

# Employee Ownership: A View from the Lab

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**Abstract:**

This paper examines how experimental economics might advance our understanding of employee ownership. Theorists must invoke a behavioral model to analyze how individuals might respond to a given set of firm institutions, yet our current understanding of what this behavioral model is, or should be, is in flux. Further, conventional empirical analysis often draws from data that is insufficiently disaggregated and prone to biases stemming from self-selection and unobservable heterogeneity. Experiments complement theory by aiding in the development of new behavioral foundations, and they also complement conventional empirical analysis, particularly in cases where naturally occurring data does not exist.

## Introduction

Does employee ownership foster human empowerment (e.g. Dahl, (1986)), increase employment stability (Svejnar et al., (1982)), improve worker productivity (e.g. Ben Ner and Jones (1995)), require less employee monitoring (Bowles et al, (1993)), promote innovation (Hoskisson et al. (2002)), reduce inequality (Sen (1966)), and even increase civic engagement beyond the firm (Mill, 1962)? Or, are employee owned firms prone to free-riding behavior (e.g. Alchian and Demsetz, (1972)), slow and inefficient in decision-making (Jensen and Meckling, (1979)) and wastefully thwart managerial talent (Williamson, (1980))?

Addressing these hypotheses requires insight into how people behave within employee owned firms, and also, how they behave in non-employee owned firms. If one were to analyze these questions from a purely theoretical perspective, they would be forced to invoke a belief regarding how firm members would react to the institutions and incentives within the firm. Indeed, for much of the 20<sup>th</sup> century, personnel and firm theorists took this route by invoking the specific psychology of the rational actor leading to a number of models rich in analytical rigor but poor in realism (Hart (1989)).<sup>1</sup> In recent decades, however, many economists have joined the chorus of observers that have questioned whether rational choice theory is an appropriate lens to analyze the behavioral implications of organizational characteristics in firms.

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<sup>1</sup>Hart (1989) notes “[T]heories that attempt to incorporate real world features of corporations, partnerships and the like often lack precision and rigor, and have therefore failed, by and large, to be accepted by the theoretical mainstream”

For example, the rational actor model predicts that incomplete labor contracts essentially guarantee ‘morally hazardous’ shirking from employees. Yet, despite this claim, a wealth of evidence shows that workers commonly find work intrinsically motivating (e.g. Frey (2004)), they often reciprocate above-market ‘gift-wages’ with high effort (e.g. Akerlof (1982)), and also respond to group incentives schemes when they could just as easily free ride on the efforts of others (e.g. Mellizo, (2013)). These and similar ‘non-rational’ behaviors certainly undercut the rational perspective of the firm. But we also know that in the presence of market forces, people *do* tend to act more ‘rationally’. These competing mindsets suggest that the decision about whether the rational actor model is a reasonable guide to understand the behavioral dynamics in firms cannot be made in the abstract, particularly since the firm is partly a place where individuals are prone to market forces and partly a place where they are whole personalities.

Perhaps owing in part to these concerns, research over the past 35 years on employee ownership has been more empirical (Dow, (2003)). While this literature has produced a wealth of valuable insights, *causal* evidence remains elusive. There are many reasons why this is so, ranging from issues as fundamental as not being able to observe relevant individual-level data (Alchian and Demsetz, (1972)), to insufficiently disaggregated data on product type and technology (Bonin et al (1995), to vexing self-selection and unobservable heterogeneity issues. Indeed, some scholars such as Dahl (1947) suggest that these and similar complications preclude the scientific analysis of firms. Consider the challenge: in order to identify causal effects of an organizational

construct on behavior, the scientific ideal would randomly assign workers to a number of 'twin' enterprises in all nonorganizational respects (e.g. technology, product, market conditions, etc) but that vary in just one clear identifiable organizational dimension over several trials (Bonin et al. (1993)). Clearly, the 'real-world' does not produce these data on a systematic basis, if ever.

