What Do Shareholders Want? Consumer Welfare and the Objective of the Firm

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Abstract

Shareholders want a firm's objective function to place some weight on consumer welfare, motivated by both self-interest and altruism. Firms have a unique technology for improving consumer welfare: lowering inefficient price markups. Optimal pricing formulas can account for shareholders' marginal rate of substitution between profits and consumer welfare. Calibrations show shareholders should place non-trivial weights on consumers. A survey experiment with a representative sample shows how shareholders would vote on resolutions giving strategic guidance to firms. Only 7% would vote for pure profit maximization. The median individual is indifferent between $0.44 in profits or $1 in consumer surplus.

Keywords: shareholder welfare maximization, corporate social responsibility, ESG investing, shareholder governance, imperfect competition, optimal pricing
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1 Introduction

What should firms maximize? Maximizing profits, or shareholder financial value, is often assumed to be the objective of the firm, with Friedman (1970) classically arguing that "the social responsibility of business is to increase its profits." Most economic theory assumes shareholders want to maximize financial value (e.g. Shleifer and Vishny (1988)).[1] However, shareholders have various motivations, and may care directly about various environmental, social, and governance outcomes. Thus, Hart and Zingales (2017) argue that firms should maximize shareholder *welfare* instead. To act in the interest of shareholders requires understanding shareholders' objectives.

This paper examines the role of consumer welfare in the objective of the firm. In my model, shareholders place weight on consumer welfare because 1) shareholders are consumers themselves who benefit directly from lower prices and 2) shareholders are people who may directly value the welfare of others.[2] The importance of the self-interested motivation depends on the ratio of the share of the firm's output they consume to the share of the firm that they own, while more altruistic social preferences also increase shareholders' desired weight on consumer welfare.

Valuing consumer welfare changes how firms should optimally set prices in imperfectly competitive markets. The key parameter is the marginal rate of substitution between profits and consumer welfare in the firm's objective function, which I term λ. A firm that was previously profit-maximizing can implement optimal pricing by reducing the Lerner index (markups as a percentage of price) by approximately λ percent. For instance, if a \$1 increase in profits is equivalent to a \$10 increase in consumer welfare in the shareholders' desired objective function, then the weight $\lambda = 0.1$, and markups as a percentage of price should be about 10% lower relative to the profit-maximizing level.

The structure of profit and utility maximization, together with estimates of the own-price elasticity of demand, allows us to derive the resulting impact on profits and consumer surplus. When firms reduce markups they both transfer money to existing consumers and induce new, socially efficient, purchases. As a result, the gain in consumer welfare is larger than the loss in profits. The gain, relative to the loss, is particularly large when considering changes near the profit-maximizing price, where a small reduction in price has no first-order impact on profits (because it induces more sales) but does have a first-order impact on

[1] This assumption builds on the Fisher separation theorem (Fisher 1930) and subsequent literature showing conditions under which shareholders would unanimously prefer firms to maximize profits (Radner 1974; Dreze 1974; Grossman and Hart 1979; DeAngelo 1981).

[2] Evidence suggests that people care about others in a variety of ways, including efficiency-promoting preferences (e.g. Fisman et al. (2007), Rotemberg (2014)).

consumer welfare. Thus, the model shows why shareholders would want to achieve their objectives via firms, rather than taking profits and donating to charity: firms have access to a unique technology for improving consumer welfare– lowering inefficient markups. [3]

Numerical calibrations in a stylized model show that implementing $\lambda = 0.01$ in imperfectly competitive markets would increase consumer surplus by about 200 times the cost in lost profits. I provide estimates of the gains to consumer surplus and cost in lost profits under varying elasticities of demand and desired λ. For instance, using Allcott et al. (2023)'s estimates of average elasticities for grocery chains, I estimate that implementing $\lambda = 0.1$ would reduce variable profits by 1% but increase consumer surplus by 21% of those profits.

Data on consumption and stock ownership can be used to estimate weights that a non-altruistic shareholder might attach to consumer welfare. For instance, since the top decile of income owns about 71% of stock, and consumes about 22% of consumption, under stylized assumptions of a diversified portfolio and diversified consumption, a representative non-altruistic individual from this group would have a $\lambda_i = 0.31(0.22/0.71)$. Constructed weights for more detailed demographic groups, I show that the weights are substantial for most shareholders. However, average λ weighted by share ownership is less than the simple average across people, as stockholding is more concentrated than consumption (Gans et al. (2019)). The median non-altruistic individual would have λ greater than 1, while the median share of stock would be held by an individual whose non-altruistic λ is about 0.06.

The calibrations consider the role of altruism. Because each individual is relatively small, the role of even small amounts of altruism dominates the self-interest of individuals, even those with large equity holdings. As a result, even low amounts of altruism drive λ close to one– equal treatment of profits and consumer surplus– for most of population.

I then use choice experiments to directly elicit shareholders' desired weights on consumer welfare. I ask how shareholders would vote on resolutions giving strategic guidance to firms about what objective function to pursue.[4] Specifically, I elicit how they want firms to tradeoff profits against benefits to consumers. These types of resolutions give general guidance to firms, and do not require shareholders to have specific knowledge about the relative costs and benefits of particular actions.[5]

[3] A second reason shareholders would want to act via the firm is that increasing consumer welfare has aspects of public goods provision, as many individuals benefit. Free riding will lead to underprovision of public goods, but when the firm reduces profits to contribute to the public good, it effectively commits all shareholders to contribute (Morgan and Tumlinson 2019).

[4] While choices were unincentivized, they did not require participants to acquire data but express their own objectives. Individuals are also unlikely to be the pivotal voter in actual votes.

[5] In contrast, existing shareholder resolutions typically ask firms to take some specific action, such as releasing information about environmental impact, improving working conditions, or reducing managerial rent-seeking (see Renneboog and Szilagyi (2011)). These require some knowledge of issue-specific costs and benefits for shareholders to effectively express their preferences.

I recruit an approximately representative sample of Americans recruited from the RAND American Life Panel. The median desired weight on consumer surplus is about $\lambda = 0.44$, with substantial heterogeneity across individuals. Of people identified as owning stock, the median $\lambda = 0.27$. Only 7% of participants vote for firms to be purely profit maximizing. To put these estimates in context, I also give participants a similar choice between reducing environmental harms versus increasing profits. The resulting estimates show that the desired weight on consumer welfare and the environment is similar for stockholders, but that non-stockholders place a higher weight on environmental benefits.

Even though consumer welfare has not played a prominent role in the literature on corporate social responsibility, these results indicate that how firms affect consumers is a key dimension of corporate impact, and that shareholders care about that impact. This research is complementary to recent research by Allcott et al. (2023), which for various firms and industries, examines externalities, internalities, and impact on consumer surplus if a firm were to exit the industry. They conclude that consumer welfare is one of the most important dimensions of corporate impact. They show that profit-maximizing firms have a major impact on consumers. In contrast, this paper shows how shareholders would like firms to behave toward consumers and that firms can deliver large benefits to consumers at low costs in terms of profits.[6]

These results open new questions. Though consumer welfare is valued by shareholders, it unclear whether firms currently account for this preference in their pricing. The active debate over whether shareholder financial value or shareholder utility should be the firm's objective ((Hart and Zingales 2017; Bartlett and Bubb 2023)), as well as over what is legally permissible, could limit the willingness of firm to implement such preferences. These questions about whether firms do and should implement shareholder preferences echo those raised by the common ownership literature, which notes shareholders should want firms to broaden their focus from maximizing their own profits to maximizing the profits of their owners' entire portfolio.[7]

[6]Ederer and Pellegrino (2023) also model how managers behave when they consume some of the goods that their firms produce, which would lead them to place some weight on consumer surplus.

[7]For instance, Azar et al. (2018) and Backus et al. (2021), building on the framework of Rotemberg (1984), argue that overlapping ownership leads firms to include profits of other firms in their objective function. Antón et al. (2023) find that indeed, top managers experience lower performance incentives with more common ownership. Azar and Vives (2021) examine how ownership structure will affect employment in imperfectly competitive labor markets. For a more detailed review of the literature on common ownership, see Schmalz (2018).

1.1 Related Literature

This paper builds on Hart and Zingales (2017, 2022), which argue that shareholder welfare, rather than financial value, is the legitimate objective of the firm. Morgan and Tumlinson (2019) also examine theoretically the implications of maximizing shareholder welfare in the context of public goods provision.[8]

My model of shareholders builds on previous literature that examined self-interested owners as consumers. Classically, Farrell (1985) showed that self-interested shareholders would want firms to set prices to maximize social welfare in an egalitarian economy that has homogeneous consumers all owning an equal share of all firms. Gans et al. (2019) extended these results to include consumer heterogeneity in ownership share and showed conditions on the largest ownership share that would induce the median shareholder to vote to set the socially efficient price. I further extend these models to include both social preferences and heterogeneity in how much individuals consume.

The literature on corporate social responsibility (CSR) is vast. In the taxonomy of Kitzmueller and Shimshack (2012), a firm can engage in CSR activities because they have strategic motivations to do so (e.g. these activities may raise profits by increasing consumer demand or lowering the cost of attracting employees), agency problems (managers pursue objectives other than profits over the wishes of shareholders), or not-for-profit motivations (shareholders desire the firm to undertake CSR activities independently from their impact on profits).[9] This paper's model examines firms engaged in not-for-profit CSR, as shareholders deliberately choose to sacrifice profits to promote consumer welfare, or what Benabou and Tirole (2010) describe as "the delegated exercise of prosocial behaviour on behalf of stakeholders".

Other work has examined the goals of stockholders in corporate governance. Bubb and Catan (2022) document how different mutual funds vote their shares, showing variation in objectives between funds and identifying a subset of funds that vote for corporate governance reform. However, it is unclear whether institutional investors are representing their individual shareholders' preferences. Similarly, Agrawal (2012) shows that union pension funds appear to promote the interest of union labor objectives over and above shareholder welfare alone, but it is unclear whether that is consistent with the preferences of individual claimants on those pension funds.

This paper focuses on how shareholders would like the firms they currently own to behave,

[8] Also related are Magill et al. (2015) and Fleurbaey and Ponthière (2023), who examine firms run in the interest of stakeholders (rather than solely shareholders) and show that such a firm will not fully exploit its market power.

[9] An empirical debate also exists over the extent to which social components are instrumentally useful in predicting firms' financial performance. See Edmans (2011) on employee satisfaction, Edmans et al. (2023) on diversity, and Berchicci and King (2022) and Khan et al. (2016) on sustainability.

which is distinct from the portfolio choice decision: what firms individuals choose to invest in. Broccardo et al. (2022) develop a model that compares the relative efficacy of these two methods (votes versus exit) of shareholder influence. Empirically, Riedl and Smeets (2017) find that investors hold socially responsible mutual funds for both social preferences and reputational reasons, and that investors are willing to forgo financial performance to invest in accordance with their social preferences, suggesting there is a role for "non-profit" CSR motives. Hartzmark and Sussman (2019) find that low sustainability rankings of mutual funds led to an outflow of investment. Finally, Bonnefon et al. (2022), Heeb et al. (2023), and Hirst et al. (2023) conduct lab experiments examining how investors value attributes of investments apart from their financial return.

2 Simple Model

In this section, I develop a simple one-period model with a single monopolistically competitive firm and heterogeneous individuals who are potentially both shareholders and consumers of the firm's product. Individuals care about their own consumption utility, and hence benefit from higher firm profits via increased budgets, as in Farrell (1985). However, individuals also may care about other individuals and have social preferences in the form of altruism.

2.1 Individuals: Shareholders and Consumers

There is a large number N of individuals. Each individual i owns fraction α_i of the firm, with ownership shares summing to one: $\sum_i \alpha_i = 1$ and $\alpha_i \geq 0$.

Individuals have consumption utility that is quasi-linear in the good produced by the firm and the numeraire. Hence, consumption utility for individual i is given by $x_i + v_i(q_i)$ where x_i is their consumption of the numeraire, q_i is their quantity of the good consumed, and $v_i()$ their valuation of the good. The function v_i can be heterogeneous across individuals and is continuous, increasing, and concave. Consumption is funded from background income y (which we can normalize to be zero without any loss of generality) and their share of the firm's profits, $\alpha_i \Pi$. Facing price p for the good produced by the firm, the budget constraint is $pq_i + x_i \leq y + \alpha_i \Pi$. For simplicity, assume that the individual does not account for the effect of their choice on profits when choosing how much to consume.

Individuals may also have social preferences, which here takes the form of some weight $\theta_i \geq 0$ that they place on the consumption utility of other individuals– a form of altruism. This altruism weight attaches to other consumers' surplus from consuming both the firm's good and the numeraire (and hence profits).

Define the individual $i's$ consumer surplus from purchasing the firm's good as $CS_i = v_i(q_i) - pq_i$, and then total consumer surplus as $CS = \sum_i CS_i$. Then, let $\gamma_i = \frac{CS_i}{CS}$ be individual i's share of consumer welfare. The social preference component of utility is then $\theta_i(\Pi + CS)$.[10]

An individual's utility can then be expressed as the sum of their weights on profits and on consumer surplus, which depends on their ownership share α_i, their share of consumer surplus γ_i and their social preferences θ_i as follows:

$$u_i = (\alpha_i + \theta_i)\Pi + (\gamma_i + \theta_i)CS \tag{1}$$

Thus, an individual is indifferent between \$1 of additional consumer surplus and $\$\lambda_i \equiv \frac{\gamma_i+\theta_i}{\alpha_i+\theta_i}$ of additional profits.[11] This parameter λ is what will govern shareholders' preferences about how firms should tradeoff profits versus consumer surplus.

Note that for self-interested individuals ($\theta = 0$), when an individual's ownership share equals their consumer surplus share ($\alpha_i = \gamma_i$), then $\lambda_i = 1$ and they treat profits and consumer surplus equally, a result established by Farrell (1985) and Gans et al. (2019). However, note that λ can also approach 1 as the weight θ_i on social preferences gets larger relative to ownership share α_i.

