friedman's theory on the basis that it too narrowly defines what it is that the owners of the business desire from their investment. Hart and Zingales (2017) argue that investors are not one-dimensional robots concerned only about monetary rewards. Yes, financial resources are important but individuals also have social and ethical concerns that do not end when evaluating corporate performance. Friedman makes the point that individuals should separate money-making activities from charitable acts which could be funded by those activities. But this separation argument assumes that individuals can gain the same scale and impact that a focused corporate action can have. Such is not always the case. Historically some corporate activities have resulted in significant negative social or environmental effects, but individuals acting on their own do not necessarily have the information, technology, or other resources to undo the damage. In these cases, having corporate involvement to address the negative effects might be the only credible solution. Government intervention either alone or with corporate participation is another alternative, although many agreeing with Friedman's profit maximizing argument would expect that corporate actions would be more efficient than government involvement.

Individuals are subject to the negative effects of "externalities" that may be generated by some corporate activities. Their welfare would be increased by direct corporate action to mitigate these externalities. In Friedman's idealized world, companies would simply make money and individuals and governments could use corporate income and taxes to address externalities. But Hart and Zingales argue that in many cases, money-making and ethical activities go hand in hand and are inseparable. They see Friedman's theory as requiring that consumers have scalable projects that are the mirror image of negative corporate activities. And further, that consumers receive enough funds to effect the offset, along with technology, information, communication, and other resources to bring this about. Clearly, this occurs rarely if ever. Government actions might be proposed as remedies but it's not obvious that focused government solutions can be provided efficiently in every instance. Nonseparable antisocial corporate activities are even more damning to Friedman's theory. The company's profit-making activities are intertwined with damaging results from those activities. And individuals do not have the technology, information, communication, and other resources to reverse the damaging results in a cost-effective manner. In this view, companies are better situated to address these issues.

Friedman's claim that government is the (sole) agent to effect social actions is also challenged. Laws and regulations don't necessarily cover every instance of desirable action. Even where there is the will to pass a law, the time it takes to gain enactment and enforcement can be excessive. And it may be more efficient for a business to act than for a government agency to be mobilized. The relative efficiency of corporate versus government action is surely supported by modern-day adherents to Friedman's theory.

These counter arguments are clouded somewhat by Hart and Zingale's use of examples of social issues which are controversial and have yet to receive overwhelming public support. And if there is no well-defined standard for the level of support required, there is a risk of self-interested behavior by managers and boards. Socially responsible actions by a business may well be justifiable, but there are still unanswered questions of who decides what actions and what level of resources.

Maximizing welfare

Stout (2013) makes the argument that boards and managers have latitude to maximize a wide array of possible objectives provided only that these actions themselves are legal and that they don't constitute a theft of corporate resources. She takes issue with the agent-principal analogy, noting that shareholder control is only indirect and in practice is difficult to exercise. Shareholders can replace boards, but this is rarely done. (A counter argument would be that this is rarely done because boards rarely act in an egregious manner. The threat of replacement and the recognition by the board of their responsibility to shareholders may act as a sufficient deterrent so as to make replacement unnecessary.) She notes that several strategies for shareholder profit maximization have been pursued in recent decades. Some of these strategies are as follows:

- Increasing the number of independent directors on the board.
- Tying executive compensation more closely to stockholder profits, especially share price appreciation.
- Remove staggering of director terms so as to make it easier to replace these directors and thereby encourage accountability.

Have these strategies been successful in increasing shareholder profits? Empirical studies are mixed, but Stout finds that at times, these strategies for increasing shareholder value have not been successful in increasing investor returns. Further complicating managing toward a goal of shareholder profit maximization is the realization that shareholders are a diverse bunch with many different objectives. Some may want short-term maximum profits, but others may be in the stock for the long run, with a distant retirement objective. This latter group of shareholders would presumably approve forgoing current profits in order to expand investment programs with a longer run payoff. Other investors may have a strong opinion on social goals. For example, a union pension fund would presumably be opposed to an aggressive workforce reduction to improve short-term quarterly results. Shareholder value then is an artificial concept that is in practice impossible to define. Using short-term share price as the only metric for success results in privileging those shareholders "...who are most shortsighted, opportunistic, undiversified, and indifferent to ethics or others' welfare." The desire to identify a single corporate purpose and optimize it may be appealing for its simplicity and for its usefulness when applying mathematics, but she thinks this is unrealistic and points out that many human activities pursue multiple objectives. For example, when eating a meal, we typically balance taste, healthfulness, and expense.