Controlled experiments can be used to both aid theory by isolating basic behavioral characteristics of alternative analytical theories, and also empirically, particularly in scenarios where data is impossible to collect. Experiments have obvious advantages and drawbacks. In addition to being able to measure an event and its counterfactual, or having the ability to control for endogeneity biases through experimental design, the experimental economic method both mediates, and also relies on, the explicit consideration of behavioral explanations that are often outside the purview of the rational actor model (Camerer et al (2004); Gintis, (2006)). In economics, the accumulation of findings from controlled experiments has, in a relatively short time, had a profound impact on the discipline, producing new insights and theories, and nudged many economists into a space that considers (1) rationality as a contextually produced, and not exogenous, behavior (e.g. Smith (1991)), (2) the role of other-regarding preferences in economic outcomes (e.g. Fehr and Schmidt (1999)), (3) the regularity of non-rational behaviors that are robustly explained by established theories in social and cognitive psychology (e.g. Kahnemann and Tversky, (1979)) and (4) the role of cultural norms in explaining behavior (e.g. Ostrom et al.(1994))

Experimental methods can help guide policy by providing insight into how a proposed change in policy, such as firm conversion, or the removal of a gain-sharing plan, could affect behavior. By supplying information on the behavioral link between incentives, values, and choice, experiments can help us understand how specific institutions might work. Experimental control complements the contextually rich social experiments, natural events, and field data traditionally used in labor and personnel economics.

This work, however, naturally reveals the on-going challenge and tension of external validity. Indeed, a typical experiment randomly assigns subject participants that are strangers to one another to make decisions with modest financial incentives at stake for a relatively short period of time. But as Angrist and Pishke (2010) note, *any* empirical relationship is “always local, derived from a particular time, place, and research design...[and the] extrapolation of causal effects to [other] settings is always speculative.” In other words, an inference about the external validity of a piece of empirical evidence (or even a formal theoretical statement) is *analogical* in character to what might be happening in the ‘real’ circumstance (Guala, (2005)). Though most empirical researchers have presumably made peace with the epistemological belief that heterogeneity is restricted enough to infer that one understood circumstance can inform another, there is no question that analogical inferences can, and likely do, go wrong. A specific finding from an experiment that, say, confirms a theory does not mean the theory is universally true since it could very well be falsified under different set of conditions, but a strong theory should succeed under a variety of circumstances. It is

through the accumulation of evidence, and not the evidence owing to any given study (or any methodological arena), that informs the generalizability of a *theory*, as opposed to a method (e.g. Imbens (2009)).<sup>2</sup>

Further, many firms *are* complex institutions and it may be useful to start with simpler environments that incrementally unfold in complexity (Plott, (1989)). On the other hand, it is also true that some firms are, like experimental environments, small, simple, and populated by a few inexperienced workers that are strangers to each other. Simple experimental environments would actually serve as appropriate analogies for such institutions (e.g. Camerer and Weber (2007)). Given that 77% of all employer firms are comprised of 9 employees or less (60% with 4 employees or less), small groupings that are commonly used in experiments are fairly representative.<sup>3</sup>

Today many economists view the experimental method as another tool to isolate and test questions in a number of sub-disciplines as diverse as environmental and natural resource economics (e.g.; Cherry et al., 2008), to finance (e.g. Shiller, (2009)) health, (e.g. Bickel and Vuchinich, (2009), and development (e.g. Duflo, (2006)). The same is also true, though to a lesser extent, within labor and personnel economics (e.g. Falk and Fehr, (2003), Charness and Kuhn, (2011)). But as Camerer and Weber, (2007) note, the number of experiments that are specific to organizational hypotheses in firms is

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<sup>2</sup> Similar arguments made herein are also in Falk and Fehr, (2003), Charness and Kuhn, (2011), Camerer and Weber, (2007), and Bardsley et al. (2010). Gadenne (2013) is an interesting paper that provides an excellent taxonomy of the philosophy of science of the external validity problem in experimental economics. The author concludes that “[t]he criterion of external validity is superfluous and misleading. And the problems in experimental research associated with external validity can well be solved on the basis of deductivism.”