2.2 Shareholder Heterogeneity

Each shareholder would like firms to optimize a weighted sum of profits and consumer surplus, but, as shown in Equation 1, that weight varies between shareholders. Given this heterogeneity, there will be disagreement about the desired weight on consumer surplus in the firm's objective function.

I assume that shareholders induce some marginal rate of substitution between profits and consumer surplus λ in the firm's objective function. It could simply be that of the median voter among the shareholders. In other models, though, the firm resolves disagreements among shareholders as a social choice problem with Pareto weights that may be proportional to ownership share (e.g. Backus et al. (2021)).

[10] This assumes that θ_i multiplies all of consumer surplus, rather than $CS - CS_i$, which simplifies the expression and is a good approximation with a large N of consumers.

[11] Note that the theory assumes λ does not vary depending on the firm's choice of price p. Ownership share α_i does not depend on p, and θ also will not vary with p in most social preference models. An individual's share of consumer welfare γ_i may depend on price depending on the form of preference heterogeneity. $\frac{d\gamma_i}{dp} = \frac{1}{CS}[-q_i + \gamma_i \sum_i q_i]$, which equals zero so long as the individual's share of consumer welfare is also their consumption share.

2.3 The Firm

The firm chooses linear price per unit p. It faces a demand curve $Q(p)$ derived from individual demand, and has a constant marginal cost $c > 0$ but no fixed costs. Profits are given by $\Pi = (p - c)Q(p)$.

The firm sets price to maximize the objective function:

$$\widetilde{\Pi} = \Pi + \lambda CS \tag{2}$$

for some marginal rate of substitution λ, where the firm is indifferent between $\$\lambda$ of additional profits and \$1 of additional consumer surplus. I assume that that demand Q is continuous and gives a unique optimum price for each $\lambda \in [0, 1]$, and that the second order conditions are satisfied. The elasticity of demand at a point is denoted by $\eta \equiv -\frac{Q'}{Q}p$.

2.4 Results and Implications

Price Setting Behavior Implemented by Shareholders

The following proposition shows that the optimal price shareholders will want firms to choose is a modification of standard markup pricing.

Proposition 1. *The price that maximizes the objective function in Equation 2 is* $p^* = c + (1 - \lambda)\frac{Q(p^*)}{-Q'(p^*)}$*, implying that the Lerner index at the optimal price is*

$$\frac{p^* - c}{p^*} = (1 - \lambda)\frac{1}{\eta}. \tag{3}$$

Proof. The first order condition is $\frac{d\Pi}{dp} + \lambda\frac{dCS}{dp} = 0$. We have $\frac{dCS}{dp} = -Q$, as $\frac{dCS}{dp} = \sum_i v_i' q_i' - q_i - pq_i'$, and by the envelope theorem, we know that $v_i' - p_i = 0$ for each individual i. Then, the FOC becomes $\frac{d\Pi}{dp} = \lambda Q$, which then gives p^*. A simple rearrangement yields the Lerner index. □

The formula for optimal price in Equation 3 nests the profit maximizing case when $\lambda = 0$. On the other end of the spectrum, when $\lambda = 1$, the firm engages in socially efficient marginal cost pricing. The impact of implementing λ on markups is larger the more inelastic demand is.

In the special case of (or approximation with) constant elasticity of demand η, Proposition 2 provides a simple way of describing how to implement shareholders' desired objective function: a firm that was previously setting the profit maximizing price should "lower its markup as a percentage of price by λ".

Proposition 2. *Consider a firm that was formerly profit-maximizing but now implements $\lambda > 0$ in its pricing as in Proposition 1. Suppose the elasticity η is constant in the region between the profit maximizing price $p^*_{\lambda=0}$ and p^*. Then, the change in the Lerner index is*

$$\frac{p^* - c}{p^*} - \frac{p^*_{\lambda=0} - c}{p^*_{\lambda=0}} = -\lambda \frac{1}{\eta}.$$

and the change in price as a percentage of the profit maximizing price is given by

$$\frac{\Delta p}{p^*_{\lambda=0}} = \left(-\frac{\lambda}{\lambda + (\eta - 1))} \right)$$

Proof. The change in the Lerner index follows immediately from Proposition 1 given a constant η. To calculate Δp, note that Proposition 1 also implies that that for any λ, $p^* = c\frac{\eta}{\eta - 1 + \lambda}$. Then, $\Delta p = c\left(\frac{\eta}{\eta-1+\lambda} - \frac{\eta}{\eta-1}\right)$, which gives $\frac{\Delta p}{p} = \left(-\frac{\lambda}{\lambda+(\eta-1))}\right)$. □

How costly is it to account for shareholder utility?

The next proposition shows that, beginning from profit maximization, adding some weight on consumer welfare has no first order effect on profits. However, doing so yields a first order increase in consumer welfare.[12] That is, there are gains to all shareholders (so long as they have some positive γ_i or θ_i) from lowering markups slightly relative to the profit-maximizing level.

Proposition 3. *Adding a small amount of weight on consumer surplus (moving from $\lambda = 0$ to λ positive) has no first order effect on profits, but does create a first order improvement on consumer welfare.*

Proof. The absence of a first order effect on profits follows from the envelope theorem. Define optimally chosen p^* as a function of λ, so $\frac{d\Pi}{d\lambda} = \frac{d\Pi}{dp}\frac{dp}{d\lambda}$. Recall that $\frac{d\Pi}{dp} = 0$ when evaluated at the profit maximizing price. We can sign $\frac{dp}{d\lambda} < 0$ by taking the first order condition that defines p in Proposition 1 and differentiating with respect to λ, giving $\frac{dp}{d\lambda} = \frac{Q}{(p-c)Q'' + (2-\lambda)Q'}$, where the denominator is the second order condition for the firm's objective function, which is negative. Finally, note that $\frac{dCS}{d\lambda} = \frac{dCS}{dp}\frac{dp}{d\lambda} = -Q(p)\frac{dp}{d\lambda} > 0$. □

Robustness

The optimal pricing results, here developed for a simple static setting, can be extended to other models. First, Appendix Section A.1 considers a multi-period model in which the

[12] This is similar in spirit to Akerlof and Yellen (1985) result on near-optimality of firm price setting.

profit-maximizing firm's price in the current period is below the static profit-maximizing price. For instance, the firm could be engaging in invest-then-harvest pricing and pricing low to increase future market share (Klemperer (1995); Ericson (2014)), or the firm could be engaging in limit pricing and pricing low to deter entry (e.g. Milgrom and Roberts (1982); Wilson (1992)). In this model, firms still face no first order loss in the present discounted value of profits from small declines in price, just as in the static model. When the firm places a weight $\lambda > 0$ on consumer surplus, the optimal price markup over consists of two components: the standard markup term, multiplied by $(1 - \lambda)$ as in Proposition 1, plus a new term accounting for the effect of today's price on expected future profits and expected future consumer surplus.

Second, Appendix Section A.2 develops a model in which the firm invests today to create a new product (e.g. pharmaceutical development). The results for optimal price follow those in Proposition 1; however the level of investment with $\lambda > 0$ can be higher or lower than under profit-maximization.

Third, Appendix Section A.3 adds a pollution externality to the main model, and considers how shareholder concern with harm from externalities interacts with concern for consumer welfare. Interestingly, if a firm accounts for harmful externalities in price setting by setting higher prices, then price is above the profit maximizing price, and adding some concern about consumer surplus would actually *increase* profits.

2.5 Illustration: Effect of Implementing λ on Profits

The theoretical results show that the impact of implementing $\lambda > 0$ depends on the elasticity of demand faced by the firm. To illustrate these results, I take elasticity estimates for two industries from Allcott et al. (2023), which estimate own-price elasticities for various firms. The average automobile maker in their data has an $\eta = 3.6$, while the average grocery chain has $\eta = 1.9$.

I assume a constant elasticity of demand curve $Q(p) = \left(\frac{p}{1-1/\eta}\right)^{-\eta}$, and use this demand curve to calculate the exact change in quantity. I calculate the change in consumer surplus approximated with a linear demand curve for the familiar triangle form: $\Delta CS = -\Delta pQ - \frac{1}{2}\Delta p\Delta Q$, where Q is the profit maximizing quantity and ΔQ the change in quantity between that and $Q(p^*)$. As in the model, firms have constant marginal costs and no fixed costs. (Adding fixed costs would change the level of profits but would not change the ratio of lost profits to gains to consumers for a given price change.) Based on this set up, percentage changes in prices, quantity, profits, and consumer surplus do not depend on the scale of the industry or the level of marginal costs.

Table 1 summarizes the results. In each case, implementing λ entails that same percentage decline in the Lerner index (e.g. a $\lambda = 0.1$ entails a 10% decline in the Lerner index relative to that of profit maximization). The percentage change in price also depends on the elasticity of demand, can be calculated using Proposition 2, and is shown in the table. The demand system then gives the corresponding change in quantity.

Consistent with Proposition 3, the impact of a small $\lambda = 0.01$ has minimal effects on profits (about a 0.01% decline) regardless of the elasticity of demand, and has an impact on consumer surplus that is two orders of magnitude higher (1.4-2.1% of original profits, depending on the elasticity). Note that the firm sets the tradeoff between consumer surplus and profits to be λ at the margin. However, the overall ratio of the increase in consumer welfare relative to profits is much larger, as the early price increases deliver large social benefits for small profit costs.

A larger $\lambda = 0.1$ is more costly in terms of profits (about a 1% decline), but delivers much larger consumer benefits (14-21% of original profits). The absolute social welfare gain is larger, though the ratio of consumer gains to profit loss is only about 20.

Finally, $\lambda = 0.25$ would entail a decline in profits of about 4.8% to 6.5% but consumer surplus would increase by 38%-54% of original profits. For both industries, the ratio of consumer gains to lost profits is about 8 for this value of λ.

2.6 Calibrating Values of λ

2.6.1 Self-Interested Motivations Alone

Theory plus existing data can illuminate what types of values for λ are plausible based on the underlying distribution of ownership shares, consumption shares, and social preferences. I make rough assumptions that provide a reasonable approximation for how an owner of a diversified index fund owning the entire economy might instruct the fund manager to vote on their behalf.

To get a better estimate of the distribution of λ in the population, I use estimates of equity ownership from the 2022 Survey of Consumer Finances (SCF) and consumption shares from the 2022 Consumer Expenditure Survey (CEX) to estimate consumption shares, and to estimate equity.

First, to calibrate ownership share α, I assume that individuals are fully diversified and each share α_i of each firm. Then, to calibrate γ, I assume shareholders vote on a general weight on consumer welfare, rather than a product-specific pricing strategy, and so examine individuals' overall share of consumption. [13]

[13]The value of γ will depend on the degree of specificity with which shareholders express their preference.

Unfortunately, a single data set does not contain both consumption and equity shares. I therefore link the two datasets at the demographic cell level using key attributes that predict equity ownership and consumption that are observed in both datasets: age and income. This allows me to gain estimates of λ_j for a representative individual in demographic cell j.

I divide observations in the SCF into 20 income quantiles based on total household income. I also divide the observations in the SCF into 7 age categories (29 and below, 30 to 39, ... through 80 and above), based on the age of the reference person in the household. This results in 140 demographic cells resulting from the combination of income quantiles by age category. I follow the sample code from the SCF to categorize various accounts into equities held both directly and indirectly.

Similarly, I divide the observations in the CEX into 20 income quantiles (using the total family income before taxes) and the same 7 age categories (using the age of the reference person). I use income quantiles to match households, rather than income dollar cutoffs, to account for differences in exactly how the income is found. To estimate total consumption of the household, I merge the interview and diary components of the survey, following sample code provided by the BLS.

For each demographic cell, I construct $\alpha_j = \frac{\sum_{i \in j} equity_i}{\sum_i equity_i}$, the share of total equity held by j , using weights from the SCF, and similarly construct γ_j, the share of total consumption consumed by j, using weights from the CEX. Then, assuming homogeneity within a cell, each individual i in cell j then has $\alpha_i = \frac{\alpha_j}{N_j}$ and $\gamma_i = \frac{\gamma_j}{N_j}$. I then merge the datasets based on income-age demographic cells.

Each individual in each cell's "self-interested λ" is constructed assuming $\theta = 0$ as $\lambda_i = \frac{\gamma_i}{\alpha_i}$. Equivalently, since size of the population in each cell cancels out in the ratio, $\lambda_i = \frac{\gamma_j}{\alpha_j}$. For intuition, consider a simpler example: the top decile of income owns about 71% of stock, and consumes about 22% of consumption, so a representative individual from this decile would have a $lambda_i = 0.31$.

Finally, I aggregate these λ_i to describe both the household-level distribution[14] and the share-weighted distribution. The household-level median λ gives the describes the median household, while the share-weighted median describes the median share, which may be informative for the values of λ that might win a shareholder vote.

Figure 1 shows the distributions of self-interested λ, both household-level and equity

A self-interested shareholder would only like to include consumer welfare in the objective function for the particular products they purchase. However, the ways in which shareholders induce the firm to change its objective function are not this specific, and individuals will have uncertainty about what they will buy and thus what share of their expenditure is at a particular firm.

[14]A challenge for the aggregation is that each demographic cells has two potential weights: that from the SCF and the CEX. The weights are highly, but imperfectly correlated. I rescale the weights to a common scale and take the average weight across the two datasets for each demographic cell.

weighted. The left panel truncates the x-axis at $\lambda = 1$, while the right panel shows the extended distribution, though values of $\lambda > 1$ are unlikely to be implemented. The median household has a self-interested λ far above 1 (about 6.3), while the median share is held by an owner with a self-interested λ of 0.28.