In a dramatic letter to corporate heads (Fink, 2018), the CEO of the world's largest asset manager expressed the opinion that in managing their companies, corporate leaders need to have a broader perspective:

> *...society increasingly is turning to the private sector and asking that companies respond to broader societal challenges. Indeed, the public expectations of your company have never been greater. Society is demanding that companies, both public and private, serve a social purpose. To prosper over time, every company must not only deliver financial performance, but also show how it makes a positive contribution to society. Companies must benefit all their stakeholders, including shareholders, employees, customers, and the communities in which they operate.*

> *...Without a sense of purpose, no company, either public or private, can achieve its full potential. It will ultimately lose the license to operate from key stakeholders. It will succumb to short-term pressures to distribute earnings, and, in the process, sacrifice investments in employee development, innovation, and capital expenditures that are necessary for long-term growth. It will remain exposed to activist campaigns that articulate a clearer goal, even if that goal serves only the shortest and narrowest of objectives. And ultimately, that company will provide subpar returns to the investors who depend on it to finance their retirement, home purchases, or higher education.*

While Fink's letter was well received by many investors and corporate CEOs, it failed perhaps unsurprisingly to convince others with more traditional views. These latter investors point out the difficulty in identifying agreed social purposes and in measuring results. They also revert back to Friedman-esque arguments that the purpose of the firm is to maximize shareholder value, pay taxes, and allow governments to address social issues. One investor pointed out that many of Blackrock's funds are "passive" and follow market indices (Lovelace, 2018). This investor believes it is inappropriate, even hypocritical for those funds to represent that they follow the market, but that fund management then says it will actively seek to influence decisions of those companies. Perhaps recognizing the difficulties in identifying appropriate social causes, this investor, himself an active philanthropist, said: "I didn't know Larry Fink had been made God."

In Stout's view, firms can pursue a course of addressing multiple objectives and doing a credible job with each. This is then a "satisficing" rather than "maximizing" strategy. By not seeking to "maximize" the outcome of any one group to the detriment of others, managers would have less pressure to resolve conflict among shareholders, customers and employees. A reasonable, even desirable, management strategy is to generate significant profits for investors, but also to take into account additional desired outcomes championed by other company stakeholders. Long-term as well as short-term shareholders' interests are balanced; customers are well served; working conditions are such that employment opportunities are eagerly sought; regulations are complied with; and the firm is run in a socially responsible manner. Corporate profits are important but not the sole focus of management. Satisficing multiple objectives would seem to be a good description of management behavior of some of the best performing companies in the United States.

Shareholder rights

The preceding discussion concerns the appropriate actions of the managers and boards of a firm. But what about the shareholders? Shareholders are sometimes said to "own" a company. While shareholders have several important rights, they technically do not "own" a company, it owns itself. What rights do shareholders have? In general, they have the following rights:

- The right to receive dividends, as declared by the board and subject to the priority of preferred stockholders.
- The right to inspect certain corporate documents such as books and records.
- A claim on assets in the event of bankruptcy.
- Rights to appraisal and access to certain information.
- The right to vote to elect, remove, or replace board members and to vote on certain corporate actions and other proposals.