<sup>3</sup> <http://www.census.gov/econ/smallbus.html#EmpSize>

quite small. And, we add, in the specific case of employee ownership and related institutions, even smaller. That said, there are a number of experiments that, while may not be special to the economics of employee ownership, are certainly relevant and complementary to existing insights. Using recent research as illustrative examples, the remainder of the paper provides evidence from the lab that both complements and informs long-standing empirical questions germane to employee ownership. These findings, once considered, reveal that rational choice might, in some circumstances, be a poor guide for economics in general, and for understanding employee ownership in particular.

### **Should Financially Participative Firms worry about the free-rider problem?**

A number of pay systems tie worker payment or wealth to the performance of their own workplace, either at the team, establishment, or company level. Examples include profit-sharing, gain sharing, and various share ownership plans. Though one strong vein of intuition suggests that by tying workers' pay to group-level performance will lead to productivity increases, greater commitment, lower turnover and increases in information sharing, the group-incentive structure is, formally speaking, a n-person prisoner's dilemma. Because the payoff to any single individual is tied to the performance of the group as a whole, the success of group reward schemes is contingent upon the capacity to sustain high performance from all employees despite the presence of free-riding incentives that arise when private contributions are both (1) almost impossible to verify, and (2) the extra private payoff associated with the marginal



contribution of any worker is diluted by a factor of  $1/n$ . When considered through the lens of the rational actor model, the *free-rider problem* should prevent group incentive schemes from being effective, yet a wealth of observational evidence suggests that this need not necessarily be true. Indeed, group incentive schemes in firms have been shown to be, on average, *positively* associated with firm performance (e.g. Weizman and Kruse (1990); Kruse and Blasi, (1997); Kruse, (2002); Freeman and Dube, (2000)). These findings rightfully raise questions regarding if, how, and when free-riding affects groups and whether there are lessons to be learned from successful cases that can inform the development of general strategies to sustain cooperative behavior in similar social dilemmas.

The performance of group-incentives is an ideal topic to study using experiments since the critical variable that is unobservable in firms – a worker’s individual contribution – *is* observable to the experimenter. Further, the lab can, by design, evaluate the efficacy of group incentives by themselves, and also can be used to evaluate the complementary effects of institutions such as worker communication or mutual monitoring that may also influence the efficacy of group incentives.

The voluntary contribution mechanism (VCM) linear public good experimental paradigm is among the most widely used and influential paradigms in all of experimental economics.<sup>4</sup> VCMs have been used to study free-rider issues by creating an environment where the option to free-ride is very salient and incentive compatible to

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<sup>4</sup> See Ledyard, (1995) and Chaudhury (2009) for excellent reviews of a massive literature on linear VCM public goods games)

subjects.<sup>5</sup> In a one-shot VCM,  $n$  participants are given an endowment  $E$ . Each participant  $i$  can contribute  $C$  ( $0 \leq C \leq E$ ) to a public account.  $E_i - C_i$  is allocated to the subject's private account. Contributions are made by group members simultaneously and anonymously. The payoff for each participant in the group is  $E_i - C_i$  plus a fixed percentage ( $m$ ) of the total group contribution to the public account, where  $0 < m < 1 < mn$ .<sup>6</sup> After making the contribution decision and receiving the payoff from the public account, participants are then typically given information on the anonymous contributions of all group members.

In the baseline linear VCM public goods game, mean contributions hover near 50% of their endowment in the first few rounds, and steadily decline towards the Nash equilibrium of mutual defection after only a few rounds of play (Camerer, (2003)). The variance in initial contributions, however, suggests that some fraction of individuals that are willing contributors from the outset. As noted by Chaudury (2009), this variability has been attributed to a number of explanations, including kindness by some and confusion from others (Andreoni (1995)), the utility one receives from giving (Andreoni (1990)), and subject learning (e.g. Andreoni and Croson, (2008)). Irrespective of the precise reason for initial contributions from some participants it is clear that there is rich heterogeneity among players. The literature reveals that certainly some subjects identify

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<sup>5</sup> Incentive compatibility stems from the theory of revealed preferences and is at the heart of the experimental economic methodology. All choices taken by subjects carry a private cost that determine actual take-home payment. This is done to mitigate potential for hypothetical responses.