2.6.2 Considering Altruism

The role of altruism, though, is likely to be quite important. What weight θ might an individual place on other's outcomes relative to their own? Data on the distribution of altruism in the population is not available, limiting us from constructing the distribution of actual λ. However, a recent estimate comes from Ottoni-Wilhelm et al. (2017), who estimate a structural model from lab experiment decisions and find an altruism weight of about 0.6. Conservatively adjusting this estimate weight downward, consider the impact of $\theta = 0.2$, such that an individual is indifferent on the margin between \$1 of personal benefits and \$5 of social benefits.

This level of altruism bounds λ_i between 0.167 and 6. If an individual were to own all the equity and had no share of the consumption benefits from lower prices ($\alpha_i = 1, \gamma_i = 0$), then $\lambda_i = 0.167$, while if the individual were to own no equity but received all of the consumption benefits ($\alpha_i = 0, \gamma_i = 1$), then $\lambda_i = 6$.

However, given the small size of most individuals in the population, both α_i and γ_i are approximately zero compared to the altruism parameter, and λ_i is near 1. In contrast to the self-interested λ calculation, the size of the population in each demographic cell now matters. Note that the limit as the number of individuals in each N_j goes to infinity is that each individual's equity share and consumption share goes to zero and $\lambda_i = 1$. As a result, even very large equity holdings still lead to a high value of λ given the number of shareholders. For instance, for an individual who owned 1/1000th of US equity (holdings on the order of billions of dollars), $\alpha_i = 0.001$ and still $\lambda = 0.995$ with $\theta = 0.2$; even with $\theta = 0.01$ (indifferent between \$1 to self and \$100 in social benefits), this large equity holder would have $\lambda = 0.91$.

As a practical matter, the data show that individuals have much lower equity shares, such that even when $\theta = 0.01$, the population-weighted $\lambda = 1.000$ and the equity-weighted λ is slightly below 1: 0.999994.

While these calculations are only rough approximations, they show that the weights that shareholders might place on consumer welfare are not trivially small, and that the role of shareholder altruism can dominate any variation in self-interested incentives.

3 Survey Experiment

3.1 Design

I design a survey experiment to elicit shareholders' preferences regarding the objective function they would want a firm to maximize. To infer the weight shareholders place on consumer surplus relative to firm profits, participants were asked how they would vote as a stockholder in one of the companies they owned stock in. (If they did not own stock, they were asked to suppose they owned $100 worth of stock in a company.) The question was not specific about which firm was being considered, with the goal of eliciting a general parameter that could be used by fund managers to represent shareholder preferences. Moreover, calibrations suggested that variation in altruism, rather that any direct pricing benefit, would be most important in determining λ.

The crucial question asked participants to:

> Consider a shareholder vote on pricing strategy.
>
> Prices could be set to maximize the firm's overall present and future profits.
>
> Alternatively, prices could be set lower. This would reduce profits. However, it would benefit consumers, who would pay lower prices and who might buy more.

Participants then chose between voting to "Set prices to maximize profits" or to "Set prices lower. Give up $1 million in profits, but gain $\$x$ for consumers".

The value of x was initialized at $64 million and iteratively updated based on their choices to produce an estimate of their indifference point x^*. Participants saw 8 questions about this tradeoff. The question gives shareholders a choice of what the firm should optimize: profits, or profits plus some weight on consumer welfare, as in Equation 2. Their indifference point implies $\lambda = \frac{1}{x^*}$.

Participants were also asked to choose between profit maximization and a more traditional ESG-related topic. The scenario asked about a shareholder vote on environmental strategy:

> The firm's production could be designed to maximize its overall present and future profits, while complying with all relevant environmental laws.
>
> Alternatively, the firm could use more environmentally friendly processes, which would lower profits. However, individuals would benefit via reduced exposure to pollution and reduced carbon emissions.

Participants then choose between voting to "Design production to maximize profits" or to "Make production more environmentally friendly. Give up $1 million in profits but gain $\$x$ in environmental benefits to individuals".

Again, x was varied over 8 questions using the same methodology as for the previous question. Just like for the original question, choices here allow us to infer a weight on environmental benefits relative to profit maximization. I term that weight ω.

While these survey results are not incentivized, shareholder votes are also not heavily incentivized, since an individual shareholder is unlikely to be pivotal when voting. Of course, actual votes may be influenced by debate, lobbying, information acquisition, and context-specific factors. Nonetheless, these questions should be reasonable guides to how shareholders would vote if presented with a similar resolution.

3.2 Iterative Procedure

To identify the indifference point x^*, I use a binary search over the interval $x_{min} = \$0$, $x_{max} = \$128$ million and present a series of choices that narrow the range between x_{min} and x_{max}. The choice of the interval was informed by pilot survey data and calibrations. The choice of binary search algorithm was determined by technological constraints of the survey implementation. Details are provided in Appendix Section B.1.

If a participant's indifference point x^* is located between 0 and 128, we can identify it within 0.5 million based on their choices– I assign x^* to be the midpoint of the remaining interval. I then calculate λ as $\frac{1}{x^*}$. If a participant always chooses to maximize profits, $x^* = 128$ and I impute $\lambda = 0$. If a participant never chooses to maximize profits, our estimate of $x^* = 0.25$ and I impute $\lambda = 4$ when calculating means. An identical procedure is used to calculate individual values of ω from choices about trading off profits versus environmental benefits.

3.3 Survey Deployment

In Fall 2023, the survey was released via the RAND American Life Panel, targeting approximately 500 participants drawn from a representative sample of Americans.[15] For more on the RAND American Life Panel, see Pollard and Baird (2017). The full text of the survey questions is available in the Appendix. Participants first answered a series of demographic questions. Additional demographic characteristics, including income, gender, race, and age are provided by the American Life Panel.

Participants then answered questions about whether they owned stock. These questions aim to identify both direct stockholding as well as indirect stockholding (such as stock held in

[15]The survey was also given to another, unrepresentative, group of individuals who had previously participated in a finance-related survey. Moreover, a pilot survey, with a slightly different design, was fielded in May 2023 on a sample recruited from Prolific.

a mutual fund, ETF, or retirement account). Participants were categorized as stockholders if they said yes to any of the following: having "any investments in stocks or mutual funds that are not in a retirement plan", having ever invested in "stocks, mutual funds, or index funds," or if they participated in a defined contribution retirement plan (which typically contains some allocation to equities). These questions were designed as a simplified version of the Survey of Consumer Finances questions measuring direct and indirect stockholding.

Participants then saw the key questions that elicited their preferred tradeoff between profits and either consumer welfare or the environment. The order of seeing consumer welfare or environmental questions was counterbalanced between participants.

Participants then answered questions about what strategy they predict would win in a majority vote of shareholders. That is, they answered a set of 8 questions about which option they believe would win in a vote between profit maximization and a lower price strategy that would gain $\$x$ for consumers. They also answered the same questions about a vote between profits and environmental benefits.

To ensure high-quality responses, the study included an attention screener. The analysis excludes the 17% of participants who failed that check. Participants are also excluded if they either took longer than 2 hours or shorter than 3 minutes to complete the survey. The remaining 436 participants comprise the analysis sample.

The RAND ALP provides a sample weight for each observation to enable researchers to obtain estimates representative of the US population. These weights are constructed using age, gender, ethnicity, household income, and education. (See Pollard and Baird (2017)). The main text presents weighted estimates. The unweighted values of λ are slightly lower (see Appendix Table A1).

Table A2 provides descriptive statistics of the analysis sample. I identify 47% of the sample as owning stock. By comparison, in the 2022 Survey of Consumer Finances, about 58% of Americans are identified as owning stock either directly or indirectly (Aladangady et al. 2023). Compared to the US population, the weighted analysis sample is slightly more likely to be women, but has a similar racial distribution, educational attainment, and family income. Political affiliation varies over time, but the sample underrepresents individuals who identify as Republican.

3.4 Main Results

Figure 2 presents the distribution of the estimated value of λ, split by stock ownership.

Result 1: Most individuals do not want firms to purely maximize profits. Only 7.3% of the sample votes for zero weight on consumer surplus ($\lambda = 0$) in the firm's objective

function, with another 3.6% voting for a weight between 0 and 0.01. Only 6.9% vote for zero weight on environmental benefits ($\omega = 0$).

Result 2: A substantial fraction of the sample (42%) has a preferred value of λ above 1. This implies they would be willing to forgo \$1 of profits for less than \$1 of consumer benefits, which does not promote efficiency in a social welfare function that equally weights profits and consumer surplus. As the theory model showed, $\lambda > 1$ can result from self-interested concerns, where a small shareholder receives little to no benefit from profits, but may receive benefits from lower prices. These preferences could also result from participants' distributional concerns, as the average consumer likely has lower income than the average stockholder. Legal, ethical, and practical constraints may limit implemented λ to be less than 1.

Values of λ above 1 are more likely among those who do not own stock than those who do own stock (50% versus 32%), but are still quite common among stockholders. Conditional on having $\lambda > 1$, 70% of those participants always favor consumers over firms, regardless of the amount. I impute $\lambda = 4$ for these individuals, but also discuss results in which λ is top-coded at 1. However, we will focus on sample medians, which are less affected by extreme values of λ.

Result 3: The median value of λ is substantial. Table 2 Panel A provides summaries of the elicited values of λ and ω, split by whether the participant owns stock or not. Overall, the median value of λ is 0.44. Stockholders and non-stockholders differ in their values of λ, with non-stockholders having a higher median (0.80 v 0.27) as well as higher means. The mean estimated value of λ is 1.55, but this is affected by individuals with extreme values, and the mean of $min\{\lambda, 1\}$ is 0.52.[16]

Result 4: Stockholders place similar weight on consumer welfare λ and the environment ω. Table 2 also shows that stockholders' the median values for λ and ω are in fact identical, with quite similar means as well. Appendix Figure A1 shows the distribution of weights on environmental benefits is similar to the distribution of λ.

In contrast, non-stockholders place a much higher value on environmental factors, with more than half the sample never identifying an amount of profits that they prefer to avoidance of environmental damage (and thus being imputed $\omega = 4$).

Result 5: The median individual expects firms to implement a much lower

[16]Unrepresentative samples show a lower median λ but are still consistent with most individuals placing a positive value on consumer surplus. A pilot survey on Prolific had a sample that was more educated and more likely to stock than the representative sample. The median value was lower at 0.10, but still, only 11% wanted λ=0. A different, unrepresentative sample of RAND American Life Panel participants recruited from individuals who had participated in a previous finance-related study and had said they owned stock yielded a median λ of 0.08, with only 19% preferring $\lambda = 0$.

λ than they prefer. Panel B of Table 2 shows what participants *believe* would win in a majority vote among shareholders. The median participant does not believe that firms will implement much weight on consumers or the environment, with a belief of about 0.02 for the value of λ and ω that would win in a shareholder election. The mean belief is substantially higher, at about 0.6. The divergence between predicted and average values could result from incorrect beliefs about preferences or due to compositional differences between this sample and who owns stock or who votes in elections.

4 Conclusion

Theory shows that firms maximizing shareholder welfare will place some weight on consumer welfare when setting price, because shareholders may receive a direct benefit from lower prices or have altruistic preferences. Firms can implement shareholder preferences when setting prices by lowering their markups as a percentage of price by approximately λ. The gains to consumers, relative to the costs in profits, can be substantial.

Both calibrations and survey experiments show that the desired weight on consumer welfare is non-trivial and that there is substantial heterogeneity across shareholders. Few participants are consistent with a pure profit maximization motive.

Eliciting shareholder preferences using this method does not require them to have knowledge of the business situation the firm faces. As such, it can be extended to other domains (e.g. such as how firms treat employees) and can be used by index funds and pension funds seeking to represent the ultimate owners' interests.

References

Agrawal, Ashwini K., "Corporate Governance Objectives of Labor Union Shareholders: Evidence from Proxy Voting," *The Review of Financial Studies*, January 2012, *25* (1), 187–226.

Akerlof, George A. and Janet L. Yellen, "A Near-Rational Model of the Business Cycle, With Wage and Price Inertia," *The Quarterly Journal of Economics*, 1985, *100*, 823–838. Publisher: Oxford University Press.

Aladangady, Aditya, Jesse Bricker, Andrew C. Chang, Sarena Goodman, Jacob Krimmel, Kevin B. Moore, Sarah Reber, Alice Henriques Volz, and Richard A. Windle, "Changes in U.S. Family Finances from 2019 to 2022: Evidence from the Survey of Consumer Finances," *Washington: Board of Governors of the Federal Reserve System*, 2023.

Allcott, Hunt, Giovanni Montanari, Bora Ozaltun, and Brandon Tan, "An Economic View of Corporate Social Impact," Working Paper 31803, National Bureau of Economic Research 2023.

Antón, Miguel, Florian Ederer, Mireia Giné, and Martin Schmalz, "Common ownership, competition, and top management incentives," *Journal of Political Economy*, 2023, *131* (5), 1294–1355.

Azar, José and Xavier Vives, "General equilibrium oligopoly and ownership structure," *Econometrica*, 2021, *89* (3), 999–1048.

Azar, Jose, Martin C. Schmalz, and Isabel Tecu, "Anticompetitive Effects of Common Ownership," *The Journal of Finance*, 2018, *73* (4), 1513–1565.

Backus, Matthew, Christopher Conlon, and Michael Sinkinson, "Common Ownership in America: 1980–2017," *American Economic Journal: Microeconomics*, August 2021, *13* (3), 273–308.

Bartlett, Robert P and Ryan Bubb, "Corporate Social Responsibility through Shareholder Governance," *Available at SSRN 4354220*, 2023.

Benabou, Roland and Jean Tirole, "Individual and Corporate Social Responsibility," *Economica*, 2010, *77* (305), 1–19.

Berchicci, Luca and Andrew King, "Corporate sustainability: A model uncertainty analysis of materiality," *Journal of Financial Reporting*, 2022.