Among these, the right to vote may be the most important. By exercising their right to vote, investor/owners can affect corporate oversight, management, and actions. Roughly 85% of US companies have issued stocks which provide for a one-share, one-vote structure. However, voting rights are watered down by companies which issue dual-class shares with differential voting rights attached to each class. In terms of voting rights, not all shares are created equal. Typically, the founders and other corporate insiders will retain stock with "super" voting rights which allow the founders to maintain voting control of the company. Stock issued to the public will have diluted voting rights. The most frequent voting ratio is for stock issued to founders, their families, and other insiders to have ten votes, while inferior shares have only one vote each. Some companies have dual-stock voting structures which are even worse than this. The dual-stock structure may have negative consequences in that it entrenches bad management unwilling to change its ways when the company fares poorly. But for a well-managed company it can also have the benefit of allowing forward thinking management to focus on long-term growth as opposed to merely maximizing this quarter's profits. Some examples of companies which have dual-class stock with skewed voting rights are Berkshire Hathaway, Ford, Facebook, and Alphabet. When Snap went public in 2017 it issued shares with no voting rights at all. The New York Stock Exchange for most of its existence would not list companies with dual-class voting rights. To compete with other exchanges with more liberal policies, it changed its rules and it now allows companies to initially list their shares in dual classes, but once they are listed the company cannot reduce the voting rights of existing shareholders or list new stock with super voting rights. More than 15% of the companies listed on US exchanges in 2015 had dual-class shares as opposed to only 1% in 2005.

Research on the question of whether companies with dual classes of stock underperform their peers show mixed results. While there is some evidence that closely held companies have historically taken on excessive debt and that increased insider voting rights is associated with reduced firm value, the recent public listing of growing technology companies and changes in public and private capital markets structure has, however, muddied the waters. Managers of these technology companies have had more freedom to successfully pursue long range projects than they might have had if they were more beholden to quarterly performance metrics. But disagreeing on the potential value of dual-class stock, some institutional investors include "one share, one vote" as a positive governance factor. Also, FTSE Russell, one of the largest providers of equity indexes, notified companies in 2017 that it would include in its indexes only those companies with at least 5% of voting rights in the hands of the public. This seems to be a low bar, but it would exclude companies such as Snap, Virtu, Hyatt and 45 others. If the bar were set at 25% of voting rights in the hands of the public, 230 companies would be excluded. The Appendix to this chapter contains the list of these companies. For its part, S&P Dow Jones barred the addition of dual-stock companies from the S&P 500 and other indexes, although existing companies were grandfathered.

One study (CFA, 2018) found the following from the history of dual-stock listings in the United States and from reviewing several case studies:

- The current boom in dual-stock listings in the United States and in Asia is similar to the experience in the United States during the 1920s and 1980s, including increased liquidity and outsized optimism.
- The booms in the 1920s and 1980s were each followed by a prolonged period of market turmoil.
- The rise and fall (and rise again) of dual-stock listings is neither inevitable nor unique, and there are many more options than a wholesale adoption of dual-stock structures.
- Stock exchanges are feeling competitive pressures to allow dual-stock listings.
- For family businesses with a dual-stock structure, it is much easier for major shareholders to abuse their position and take advantage of public shareholders, either through massive executive compensation packages or questionable consultancy arrangements.

- Major shareholders (usually the founders) are not incentivized to maximize the company's potential. They may have voting control, but they have low equity ownership and few benefits accrue to them.

The tension then is between founders' desire to maintain control and investors' desire for representation. A possible solution is to recognize that there may be some value in founders' keeping voting control in the early years of a company's life and growth, but to put a time limit on this structure. When the company is more mature, there are less grounds for arguing that super voting control should be in the hands of the founders' ancestors. The Securities and Exchange Commission (SEC) studied the relative valuation of companies with dual classes of stock. One group of companies gave insiders control of the company forever, and a second group had "sunset"