<sup>6</sup>  $m$  is referred to as the marginal per capita return (MPCR). The MPCR must be less than 1 to make defection a dominant strategy.  $mn > 1$  makes contributions to the public account Pareto improving.

the incentive to free-ride and jump at the opportunity to do so, but as illustrated below, many do not. Though this is an obvious point, agent heterogeneity has not yet been commonly considered in the unfolding of many personnel economic models.<sup>7</sup> As Chaudury (2009) notes, “social preferences and/or their beliefs about their peers... may be sufficient to generate behavior not commensurate with the simple game theoretic prediction of free riding in such situations” (Chaudury (2009)). Below we briefly comment on some paradigmatic experimental studies that ‘cleanly’ reveal agent heterogeneity, and also how simple institutions can be used to exploit this heterogeneity to mitigate and/or eliminate free-riding.

#### *Conditional Cooperators*

One of the biggest insights from the experimental literature is that many participants can be categorized as *conditional cooperators*, or subjects that are willing to contribute only if they believe others will also contribute to the collective project (Chauduri, (2009)). Scores of experiments have been used to study conditional cooperation. A widely cited and replicated experiment from Fischbacher et al. (2001), find that roughly 50% of participants in their displayed a willingness to match the expected average contribution of fellow group members. The authors suggest that player heterogeneity explains decreasing contributions in a multi-period, repeated VCM. Conditional cooperators will contribute as long as they believe their group

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<sup>7</sup> There are some examples where heterogeneity is explicitly considered including Lazear (2000) where he models a situation whereby heterogeneous workers should be paid a piece-rate when possible.

members will contribute to the public account, but if there are free-riders in the group this will eventually be learned and will lead to decaying pattern in contributions. A natural question is whether groups ordered by 'types' can sustain cooperation.

### *Exogenous Sorting*

They study from Kurzban and Houser (2005) is one example of a series of multi-stage experiment that first classifies subject participants by general 'type' by observing behavior in a series of different games, and then examines the extent that this classification predicts behavior in a subsequent game. After first classifying subjects as free-riders, conditional cooperators, and unconditional cooperators, they then regroup subjects into groups. Consistent with intuition, they find that groups with a greater fraction of pre-classified cooperators made higher contributions than groups with fewer classified cooperators. The profound feature of their study is the stability of subject behavior under anonymous and random regroupings. Chaudhuri and Paichayontvijit (2006) follow an analogous experimental procedure that first classifies subjects, but they additionally provide subjects information regarding the presence of conditional cooperators when in the groups. They find, consistent with intuition, that once subjects know their group composition, contributions increase. Importantly, they find that this increase in contributions comes from conditional cooperators themselves.

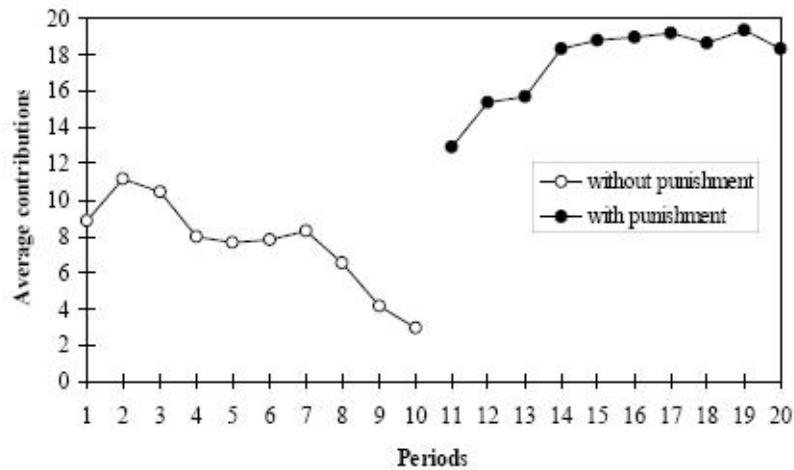
### *Mutual Monitoring*

The notion that workers will mutually-monitor one another when their payment depends on group performance to reduce free-riding has historically been a part of the discussion on group-incentive payment schemes. Indeed survey results in (Freeman et al, (2010) show that workers both had an idea of how much effort their co-workers were providing, and also that roughly a third of these workers would be willing to speak with a shirking worker directly or report the behavior to a monitor.