Bonnefon, Jean-François, Augustin Landier, Parinitha R Sastry, and David Thesmar, "The moral preferences of investors: Experimental evidence," *National Bureau of Economic Research Working Paper 29647*, 2022.

Broccardo, Eleonora, Oliver Hart, and Luigi Zingales, "Exit versus voice," *Journal of Political Economy*, 2022, *130* (12), 3101–3145.

Bubb, Ryan and Emiliano M Catan, "The Party Structure of Mutual Funds," *The Review of Financial Studies*, June 2022, *35* (6), 2839–2878.

DeAngelo, Harry, "Competition and Unanimity," *The American Economic Review*, 1981, *71* (1), 18–27.

Dreze, Jacques H., "Investment Under Private Ownership: Optimality, Equilibrium and Stability," in Jacques H. Dreze, ed., *Allocation under Uncertainty: Equilibrium and Optimality: Proceedings from a Workshop sponsored by the International Economic Association*, International Economic Association Series, London: Palgrave Macmillan UK, 1974, pp. 129–166.

Ederer, Florian and Bruno Pellegrino, "A Tale of Two Networks: Common Ownership and Product Market Rivalry," *Working Paper*, 2023.

Edmans, Alex, "Does the stock market fully value intangibles? Employee satisfaction and equity prices," *Journal of Financial Economics*, 2011, *101* (3), 621–640.

_ , Caroline Flammer, and Simon Glossner, "Diversity, Equity, and Inclusion," 2023.

Ericson, Keith M Marzilli, "Consumer inertia and firm pricing in the Medicare Part D prescription drug insurance exchange," *American Economic Journal: Economic Policy*, 2014, *6* (1), 38–64.

Farrell, Joseph, "Owner-consumers and efficiency," *Economics Letters*, January 1985, *19* (4), 303–306.

Fisher, Irving, "The theory of interest," *New York*, 1930, *43*, 1–19.

Fisman, Raymond, Shachar Kariv, and Daniel Markovits, "Individual preferences for giving," *American Economic Review*, 2007, *97* (5), 1858–1876.

Fleurbaey, Marc and Grégory Ponthière, "The stakeholder corporation and social welfare," *Journal of Political Economy*, 2023, *131* (9), 2556–2594.

Friedman, Milton, "The Social Responsibility Of Business Is to Increase Its Profits," *The New York Times*, September 1970.

Gans, Joshua, Andrew Leigh, Martin Schmalz, and Adam Triggs, "Inequality and market concentration, when shareholding is more skewed than consumption," *Oxford Review of Economic Policy*, July 2019, *35* (3), 550–563.

Grossman, Sanford J. and Oliver D. Hart, "A Theory of Competitive Equilibrium in Stock Market Economies," *Econometrica*, 1979, *47* (2), 293–329.

Hart, Oliver and Luigi Zingales, "Companies Should Maximize Shareholder Welfare Not Market Value," *Journal of Law, Finance, and Accounting*, November 2017, *2* (2), 247–275.

Hart, Oliver D and Luigi Zingales, "The New Corporate Governance," *National Bureau of Economic Research Working Paper 29975*, 2022.

Hartzmark, Samuel M and Abigail B Sussman, "Do investors value sustainability? A natural experiment examining ranking and fund flows," *The Journal of Finance*, 2019, *74* (6), 2789–2837.

Heeb, Florian, Julian F Kölbel, Falko Paetzold, and Stefan Zeisberger, "Do investors care about impact?," *The Review of Financial Studies*, 2023, *36* (5), 1737–1787.

Hirst, Scott, Kobi Kastiel, and Tamar Kricheli-Katz, "How Much do Investors Care about Social Responsibility?," *Wis. L. Rev.*, 2023, p. 977.

Khan, Mozaffar, George Serafeim, and Aaron Yoon, "Corporate sustainability: First evidence on materiality," *The Accounting Review*, 2016, *91* (6), 1697–1724.

Kitzmueller, Markus and Jay Shimshack, "Economic Perspectives on Corporate Social Responsibility," *Journal of Economic Literature*, March 2012, *50* (1), 51–84.

Klemperer, Paul, "Competition when consumers have switching costs: An overview with applications to industrial organization, macroeconomics, and international trade," *The review of economic studies*, 1995, *62* (4), 515–539.

Magill, Michael, Martine Quinzii, and Jean-Charles Rochet, "A Theory of the Stakeholder Corporation," *Econometrica*, 2015, *83* (5), 1685–1725.

Milgrom, Paul and John Roberts, "Limit pricing and entry under incomplete information: An equilibrium analysis," *Econometrica: Journal of the Econometric Society*, 1982, pp. 443–459.

Morgan, John and Justin Tumlinson, "Corporate Provision of Public Goods," *Management Science*, October 2019, *65* (10), 4489–4504.

Ottoni-Wilhelm, Mark, Lise Vesterlund, and Huan Xie, "Why Do People Give? Testing Pure and Impure Altruism," *American Economic Review*, November 2017, *107* (11), 3617–3633.

Pollard, Michael S. and Matthew D. Baird, "The RAND American Life Panel: Technical Description," Technical Report, RAND Corporation July 2017. https://www.rand.org/pubs/research_reports/RR1651.html.

Radner, Roy, "A Note on Unanimity of Stockholders' Preferences among Alternative Production Plans: A Reformulation of the Ekern-Wilson Model," *The Bell Journal of Economics and Management Science*, 1974, *5* (1), 181–184.

Renneboog, Luc and Peter G Szilagyi, "The role of shareholder proposals in corporate governance," *Journal of Corporate Finance*, 2011, *17* (1), 167–188.

Riedl, Arno and Paul Smeets, "Why Do Investors Hold Socially Responsible Mutual Funds?," *The Journal of Finance*, 2017, *72* (6), 2505–2550.

Rotemberg, Julio, "Financial transaction costs and industrial performance," 1984. Publisher: Cambridge, Mass.: Massachusetts Institute of Technology.

Rotemberg, Julio J., "Models of Caring, or Acting as if One Cared, About the Welfare of Others," *Annual Review of Economics*, 2014, *6* (1), 129–154.

Schmalz, Martin C., "Common-Ownership Concentration and Corporate Conduct," *Annual Review of Financial Economics*, 2018, *10* (1), 413–448.

Shleifer, Andrei and Robert W Vishny, "Value maximization and the acquisition process," *Journal of Economic Perspectives*, 1988, *2* (1), 7–20.

Wilson, Robert, "Chapter 10 Strategic models of entry deterrence," in "in," Vol. 1 of *Handbook of Game Theory with Economic Applications*, Elsevier, 1992, pp. 305–329. ISSN: 1574-0005.

Table 1: Impact of Implementing Weight on Consumer Welfare λ

		Percent Change in...			*Change in Consumer Surplus*
	Value of λ	*Price*	*Quantity*	*Profits*	*as Percent of Profits*
Elasticity of Demand = 1.9	0.01	-1.1	2.1	-0.01	2.1
	0.1	-10.0	22.2	-1.05	21.1
	0.25	-21.7	59.3	-6.49	53.6
Elasticity of Demand = 3.6	0.01	-0.4	1.4	-0.007	1.4
	0.1	-3.7	14.6	-0.72	14.3
	0.25	-8.8	39.2	-4.78	37.8

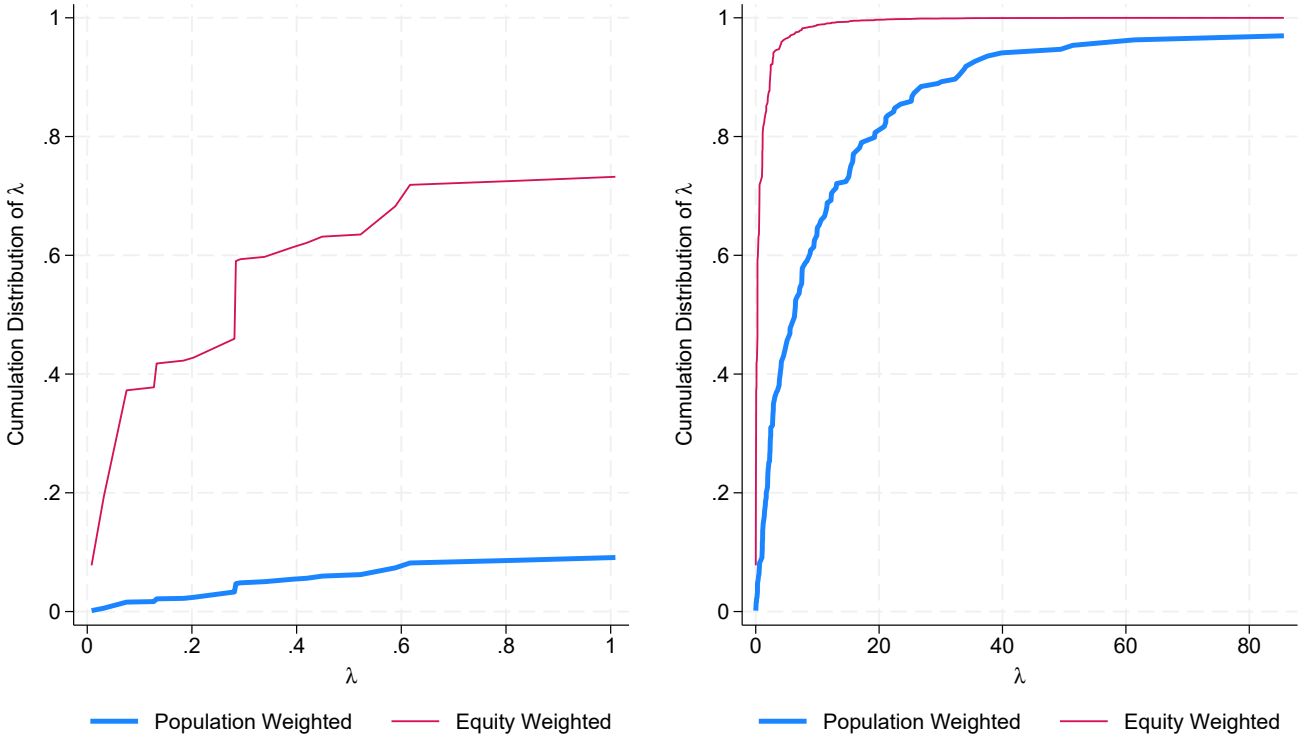
Notes: Calculations as described in text. Assumes constant elasticity of demand function. Displays percentage changes relative to the profit maximizing amounts. Profits exclude fixed costs (variable profits). Consumer surplus is measured as a percentage change in relative to profits when the firm is profit maximizing.

Table 2: Desired Weight on Consumer Welfare (λ) and Environmental Impact (ω) Relative to Profits

Panel A: Elicited Values				
	λ (Consumers)		ω (Environment)	
	Mean	Median	Mean	Median
Owns stock	1.25	0.27	1.42	0.27
	(0.28)		(0.23)	
Does not own stock	1.81	0.80	2.29	4.00
	(0.39)		(0.33)	
Total	1.55	0.44	1.88	1.33
	(0.26)		(0.24)	
Panel B: Predicted Winning Values in Vote				
	λ (Consumers)		ω (Environment)	
	Mean	Median	Mean	Median
Owns stock	0.59	0.01	0.69	0.02
	(0.30)		(0.69)	
Does not own stock	0.64	0.03	0.66	0.02
	(0.22)		(0.22)	
Total	0.62	0.02	0.68	0.02
	(0.18)		(0.18)	

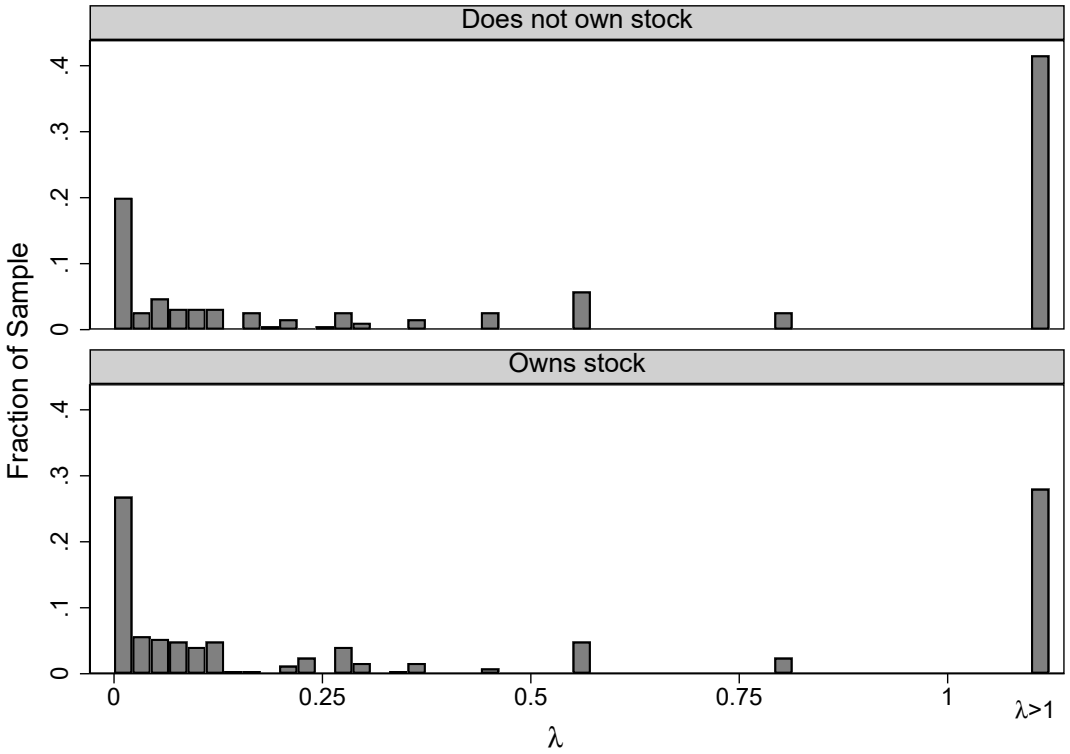
Notes: Data: Representative Sample, with weights from RAND American Life Panel. Standard errors of the mean in parentheses.