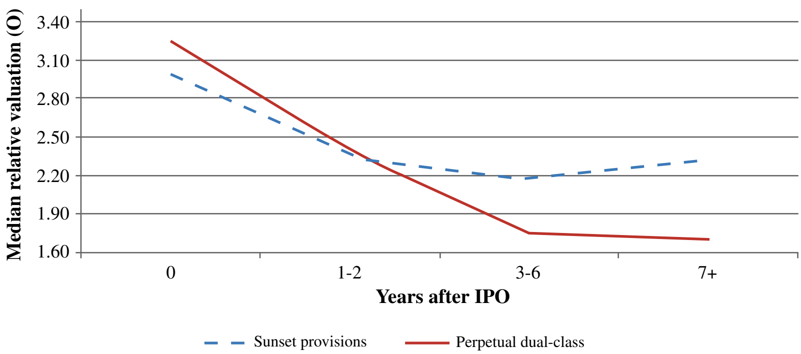

FIGURE 3.1 Valuation of dual-class firms. *Source: SEC https://www.sec.gov/news/speech/perpetual-dual-class-stock-case-against-corporate-royalty.*

Company	IPO year	Sunset trigger
EVO Payments	2018	3 years
Texas Roadhouse	2004	5 years (converted in 2009 to one share, one vote)
Groupon	2011	5 years (converted in 2016 to one share, one vote)
MuleSoft	2017	5 years (acquired in 2018 by Salesforce)
Bloom Energy	2018	5 years or superclass falls below 5% of outstanding common
MaxLinear	2010	7 years (converted in 2017 to one share, one vote)
Yelp	2012	7 years or superclass falls below 10% of outstanding common (converted in 2016 to one share, one vote)
Kayak Software	2012	7 years (acquired in 2013 by Priceline, now Booking Holdings)
Mindbody	2015	7 years
Apptio	2016	7 years or superclass falls below 25% of outstanding common
Twilio	2016	7 years
Smartsheet	2018	7 years or superclass falls below 15% of outstanding common
Veeva Systems	2013	10 years
Castlight Health	2014	10 years
Pure Storage	2015	10 years or superclass falls below 10% of outstanding common
Stitch Fix	2017	10 years or superclass falls below 10% of outstanding common
Alteryx	2017	10 years or superclass falls below 10% of outstanding common
Hamilton Lane	2017	10 years or founders and employees hold less than 25% of voting power
Okta	2017	10 years
Zuora	2018	10 years or superclass falls below 5% of outstanding common
Eventbrite	2018	10 years
Altair Engineering	2017	12 years or "executive holder" position falls below 10% of outstanding common
Fitbit	2015	12 years
Nutanix	2016	17 years
Workday	2012	20 years or superclass falls below 9% of outstanding common

FIGURE 3.2 Time-based approaches to dual-class stock. *Source: Council of Institutional Investors https://www.cii.org/dualclass_stock.*

provisions which provided for super voting control to expire either in a fixed number of years or on the death of the founder. Fig. 3.1 shows that seven or more years after their initial public offering (IPO), firms with perpetual dual-class stock trade at a significant discount to those with sunset provisions.

Sunset provisions can either be event based or time based. Events such as the death or departure of an insider could trigger provisions for higher vote shares to convert to lower vote shares. Time based sunset provisions range from 3 to 20 years after the company's IPO. Fig. 3.2 shows the time-based sunset provisions for several companies.

Summary

This chapter summarized some of the competing theories of the firm. The starting point is Friedman's seminal article making the case that maximizing shareholder value is and should be the goal of the firm. Subsequent authors point out that shareholders are a diverse bunch who have wants and needs that go beyond financial gains. Also supporting a broader range of frim objectives is the recognition that firms' actions may have adverse ESG consequences which are most efficiently addressed by the firms themselves. From a longer term view, the risk of negative ESG factors becomes even more important. Stout makes an attractive case for "satisficing" behavior that firms can and do take actions to meet the needs of different stakeholders. Finally, we looked in more detail at shareholder rights.

The theoretical discussion in the chapter also provides the background for addressing the question of whether ESG considerations are appropriate in managing a firm. In the next chapter, we will look at the duties and responsibilities of fiduciaries in managing investments and ask the similar question: "is it appropriate for investment managers to consider ESG criteria in asset allocation?" We will also discuss, in Chapter 8, Shareholder engagement, investor activism in terms of shareholder advocacy and engagement with corporate management to influence the firm's actions to be consistent with investor ESG goals.