These findings from contextually rich survey data map well to a number of experiments that show many subjects have a preference for the group's success and are willing to punish free-riders at a personal cost. Fehr and Gächter (2000) is a widely cited and replicated paradigmatic study that demonstrates the efficacy of costly punishment in the lab. In 'punishment' treatments, subjects can purchase 'punishment points' that reduce payoff of a fellow group member after contributions are initially made. Figure 1 below shows the dramatic increase in average contributions in punishment versus no-punishment, partner conditions.

**Figure 1: Mean Contributions With and Without Punishment**

Source: Fehr and Gächter (2000).



These first-order results hold in a wide variety of protocols. Some variations that may be of interest include the study from Anderson and Stafford (2003) that finds that the punishment should have some teeth, with increased probability of receiving a punishment having a smaller effect in inducing high contributions than does the severity of a punishment. External validity is enhanced in both Masclet et al. (2003) and Carpenter and Seki (2005) that both illustrate that effective punishment does not need to have a monetary component attached to it at all. They both find that the expressed disapproval from peers was enough to induce high contributions in a VCM.

### *Endogenous Sorting*

It makes sense that conditional cooperators would like to avoid free-riders *a priori* if possible, but an especially hawkish and dedicated free-rider may also like to seek out unconditional and conditional cooperators. In one of the first endogenous sorting VCMs

Ehrhart and Keser (1999) find this pattern in an experiment with endogenous regrouping concluding that the mere possibility of regrouping by itself does not lead to efficiency gains. Ahn et al (2008) evaluate a scenario where subjects can enter or exit groups at a cost and find that this additional friction has a significant positive on both individual behavior and group-level outcomes.

Going one step further into investigating the type of group that one would like select into, Gürer et al. (2006) allow subjects to either enter a VCM that allows group members the possibility to reward or punish fellow group members at a private cost, or to simply enter a standard VCM without these mechanisms. As one might expect the subjects that selected into the VCM with rewards and punishment produce high levels of cooperation. A study from Sutter et al. (2010) similarly shows the unanimous implementation of a VCM with possibilities of punishment is extremely successful in eliciting high contributions. And the findings from Kosfeld et al. (2009) suggest that, over time, groups will likely, on their own want to implement some type of punishment system to guard against free-riding whether it is happening or not. Their design allow groups to decide if they want to implement a punishment mechanism finding that a large majority of groups do indeed choose to implement the punishment mechanism by the final periods, despite its non-trivial cost. Groups that adopted the punishment institution also demonstrate higher and stabilized contributions than groups that did not implement a punishment mechanism.

Finally, Cinyabuguma et al. (2005) is a study that demonstrates that groups, once working, naturally want to keep it that way, and are willing to expel members that

are not interested in group outcomes. In their study they allow subjects the opportunity to expel members of a group, finding that contributions rose to nearly 100% of endowments under the threat of expulsion.

### *Communication*

Even when punishment is not allowed, simple forms of communication can mitigate free-riding. In his widely cited 1995 literature review on public goods games, Ledyard singled out communication the most important variable in obtaining and maintaining cooperative solutions. Similarly, Sally's 1995 meta-analysis of social dilemma games finds that when communication increases cooperation nearly 40% over the baseline environments. Ostrom et al (1994) find that face-to-face communication more than tripled cooperation rates in a repeated Common Pool Resource games while Frohlich and Oppenheimer (1998) find that face-to-face communication cooperation tripled in VCM public goods games.

### *Forcing Contracts*

The forcing contract solution to the free-rider problem proposed by Holmstrom (1982), simply establishes an output target that, once reached, distributes shares to group members akin to some gainsharing or profit sharing plans. Theoretically, forcing contract VCM games have some unique interesting qualities, with multiple equilibria similar to an assurance game (if contributions are not returned), including some equilibria where rational players provide positive contributions. In the lab, Spraggon



(2002) identifies two forcing contract instruments that either tax (punish) or subsidize (reward) subjects depending upon the relative distance of the group total to the optimal level of contributions. The provocative result is that both instruments result in socially optimal contributions.