Figure 1: Distribution of Self-Interested λ



Notes: Data: Demographic cell estimates of λ assuming $\theta = 0$, derived from 2022 Survey of Consumer Finances and 2022 Consumer Expenditure Survey. Left panel has x-axis truncated at $\lambda = 1$, right panel has extended axis.

Figure 2: Distribution of Elicited λ by Stockholding Status



Notes: Data: Representative Sample, without weighting observations. Grouped into 50 bins. All values of λ greater than 1 are grouped in a single bin.

Online Appendix for: What Do Shareholders Want? Consumer Welfare and the Objective of the Firm

Keith Ericson

A Theory Appendix

A.1 Two-Period Model

This section extends the model in Section 2 to a two period model, in which firms and consumers both discount the future by a common $\delta \in [0, 1]$. Let firms choose p for period 1, and let the firm's objective function be as follows:

$$(p - c)Q(p) + \lambda CS + \delta \left[E\Pi_{t=2}(p) + \lambda ECS_{t=2}(p) \right]$$

where $E\Pi_{t=2}(p)$ is the expected profits in period 2, which can be a function of price in period 1, as well as other actions that can in turn depend on p. $ECS_{t=2}(p)$ is expected consumer surplus in period 2, which can also be affected by period 1 price today via its impact on future actions. Assume both $E\Pi_{t=2}$ and $ECS_{t=2}$ are continuously differentiable. Then, the first order condition for the optimal choice of price is:

$$p = c + (1 - \lambda)\frac{Q'}{-Q'} + \frac{\delta}{-Q'}\left(\frac{dE\Pi_{t=2}}{dp} + \lambda \frac{dECS_{t=2}}{dp} \right)$$

The first markup term is the term shown in Proposition 1, though potentially evaluated at a different price. The new term takes into account the impact of a price change today on expected future profits. When $\lambda = 0$, if an increase in p would increase period 1 profits, it must be the case that $\frac{dE\Pi_{t=2}}{dp} < 0$. The sign of $ECS_{t=2}$ is ambiguous. Still, to see that a profit-maximizing firm faces no first-order loss in profits from implementing small λ (analogous to Proposition 3), note that the envelope theorem still applies and $\frac{d}{dp}\left((p - c)Q(p) + \delta E\Pi_{t=2}(p)\right) = 0$.

A.2 New Product Model

This section returns to the model in Section 2, but extends it in a different way intended to capture situations such as pharmaceutical firms developing a new product. In this model, the product the firm will sell does not yet exist. In period 1, firms choose a level of investment $m \geq 0$. With probability $\Phi(m)$ the product will be invented, with that probability increasing in m. Assume Φ is continuously differentiable, with $\Phi'(m) > 0$,$\Phi''(m) < 0$. In period 2, if the product is not invented, the firm makes no profit. If the product is invented, the firm chooses optimal price. Firms and consumers both discount the future by a common $\delta \in (0, 1]$. It is clear that, conditional on the product being invented, the firm will choose optimal price exactly as in Proposition 1: the choice of investment is a sunk cost. Thus, the

pricing results from the main text carry through.

A concern for consumer welfare does add novel implications for the choice of investment m. Given the optimal choice of price p^* and assuming an interior solution, the first order condition that determines the choice of m is $\Phi'(m) = \frac{1}{(p^*-c)Q+\lambda CS}$. While the choice of optimal price depended on how consumer surplus changed when price changed ($\frac{dCS}{dp}$, which we showed was $-Q$), the choice of investment is affected by the level of consumer surplus created by the existence of the product, which is much harder to estimate (see Hausman and Bresnahan 2009 and Diewert and Feenstra 2022).

A.3 Model with Environmental Externalities

This section discusses how consumer welfare concerns interact with environmental concerns that are often part of corporate social responsibility initiatives. Enrich the main text's model to include an externality[17] that increases linearly in total quantity Q, and that reduces each individual's utility by e. Allow the firm to engage in abatement activities that reduce damage by a per unit produced at cost $s(a)$ per unit, with $s' \geq 0, s'' > 0$. That is, there is a convex cost of abatement per unit. Shareholders may care about the externality due to both altruistic and self-interest reasons.

Shareholders can then induce the firm to maximize an objective function that also now includes a concern for the negative externality (weighted by ω) in addition to profits and consumer surplus. That is, the firm chooses price and the level of abatement to maximize: $\Pi + \lambda CS - \omega(e-a)Q$, where $\Pi = (p - c - s(a))Q$.

Given this objective function, the optimal choice of price p^*, given optimal abatement a^*, will be:

$$p^* = c + s(a^*) + \omega(e - a^*) + (1-\lambda)\frac{Q}{-Q'}$$

The additional pollution externality acts like a cost shifter: the harm net of abatement is treated raises price by ω , and the costs of abatement are also accounted for.

This simple model allows some new insights. First, in the absence of abatement technology, prices should be set below the profit-maximizing level if and only if the weighted impact of harm from externalities is less than that of markups: $\omega e < \lambda\frac{Q}{-Q'}$. Whether this condition holds depends not merely on shareholder attitudes to consumer surplus versus environmental harm, but also on the harm of externalities relative to markups.

Second, unless a firm has access to a zero marginal cost abatement opportunity, a profit maximizing firm ($\lambda = 0$) will respond to a new small weight placed on externalities ($\omega > 0$)

[17]The externality e is relative to any externality produced by the outside option (the numeraire consumption good).

by raising prices, not by abatement. Just as in Proposition 3, small changes in prices have no first order effect on profits, but will have first order benefits in reducing the externalities. There is a zero cost way of addressing some small amount of concern about externalities: raising price. Firms are already engaged in various CSR activities aimed at accounting for environmental factors. It is unclear whether they have responded by intentionally increasing price above the profit-maximizing level for products with negative externalities.

Finally, if a firm is accounting for externalities in price setting ($\omega > 0$) but has thus far not accounted for consumer surplus ($\lambda = 0$), then adding some concern about consumer surplus would actually *increase* profits. To see this, note that when $\lambda = 0$, the first order condition for price setting implies $\frac{d\Pi}{dp} = \omega(e - a)Q' < 0$: on the margin, reducing prices increases profits. When we induce $\lambda > 0$, prices go down, hence profits would increase.

B Empirical Appendix

B.1 Binary Search Algorithm Details

In the binary search algorithm, I take the midpoint of the range $x_{mid} = \frac{x_{min}+x_{max}}{2}$ and ask participants to choose between x_{mid} in benefits for consumers and \$1 million in profits. Thus, every participant begins with a choice between maximizing profits or giving up \$1 million in profits for \$64 million in consumer benefits. If the participant chooses to maximize profits, the value of x_{min} is updated to the current x_{mid}, while if they choose the lower price strategy, x_{max} gets updated to the current midpoint value. Then, x_{mid} is recalculated for the next question. That is, if they were willing to accept \$64 million instead of maximizing profits, they are then asked whether they would be willing to accept only \$32 million.

B.2 Appendix Tables and Figures

Appendix Table A1: Consumer Welfare (λ) and Environmental Impact (ω) Relative to Profits, without sample weights

Panel A: Elicited Values

	λ		ω	
	Mean	Median	Mean	Median
Owns stock	1.02	0.13	1.51	0.34
	(0.10)		(1.51)	
Does not own stock	1.41	0.51	1.74	1.33
	(0.12)		(0.13)	
Total	1.19	0.26	1.61	0.57
	(0.08)		(0.09)	

Panel B: Predicted Winning Values in Vote

	λ		ω	
	Mean	Median	Mean	Median
Owns stock	0.29	0.01	0.44	0.02
	(0.06)		(0.44)	
Does not own stock	0.56	0.03	0.61	0.03
	(0.09)		(0.09)	
Total	0.41	0.02	0.51	0.02
	(0.05)		(0.06)	

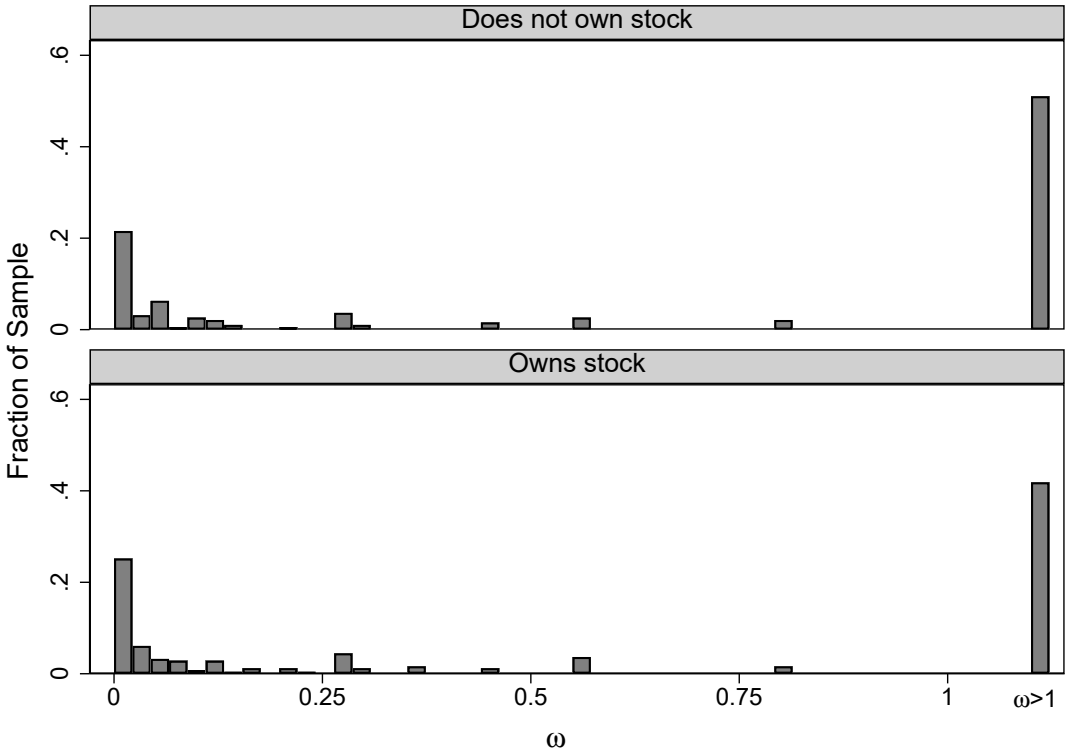
Notes: Data: Representative Sample. Standard errors of the mean in parentheses.

Appendix Table A2: Descriptive Statistics

		Percent of Sample
Stockholding:	Owns Stock	47.3
Gender:	Female	53.9
Race:	White Non-Hispanic	64.4
	White, Hispanic	10.8
	Black/African American	13.5
	Asian or Pacific Islander	4.6
	Other	6.7
Education Level:	High School or Less	42.5
	College or Some College	47.4
	Advanced Degree	10.1
Family Income Level:	Under $30k	18.2
	$30k-$60k	25.4
	$60k-$100k	24.5
	Greater than $100k	32.0
Political Identification:	Republican	19.6
	Democrat	37.0
	Independent/Other	43.5

Notes: Data: N= 436. Representative Sample, with weights from RAND American Life Panel.

Appendix Figure A1: Distribution of Elicited ω by Stockholding Status



Notes: Data: Representative Sample, without weighting observations. Grouped into 50 bins. All values of ω greater than 1 are grouped in a single bin.

Survey Documentation

Outline

1. Demographic and stock ownership related questions

Counterbalanced Order:

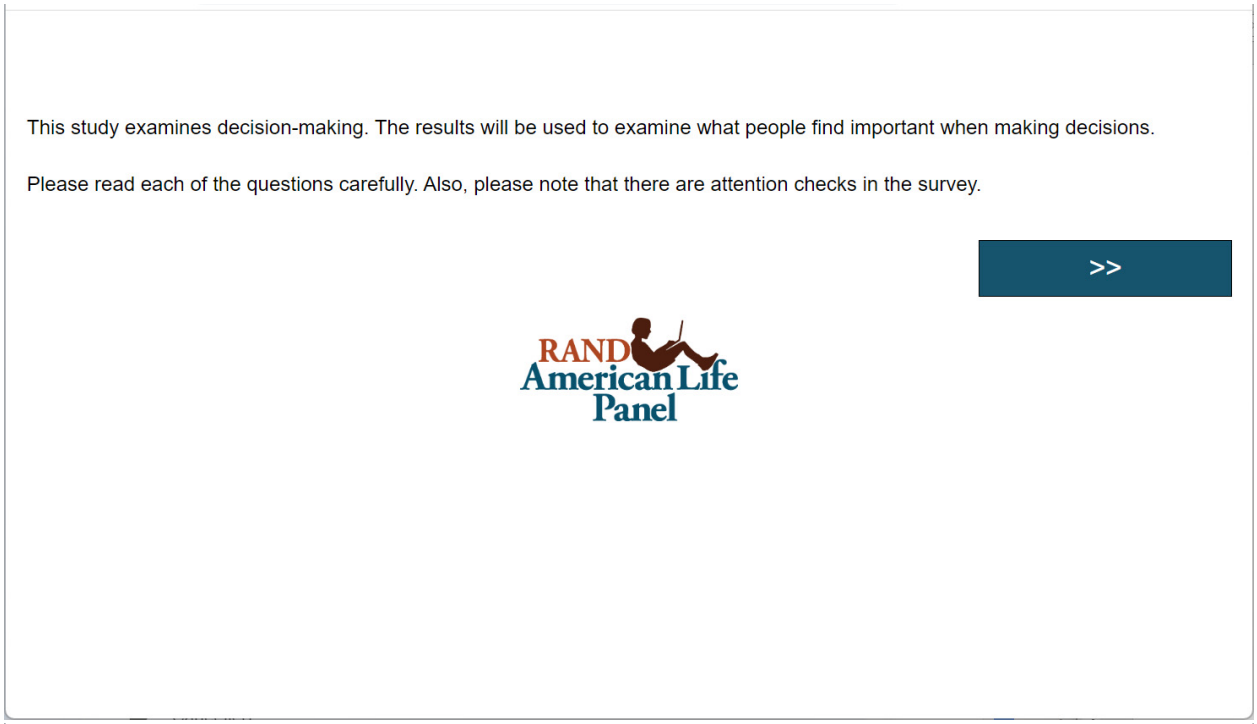
2. Consumer Benefits v. Profits (set of 8 questions)
3. Environmental Benefits v. Profits (set of 8 questions)