Appendix

Analysis of securities affected by voting right hurdles set at 5% and 25%.

Ticker	Constituent name	Voting power in public ownership (%) (May 2018)
EV	Eaton Vance Corp	0.00
ERIE	Erie Indemnity Co	0.00
ARTNA	Artesian Resources Corp	0.00
SAM	Boston Beer Inc.	0.00
BRC	Brady Corp	0.00

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Ticker	Constituent name	Voting power in public ownership (%) (May 2018)
CNBKA	Century Bancorp Inc.	0.00
EZPW	EZCorp Inc.	0.00
FII	Federated Investors Inc.	0.00
KELYA	Kelly Services Inc.	0.00
OPY	Oppenheimer Holdings Inc.	0.00
SNAP	Snap Inc.—A	0.00
GROW	US Global Investors, Inc.—A	0.00
CCO	Clear Channel Outdoor	0.58
NYLD	NRG Yield Inc. CL C	0.83
ARD	Ardagh Group SA	0.84
ATUS	Altice USA, Inc.—A	0.94
SDI	Standard Diversified Inc.	0.98
SCWX	Secureworks Corp	1.03
ANGI	Angi Homeservices Inc.—A	1.14
ZUO	Zuora Inc.—Class A	1.18
SMAR	Smartsheet Inc.—Class A	1.32
AC	Associated Capital Group	1.36
DBX	Dropbox Inc.—Class A	1.49
CIX	Compx International Inc.	1.60
MDB	MongoDB Inc.	1.98
GBL	Gamco Investors Inc.	2.11
SFIX	Stitch Fix Inc.—Class A	2.11
MDLY	Medley Management Inc.	2.15
VMW	VMware Inc.	2.21
VCTR	Victory Capital Holding—A	2.22
BAND	Bandwidth Inc.—Class A	2.29
MTCH	Match Group Inc.	2.38
CVNA	Carvana Co	2.50
BBGI	Beasley Broadcast Group	2.68
OCX	Oncocyte Corporation	2.70
ROAD	Construction Partners Inc.—A	2.76
ROSE	Rosehill Resources Inc.	3.04
UONEK	Urban One Inc.	3.24
DVMT	Dell Technologies	3.50
LAUR	Laureate Education Inc.	3.60
USM	United States Cellular	3.65
VIRT	Virtu Finl Inc.	3.85
RMR	RMR Group Inc.	3.98
APRN	Blue Apron Holdings Inc.—A	4.05
APPN	Appian Corp	4.26
PVTL	Pivotal Software Inc.—CL A	4.38
CSSE	Chicken Soup For The Soul EN	4.55
SNDR	Schneider National Inc.	5.12
HLNE	Hamilton Lane Inc.	5.28
TR	Tootsie Roll Industries	5.49
SWCH	Switch Inc.	5.57