### *Group Identity*

Akerlof and Kranton (2005) define *identity* as a person's self image — both as an individual and as part of a group. When testing the claim that group identification can suppress self-interest in favor of collective interest, the experiments conducted by Eckel and Grossman (2005) find that in a repeated VCM overt means of identification of a team do not generate greater cooperation than with random, anonymous team assignments. However, when subjects were asked to work together on an unrelated and unpaid project before playing a repeated VCM, cooperative behavior was much higher than the baseline. These findings are consistent with in Cox et al. (1991) where greater cooperative play has been observed in homogeneous groups, and Charness and Jackson (2007) also find that salient group membership affects behavior in a strategic environment.

When one's group identity is threatened economically by an out-group, McLeish and Oxoby (2007) find that in-group individuals cooperate more with fellow in-group members. Furthermore, the authors observe greater negative reciprocity among in-group individuals when the in-group's norm of behavior are violated. Similarly, Nalbantian and Schotter (1997), Erev et al. (1993), and Gunnthorsdottir and Rapoport

(2006) that show that intergroup competition markedly reduces free-riding within groups.

### *Summary*

To the extent that the wealth of findings from the lab generalize into firms operating under group incentives under financial participation, the evidence suggests that free-rider concerns in firms are likely exceptional, rather than common problems. Results from experiments show that many individuals, irrespective of the reason, act 'as if' they want the group to succeed. Further, any number of simple mechanisms present that allow these individuals the possibility to act on their preference such as seeking out like-minded individuals, communicating with other group members, or punishing free-riders sufficiently mitigating free-riding in experiments where the free-riding incentive is very salient. In many firm circumstances, the free-rider incentive is likely far less salient to workers because of both the cultural expectation that people are 'supposed' to work, and also the fact that work is also a source of satisfaction. Indeed, Mellizo (2013) used a simple VCM design where contributions to group account were made with a real-effort task (solving simple addition problems). The design was completely void of known rules, norms, and institutions known to mitigate free-riding behavior. The experiment randomly assigned subjects to one of three compensation contracts used to incentivize an onerous effort task. Two of the compensation contracts were reliant on group-incentive schemes where subjects have an incentive to free-ride on the efforts of their coworkers, and the third (control) was a flat-wage contract. Notice that in all three

conditions, subjects had no “rational” incentive to provide effort, yet subjects reported ‘worked’ quite intensely throughout the study. Moreover, in the experiment, both group-incentive schemes resulted in significantly higher performance relative to the flat-wage compensation contract and there was not any evidence of free-riding behavior under the two group-incentive schemes.

### **How does employee participation in decision-making affect behavior?**

Much of the econometric literature on financial participation shows that firms that provide group financial incentives also tend to employ management practices that encourage workers to become more involved in both firm-level and shopfloor decision-making and planning (e.g. Freeman and Dube, (2000); Conyon and Freeman (2002)).

The experimental method is well-suited to evaluate the impact of having decision-control rights on a number of dimensions though many topics are thus far unexplored. One would expect, however, that the precise location and composition of firm members with decision-control rights can be extremely important since different actors have both a different economic stake and/or affective attachment to the firm, and this in turn can influence the normative goals pursued by the firm.

#### *Participation and Compliance*

A small number of experimental studies have found evidence for a “democracy participation rights premium,” as it relates to increased cooperation in simple public good environments. Dal Bo et al. (2007) find that when subjects can vote on either

playing a Prisoner's Dilemma or a Coordination Game, higher cooperative behavior is elicited regardless of the outcome. They attribute at least some of this behavioral tendency to the intrinsic motivation of having been part of a democratic process (controlling for selection effects). Similarly, Sutter et al. (2006) show that in groups allowed to elect rules of enforcement for a PG game (punishment or reward), contributions exceed those of groups governed by the same (non-elected) rules. Frohlich and Oppenheimer (1990) show how direct participation in choosing a principle of distributive justice and a tax system interacts with subject attitudes. In contrast to these studies, however, Kroll et al. (2007), find that introducing a voting mechanism has only an impact on contributions to a public good game when a costly punishment mechanism is added.