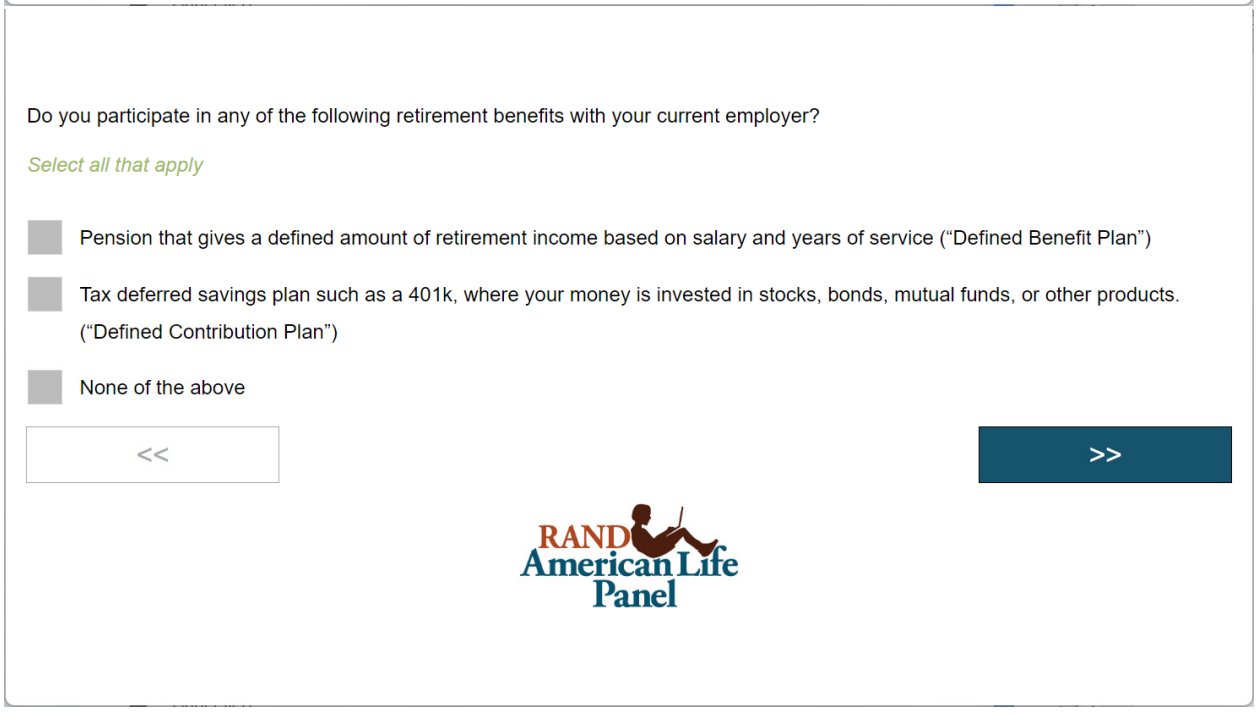
Counterbalanced Order:

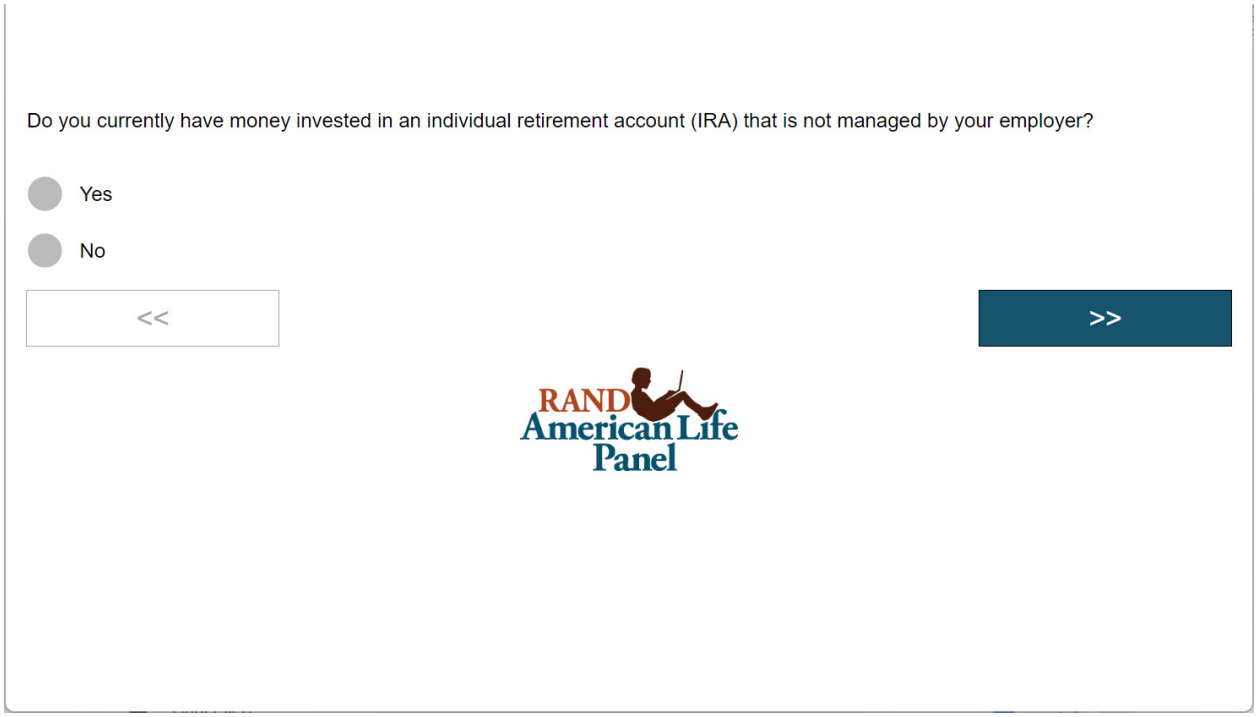
4. Predicted Consumer Benefit Vote (set of 8 questions)
5. Predicted Environmental Vote (set of 8 questions)

6. Additional questions

Screenshots






Do you currently have money invested in an individual retirement account (IRA) that is not managed by your employer?
Yes
No
<<
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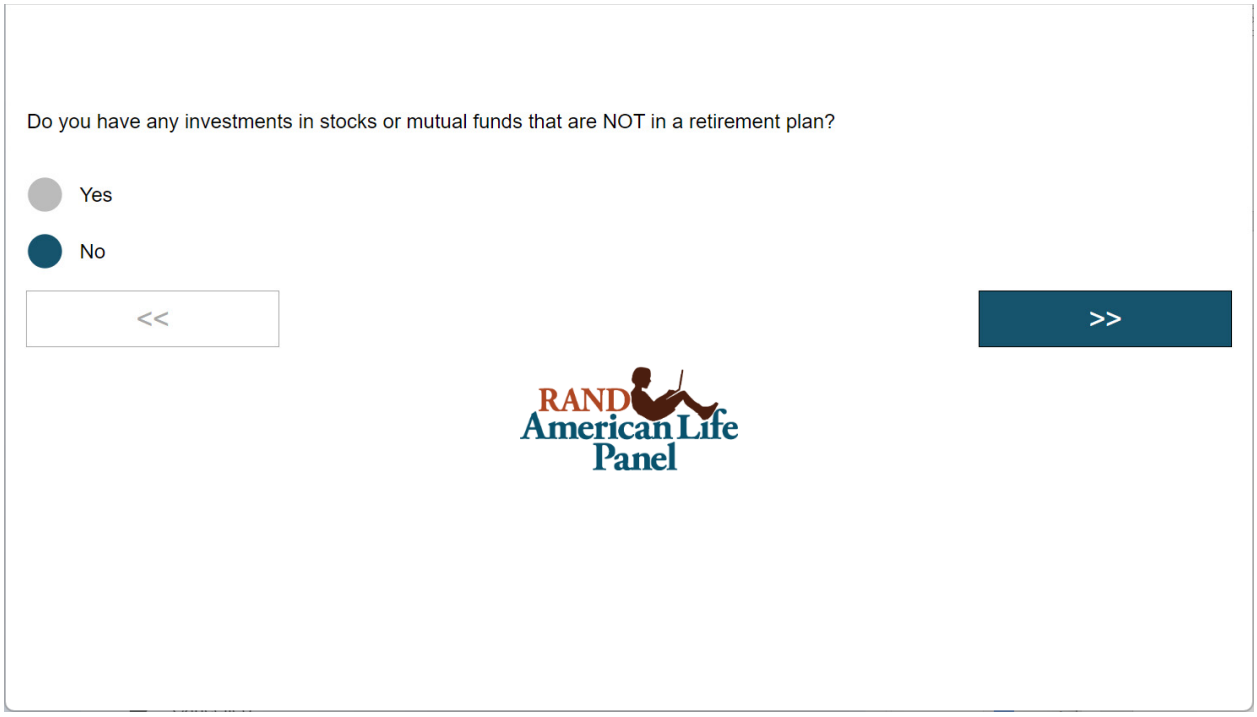
Do you have any investments in stocks or mutual funds that are NOT in a retirement plan?
Yes
No
<<
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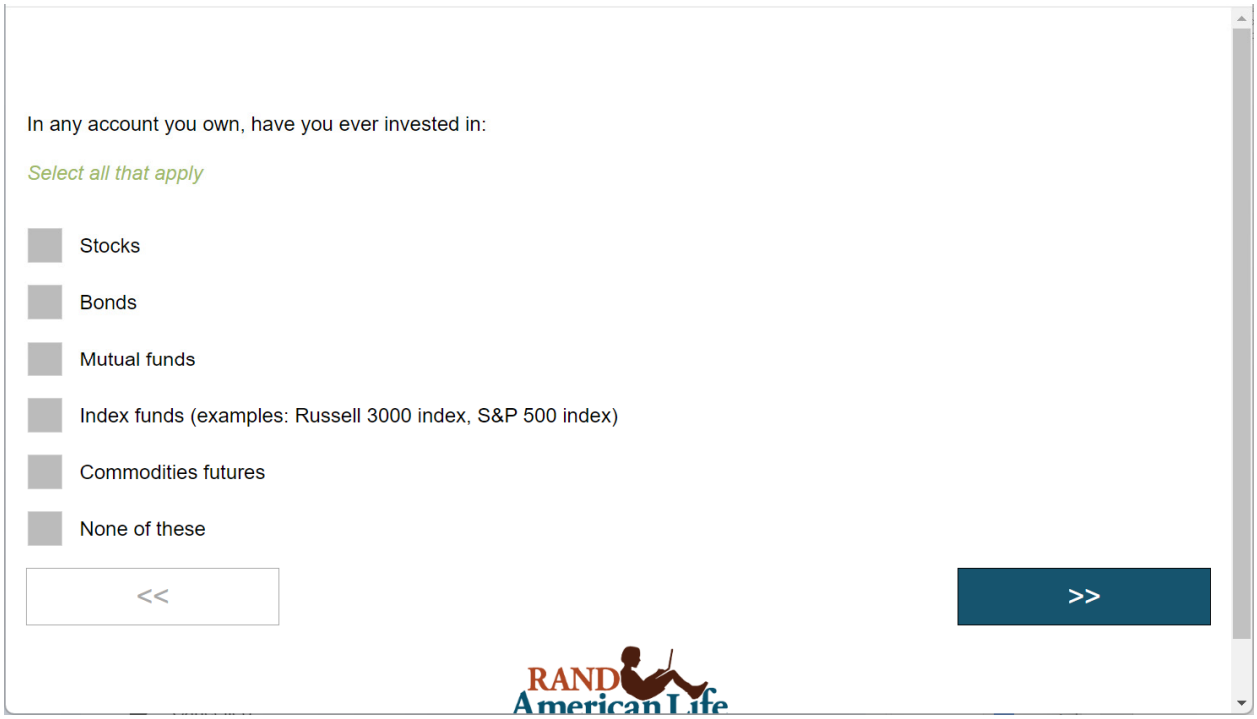
American Life
Panel