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Ticker	Constituent name	Voting power in public ownership (%) (May 2018)
H	Hyatt Hotels Corp	6.06
ALTR	Altair Engineering Inc.	6.30
PZN	Pzena Investment Mgmt	6.34
HUD	Hudson Ltd	6.91
NEXT	NextDecade	7.12
TEAM	Atlassian Corp PLC	7.12
APPF	Appfolio Inc.	7.15
IPIC	IPIC Entertainment Inc.	7.32
VHI	Valhi Inc.	7.38
HPR	High Point Resources	7.43
DVD	Dover Motorsports Inc.	7.71
HLI	Houlihan Lokey Inc.	7.72
INOV	Inovalon Holdings Inc.	7.78
AYX	Alteryx Inc.	7.96
PRPL	Purple Innovation Inc.	8.04
FLWS	1-800 Flowers Com	8.27
HMTV	Hemisphere Media Group	8.28
HOME	AT Home Group Inc.	8.35
ROKU	Roku Inc.	8.46
DISH	Dish Network Corp	8.47
CASA	Casa Systems Inc.	8.52
PAHC	Phibro Animal Health	8.79
GNPX	Genprex Inc.	9.05
COKE	Coca Cola Bottling	9.06
SATS	Echostar Corp	9.07
TLYS	Tillys Inc.	9.26
FDC	First Data Corporation	9.72
DDE	Dover Downs Gaming & Ent	9.73
BXG	Bluegreen Vacations Corp	9.88
YGYI	Youngevity International	10.25
CNA	CNA Financial Corp	10.38
SENEA	Seneca Foods Corp	10.48
SCCO	Southern Copper Corp	10.56
BOXL	Boxlight Corp	10.56
NYNY	Empire Resorts Inc.	10.68
WWE	World Wrestling Entmnt	10.76
NES	Nuverra Envtl Solutions	10.78
VALU	Value Line Inc.	11.05
ZS	Zscaler	11.58
RCUS	Arcus Biosciences	11.70
VICR	Vicor Corp	11.74
DGICA	Donegal Group Inc.	11.83
UMRX	Unum Therapeutics	11.86
PIXY	ShiftPixy	11.88
UBX	Unity Biotechnology	11.93
CBLK	Carbon Black	12.15

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Ticker	Constituent name	Voting power in public ownership (%) (May 2018)
HEI/A	Heico Corp CL A	12.44
LBRT	Liberty Oilfield Service	12.45
EAF	Graftech International	12.48
QADA	QAD Inc.	12.50
DLB	Dolby Laboratories Inc.	12.57
JRSH	Jerash Holdings Inc.	12.63
NNI	Nelnet Inc.	12.81
ARL	American Rlty Invs Inc.	12.81
UBP	Urstadt Biddle Pptys Ins	12.95
DLTH	Duluth Holdings Inc.	13.01
BWL/A	Bowl America Inc.	13.49
ACMR	ACM Research	13.50
GWGH	GWG Hldgs Inc.	13.59
EL	Estee Lauder Companies	13.70
LINK	Interlink Electronics	14.00
ADT	ADT Inc.	14.02
METC	Ramaco Resources Inc.	14.78
RUSHA	Rush Enterprises Inc.	14.78
MJCO	Majesco	15.18
SALM	Salem Media Group Inc.	15.18
REV	Revlon Inc.	15.27
GTES	Gates Industrial Corp	15.28
VLGEA	Village Super Market Inc.	15.34
W	Wayfair Inc.	15.34
EEI	Ecology & Environment	15.35
EVFM	Evofem Biosciences Inc.	15.40
RDI	Reading International	15.68
APTI	Apptio Inc.	15.74
MOTS	Motus GI Holdings Inc.	15.78
EPE	EP Energy Corporation	15.96
S	Sprint Corp	16.04
DOCU	DocuSign	16.06
PANL	Pangaea Logs Solutions	16.16
GBLI	Global Indemnity Ltd	16.20
SAH	Sonic Automotive Inc.	16.27
RMNI	Rimini Street Inc.	16.28
WHLM	Wilhelmina Intl Inc.	16.33
OFED	Oconee Federal Financial	16.34
GRIF	Griffin Industrial Rlty	16.51
MANT	Mantech International	16.57
NMRK	Newmark Group Inc.	16.60
EVLO	Evelo Biosciences	16.67
GAIA	GAIA Inc.	16.77
CURO	Curo Group Holdings Corp	16.83
AMRC	Ameresco Inc.	16.87
NL	NL Industries Inc.	16.98

(*Continued*)