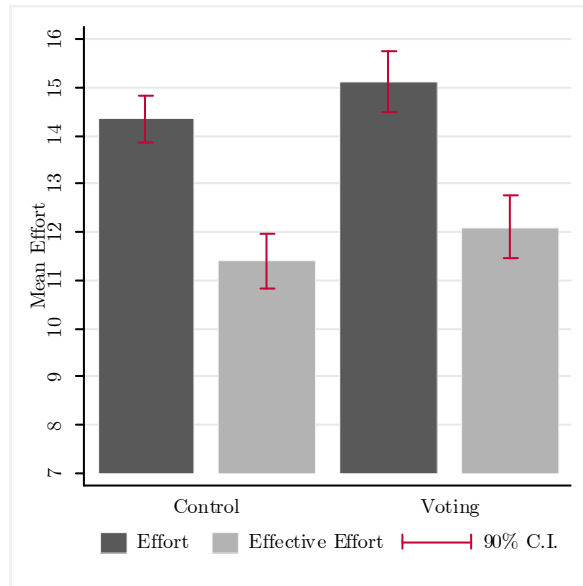
### *Participation and Effort*

Ryan & Deci (2000), posits the existence of three basic psychological needs – competence, autonomy and relatedness – and theorizes that “effective functioning” in various domains requires fulfillment of these needs. Within this framework, it seems reasonable to hypothesize that employee ownership and participatory decision-making would qualify as “autonomy-supportive social environment.” If so, participatory workers should be self-motivated, exhibit greater well-being and, other things being equal, be more productive.

Mellizo et al (2013) design an experiment to test this basic hypothesis. Specifically, all subjects in each experimental session participated in three periods. In

the first, practice period, participants were paid a fixed sum to spend 5 minutes familiarizing themselves with an effort task – solving simple addition problems. In period two, participants were randomly and anonymously assigned to groups of three, and told that they would again solve problems for 5 minutes, but that the method by which they would be compensated for their performance was contingent upon the implementation of one of two possible incentive contracts—either a rank-order tournament or a group revenue-sharing contract. Depending on the randomly assigned treatment, the decision over which compensation scheme would be implemented was made either endogenously by vote or exogenously by the computer (the Control treatment). The third period was identical to the first in that participants were again worked for a fixed sum to solve addition problems for another 5 minutes to measure their ability. Evidence from the experiment shows that effort was indeed sensitive to the decision-control rights arrangement used to select the compensation contract. Consistent with intuition, allowing groups of workers to participate in determining the compensation scheme for their group increases effort significantly. Further, these effects persist even after controlling for gender, compensation scheme, and ability, and selection effects.

**Figure 2:** Mean Effort and Effective Effort Levels in Exogenous vs Group Choice  
Source: Mellizo, Carpenter, and Matthews (2013)



Similar findings have been reported in the Charness et al (2012) that show that the delegation of choice over wages to individual workers significantly increases effort levels, and Mellizo et al (2014) report a similar effect for groups.

### *Summary*

It has been argued that the combination of group incentives along with participatory management policies may help create a “cooperative culture” that supports mutual monitoring, information sharing, and commitment that all offset free-riding behavior (e.g. Kruse et al (2004)). It certainly seems that the limited experimental evidence does not call this claim into question, though many questions and hypotheses remain to be investigated. For example, what is the domain of decisions that workers want to be involved in (compensation determination, layoffs, hiring, expansion, etc), and do these

different types of decisions affect the power of participation? At what point do the transaction costs (emotional or otherwise) of decision-making outweigh the benefits for workers? Do different systems of participation (e.g. consultative, direct, participatory) have different effects on workers?