In any account you own, have you ever invested in:
Select all that apply
Stocks
Bonds
Mutual funds
Index funds (examples: Russell 3000 index, S&P 500 index)
Commodities futures
None of these
<<
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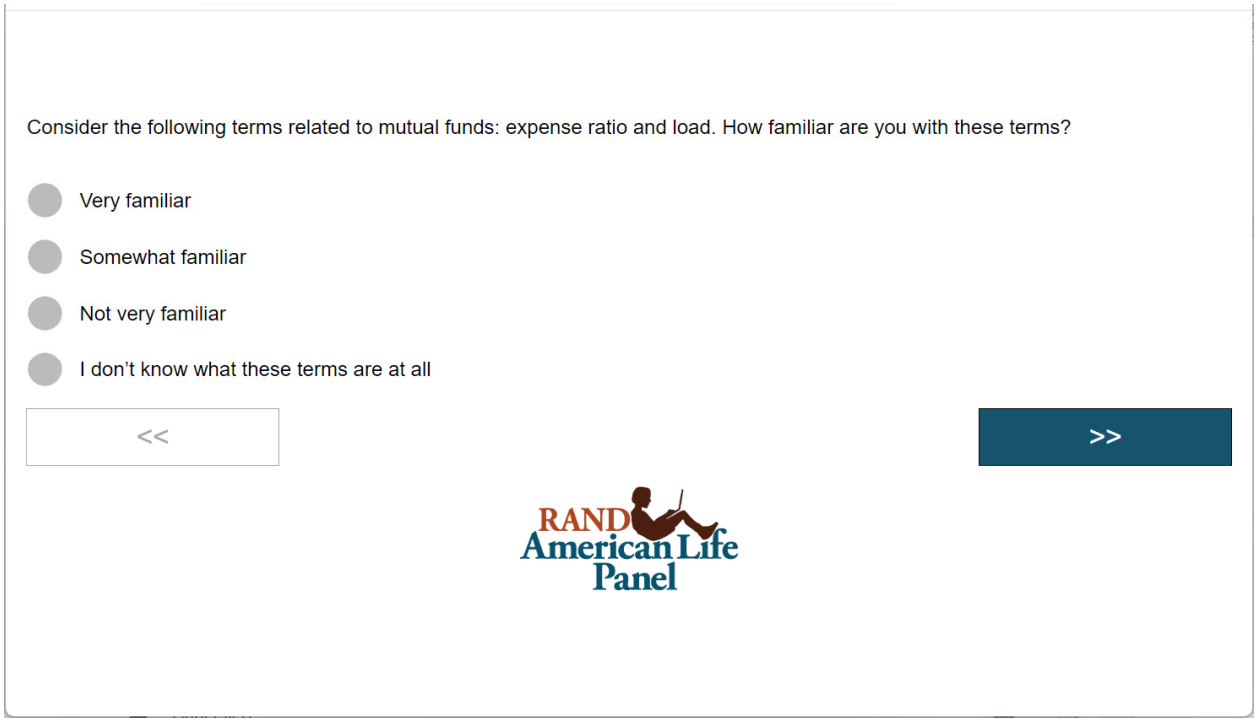
Consider the following terms related to mutual funds: expense ratio and load. How familiar are you with these terms?
Very familiar
Somewhat familiar
Not very familiar
I don't know what these terms are at all
<<
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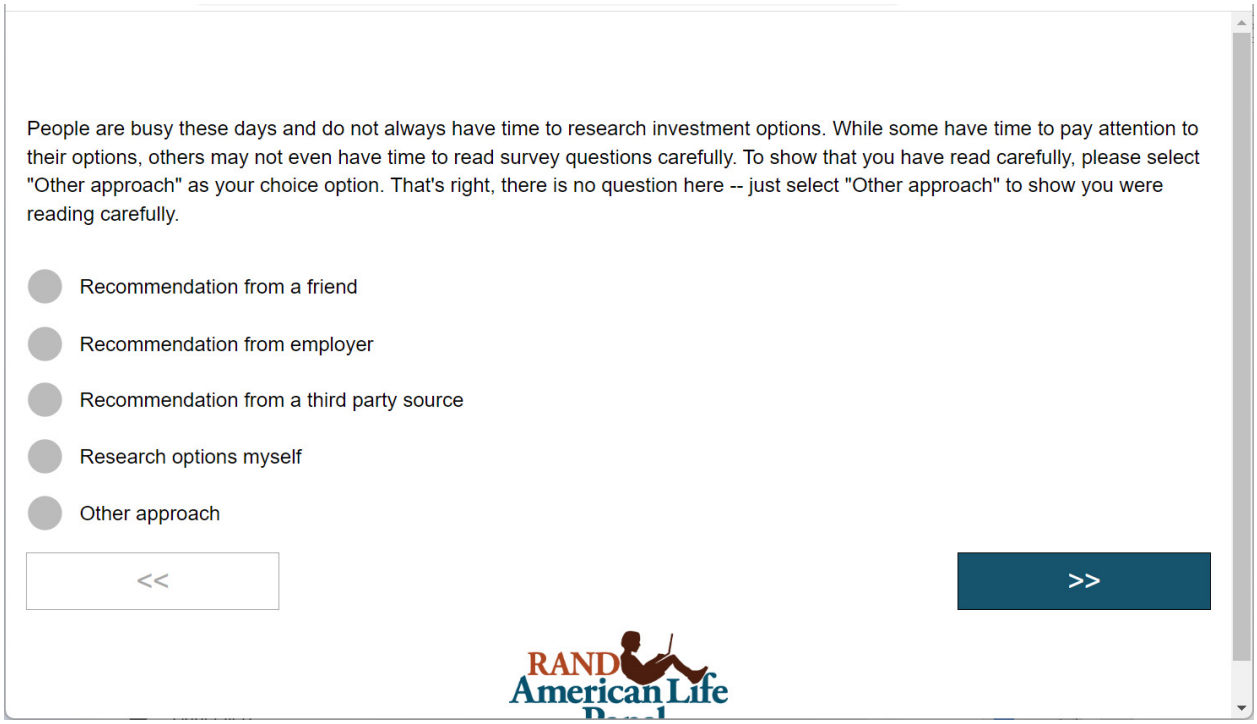
People are busy these days and do not always have time to research investment options. While some have time to pay attention to their options, others may not even have time to read survey questions carefully. To show that you have read carefully, please select "Other approach" as your choice option. That's right, there is no question here -- just select "Other approach" to show you were reading carefully.
Recommendation from a friend
Recommendation from employer
Recommendation from a third party source
Research options myself
Other approach
<<
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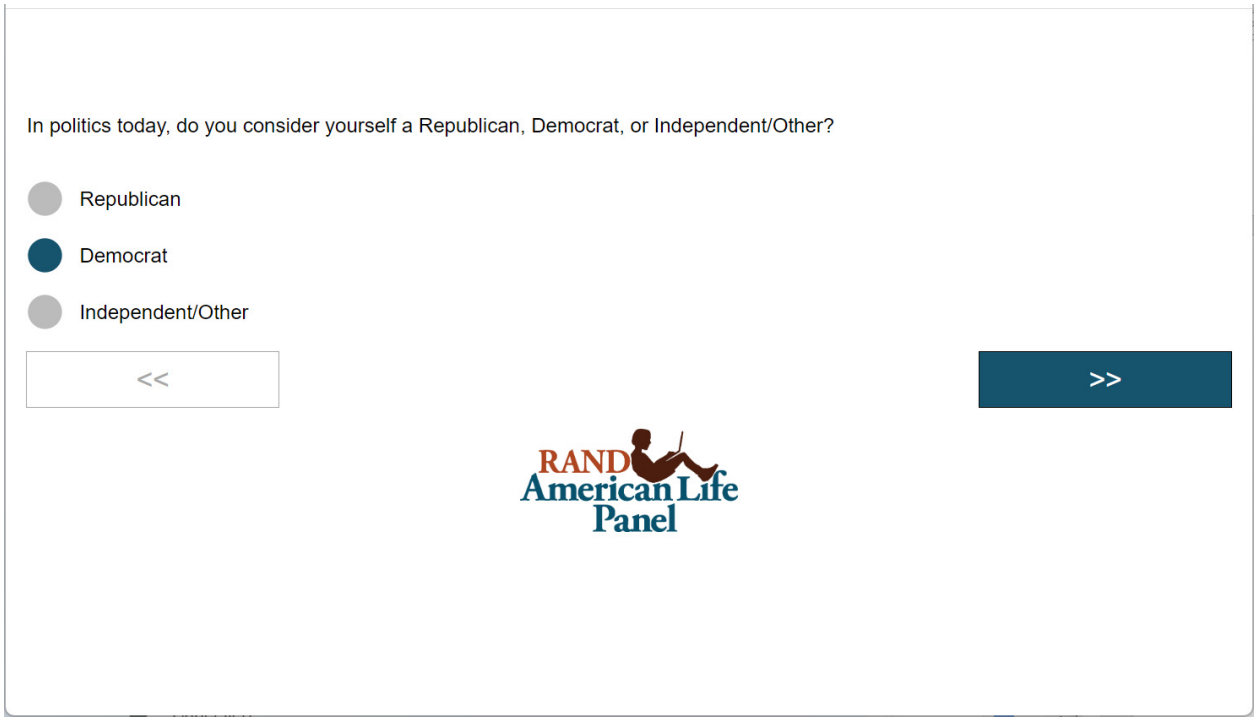
In politics today, do you consider yourself a Republican, Democrat, or Independent/Other?
Republican
Democrat
Independent/Other
<<
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Suppose you owned $100 worth of stock in a company (either directly or in an index fund).

As a shareholder in a company, you may have the opportunity to vote on major decisions facing the company.

Consider a shareholder vote on environmental strategy.

The firm could produce its products in a way that makes the most profits, while still complying with all relevant environmental laws.

Alternatively, the firm could produce its products in a way that is more environmentally friendly. This would lower profits. However, individuals would benefit from less exposure to pollution and lower greenhouse gas emissions.

We'll show you 8 different pairs of proposals, one after another. Each time, tell us which option you would vote for.

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Which option would you vote for from this pair of proposals?

- Produce in a way that maximizes profits
- Produce in a way that is more environmentally friendly. Give up $1 million in profits, but gain $64 million worth of environmental benefits to individuals.

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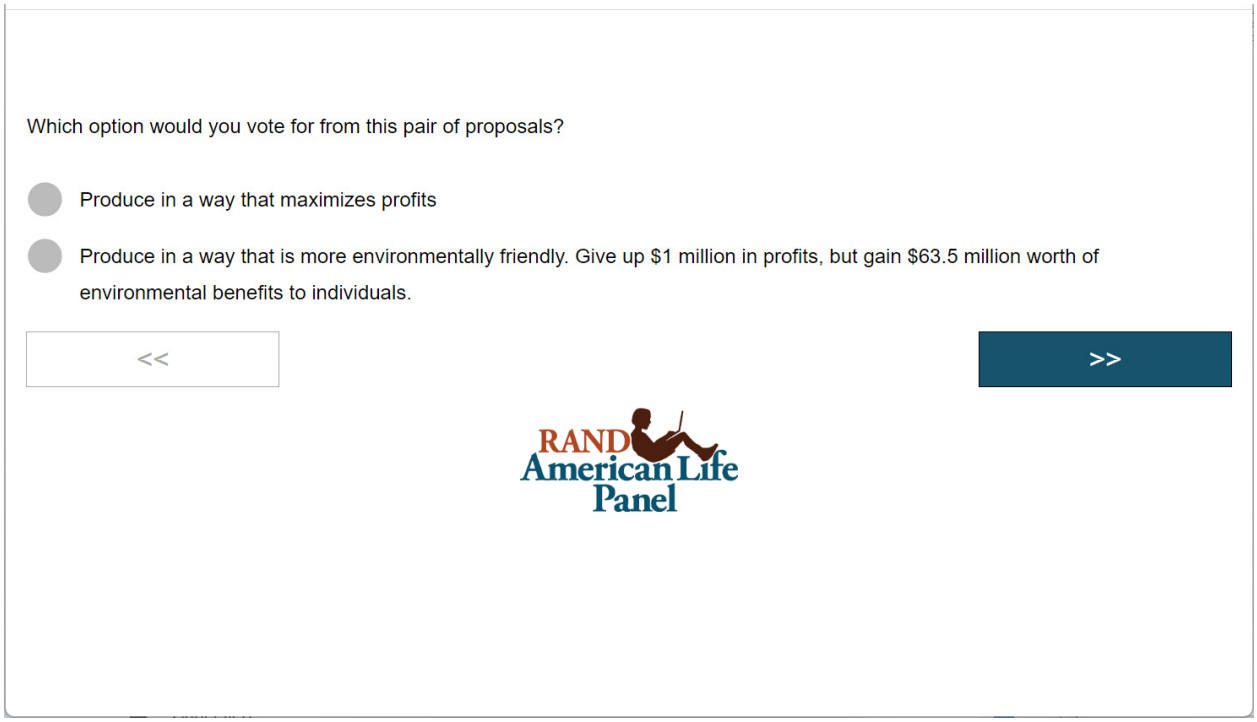
Which option would you vote for from this pair of proposals?
Produce in a way that maximizes profits
Produce in a way that is more environmentally friendly. Give up $1 million in profits, but gain $63.5 million worth of environmental benefits to individuals.
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RAND
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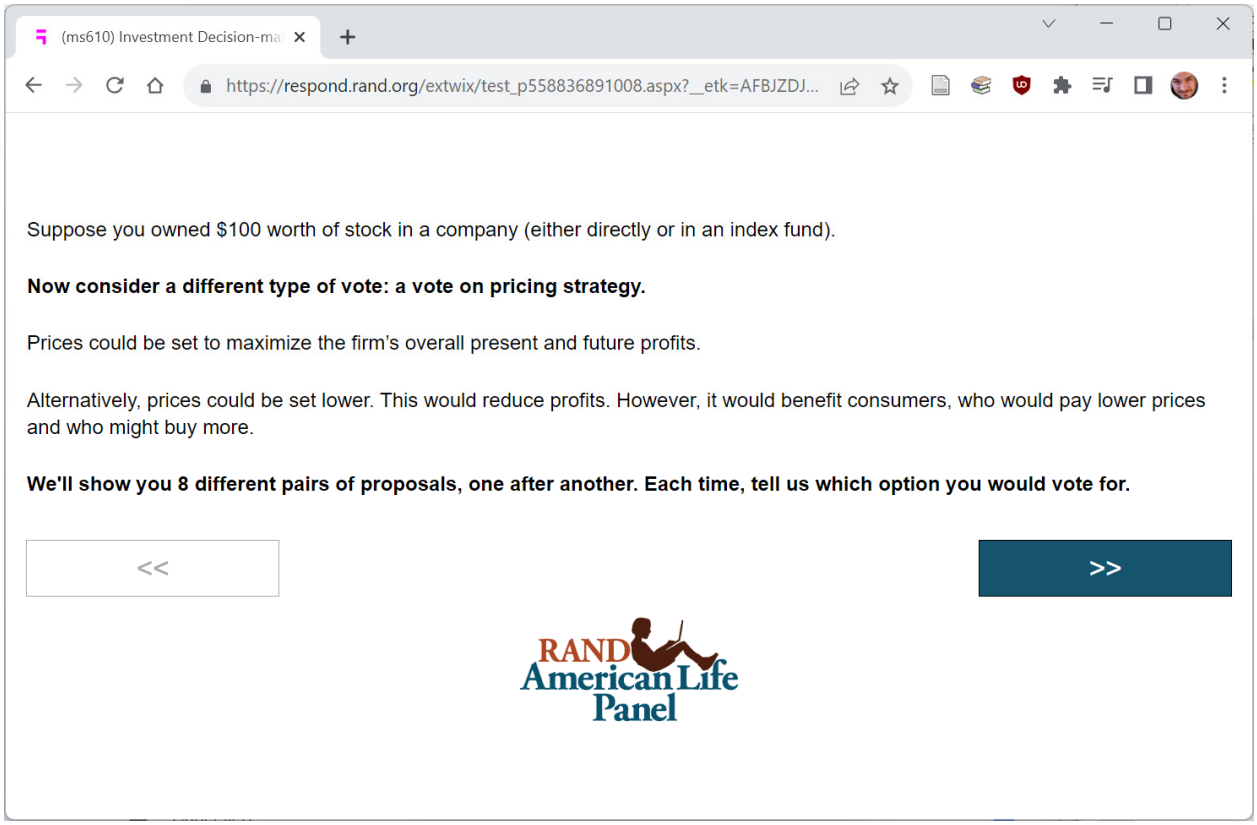
Panel