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Ticker	Constituent name	Voting power in public ownership (%) (May 2018)
IBKR	Interactive Brokers Grp	17.02
MNI	McClatchy Co	17.17
CDAY	Ceridian HCM Holding	17.27
WDAY	Workday Inc.	17.33
RL	Ralph Lauren Corp	17.43
TFSL	TFS Finl Corp	17.59
NC	NACCO Industries Inc.	17.73
DNLI	Denali Therapeutics Inc.	17.73
LEVL	Level One Bancorp Inc.	17.84
BWB	Bridgewater Bancshares	17.92
CVI	CVR Energy Inc.	18.00
MCS	Marcus Corp	18.05
BOMN	Boston Omaha	18.07
AGR	Avangrid Inc.	18.10
HSY	Hershey Company	18.10
CLXT	Calyxt	18.22
QES	Quintana Energy Services	18.34
AMC	AMC Entertainment	18.41
ODC	Oil DRI Corp of America	18.48
QUAD	Quad/Graphics Inc.	18.52
NH	Nanthealth Inc.	18.65
AKCA	Akcea Therapeutics	18.75
TUSK	Mammoth Energy Services	18.79
MOV	Movado Group Inc.	18.84
IOR	Income Opp Realty Inv	18.88
BRID	Bridgford Foods Corp	18.91
TCI	Transcontinental Realty	19.05
IFMK	ifresh Inc.	19.30
KRO	Kronos Worldwide Inc.	19.38
ISCA	International Speedway	19.52
VTVT	VTV Therapeautics Inc.	19.60
FAT	FAT Brands Inc.	19.77
TSQ	Townsquare Media Inc.	19.83
HY	Hyster-Yale Materials	19.90
LASR	NLight	19.99
PSTG	Pure Storage Inc.	20.01
CBS	CBS Corporation	20.02
SEND	Sendgrid Inc.	20.10
MC	Moelis & Co	20.14
VIA	Viacom Inc. CL A	20.20
VIAB	Viacom Inc. CL B	20.20
AQB	Aquabounty Technologies	20.29
WK	Workiva Inc.	20.40
SQ	Square Inc.	20.42
FTSI	FTS International Inc.	20.52
PNRG	PrimeEnergy Corp	20.74

(*Continued*)

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Ticker	Constituent name	Voting power in public ownership (%) (May 2018)
EROS	Eros Intl Plc	20.87
NTNX	Nutanix Inc.	21.02
STXB	Spirit of Texas Bncshres	21.08
AAME	Atlantic Amern Corp	21.09
PPC	Pilgrims Pride Corp	21.19
EOLS	Evolus Inc.	21.19
SBGI	Sinclair Broadcast Group	21.34
PNBK	Patriot Natl Bancorp Inc.	21.37
FNKO	Funko Class A	21.53
SCS	Steelcase Inc.	21.53
MPX	Marine Products Corp	21.55
NCSM	NCS Multistage Hold	21.71
APLS	Apellis Pharmaceuticals	21.75
SNFCA	Security Natl Finl Corp	21.99
FIBK	First Intst Bancsystem	22.14
MCHX	Marchex Inc.	22.16
CWH	Camping World Holdings	22.22
SEB	Seaboard Corp	22.29
QTRX	Quanterix Corporation	22.53
GMED	Globus Medical Inc.	22.75
TWLO	Twilio Inc.	22.94
JOUT	Johnson Outdoors Inc.	23.11
DCPH	Deciphera Pharmaceutical	23.12
ARMO	Armo Biosciences Inc.	23.15
RFL	Rafael Holdings	23.15
CLR	Continental Resources	23.17
TORC	Restorbio Inc.	23.24
RBCAA	Republic Bancorp Inc. KY	23.24
GNK	Genco Shipping & Trading	23.28
INTG	Intergroup Corp	23.28
SAIL	Sailpoint Technologies	23.38
DKS	Dicks Sporting Goods Inc.	23.70
GPRO	Gopro Inc.	23.72
ATRO	Astronics Corp	23.80
EQH	Axa Equitable Holdings	24.47
JBSS	Sanfilippo John B & Son	24.51
LBC	Luther Burbank Corp	24.90
FOR	Forestar Group Inc.	24.92
AMR	Alta Mesa Resources (A)	24.95
ODT	Odonate Therapeutics Inc.	25.00

Source: FTSE Russell Voting Rights Consultation-Next Steps. https://www.ftse.com/products/downloads/FTSE_Russell_Voting_Rights_Consultation_Next_Steps.pdf.