(ms610) Investment Decision-ma
https://respond.rand.org/extwix/test_p558836891008.aspx?__etk=AFBJZDJ...
Suppose you owned $100 worth of stock in a company (either directly or in an index fund).
Now consider a different type of vote: a vote on pricing strategy.
Prices could be set to maximize the firm's overall present and future profits.
Alternatively, prices could be set lower. This would reduce profits. However, it would benefit consumers, who would pay lower prices and who might buy more.
We'll show you 8 different pairs of proposals, one after another. Each time, tell us which option you would vote for.
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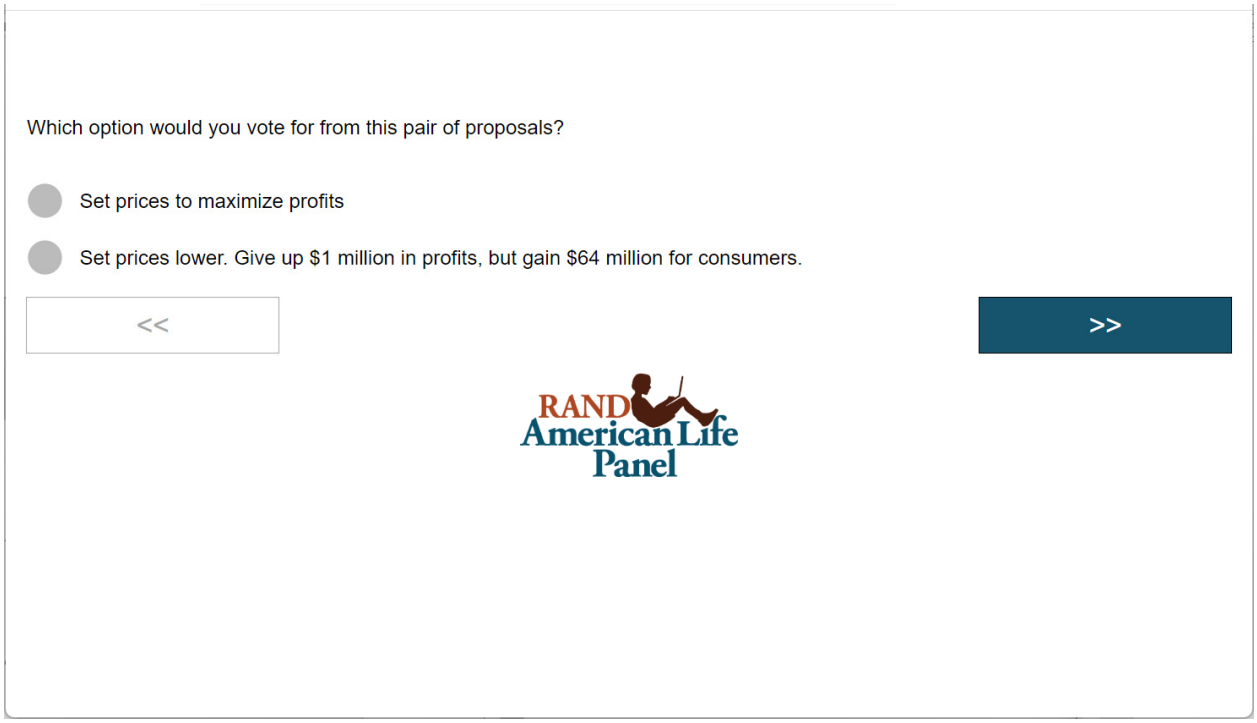
Panel


Which option would you vote for from this pair of proposals?
Set prices to maximize profits
Set prices lower. Give up $1 million in profits, but gain $64 million for consumers.
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RAND
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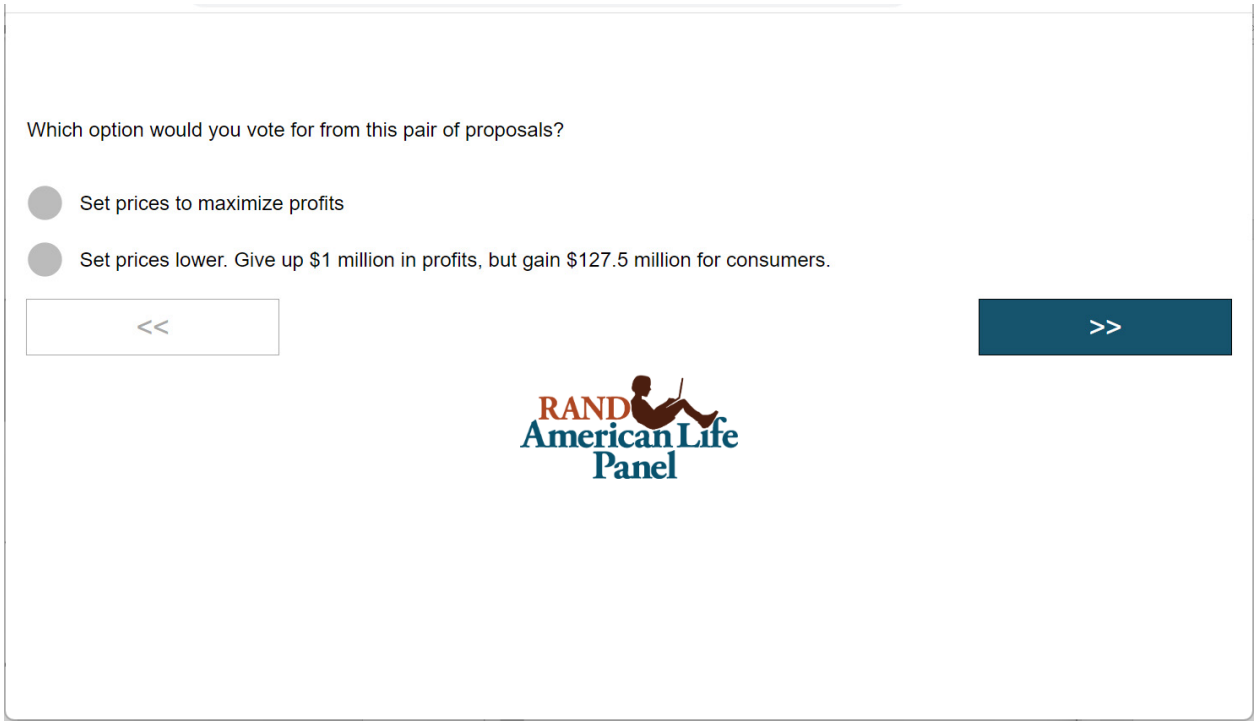
Panel


Which option would you vote for from this pair of proposals?
Set prices to maximize profits
Set prices lower. Give up $1 million in profits, but gain $127.5 million for consumers.
<<
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Now we'd like to know what you predict would win in a shareholder vote about environmental strategy if all the shareholders voted. We'll ask you about 8 different head-to-head votes.

Which of these options do you think would receive more votes from shareholders?

- Produce in a way that maximizes profits
- Produce in a way that is more environmentally friendly. Give up $1 million in profits, but gain $64 million worth of environmental benefits to individuals.

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...

Which of these options do you think would receive more votes from shareholders?

- Produce in a way that maximizes profits
- Produce in a way that is more environmentally friendly. Give up $1 million in profits, but gain $43.5 million worth of environmental benefits to individuals.

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RAND American Life Panel

Which of these options do you think would receive more votes from shareholders?

- Produce in a way that maximizes profits
- Produce in a way that is more environmentally friendly. Give up $1 million in profits, but gain $43.5 million worth of environmental benefits to individuals.

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Suppose a typical firm chose to lower prices relative to the amount that would maximize profits.

If the firm lost $1 million in profits, what is your best estimate of how much consumers would gain?

- If profits were $1 million lower, consumers would gain by $100 million or more
- If profits were $1 million lower, consumers would gain by $50 million
- If profits were $1 million lower, consumers would gain by $25 million
- If profits were $1 million lower, consumers would gain by $12 million
- If profits were $1 million lower, consumers would gain by $6 million
- If profits were $1 million lower, consumers would gain by $3 million
- If profits were $1 million lower, consumers would gain by $1 million
- If profits were $1 million lower, consumers would gain by $0.5 million or less

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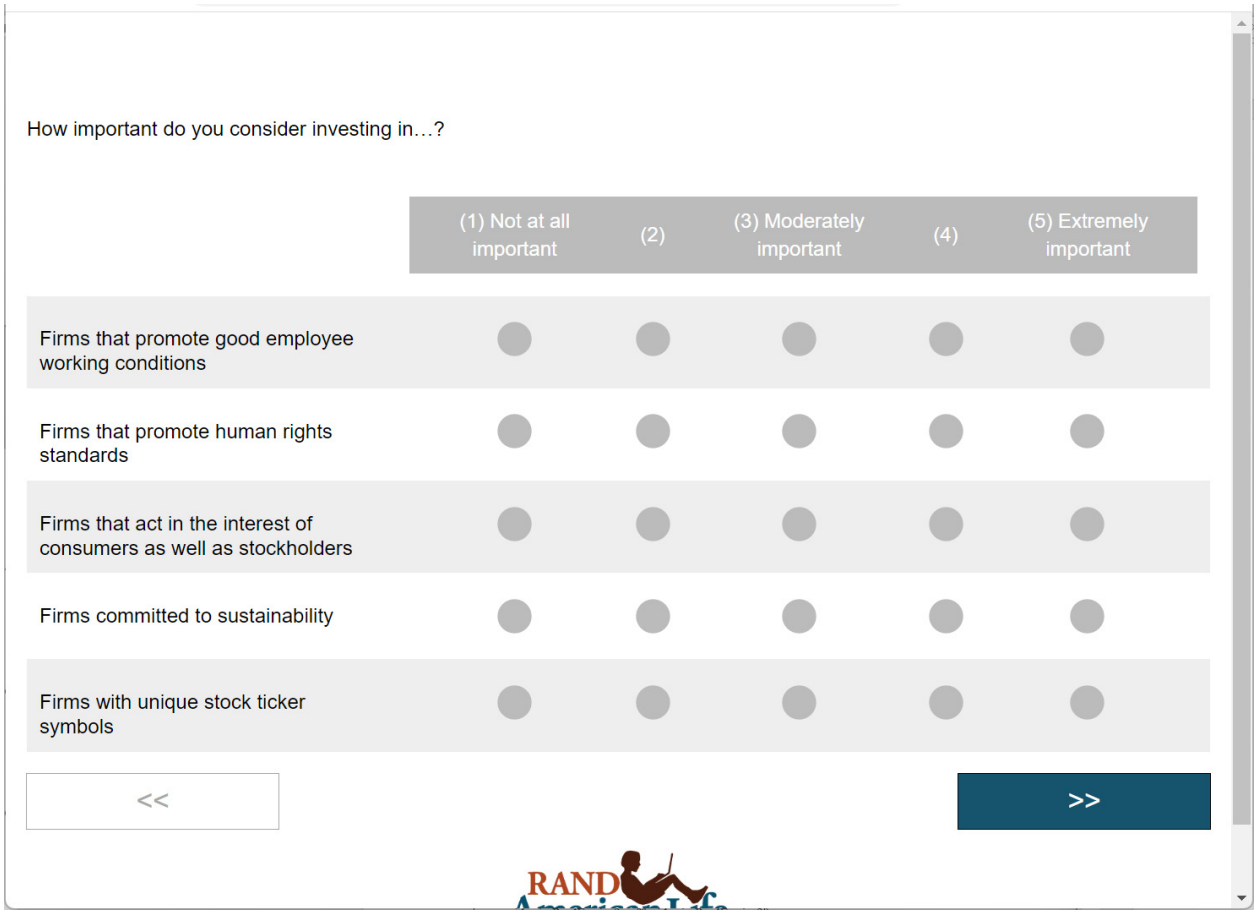
RAND American Life Panel



How important do you consider investing in…?

	(1) Not at all important	(2)	(3) Moderately important	(4)	(5) Extremely important
Firms that promote good employee working conditions	○	○	○	○	○
Firms that promote human rights standards	○	○	○	○	○
Firms that act in the interest of consumers as well as stockholders	○	○	○	○	○
Firms committed to sustainability	○	○	○	○	○
Firms with unique stock ticker symbols	○	○	○	○	○