### **Gift-Exchange**

Blasi et al. (2010) note, that “shared capitalism pay and wealth appears to generally come on top of standard pay and benefits...[suggesting that] firm must be getting productivity increases, because there is no other way for a competitive firm to pay for the ‘gravy’ aspects of the compensation package...firms can provide a “gift” of high compensation that raises worker morale, and workers reciprocate with a “gift” of greater productivity.”

Though this precise logic has not yet been evaluated experimentally (i.e. offering workers a claim on residual profit in addition to their base salary) there is a rich tradition of gift-exchange experimental literature. There are two related interpretations of gift-exchange behavior. The first is the concept of *reciprocity* or the notion that people want to reward kind actions and punish unkind ones. Though this behavioral concept has been central to anthropology, sociology, and psychology, it went overlooked until the early 1980s in economics (Gintis, (2005)). Drawing on insights from Festinger (1957), Akerlof (1982) described a scenario whereby rent-wages might elicit high effort either because a worker wants to reciprocate the kind action of her or his employer. Alternatively, the action of receiving a ‘gift’ wage creates *cognitive dissonance* whereby

the worker feels she is getting paid 'too much' and thus attempts to resolve this dissonance by increasing effort. Conversely, a low-wage works in the opposite direction.

In the lab, the gift-exchange game is usually set up so that the principal makes the initial wage offer to a worker and workers have the opportunity of accepting them (usually without the opportunity of making counter-offers) followed by the choice of workers of a privately costly effort level. The payoff framework for a gift-exchange game is therefore similar in many respects to a sequential prisoner's dilemma since the payoffs are structured so that higher wages yield lower monetary payoffs for firms and higher ones for workers (holding effort constant) and higher effort levels have the reverse effect on respective payoffs for firms and workers (holding wages constant), but the combination of high effort and high wages is the Pareto optimal outcome. Rational choice theory predicts that workers would follow their material self-interest, and subsequently choose the lowest possible effort level, irrespective of the wage offer. In anticipation of this, fully rational firms will only make the lowest possible wage offer.

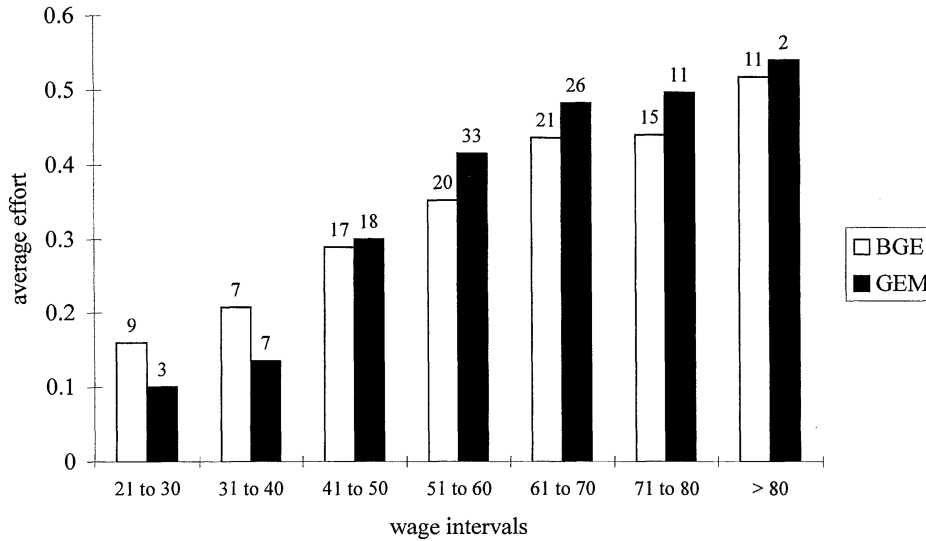
Fehr et al (1998) has become the standard gift-exchange experimental paradigm (Camerer and Weber (2007)). In the experiment, firms offer a wage  $w$ , and workers that accept the wage choose an effort level  $e \in [0,1]$ . Firms earn  $(v-w)e$  and workers earn  $w - g - c(e)$  where  $c(e)$  is a convex cost of effort function and  $v$  and  $g$  are exogenously given. Using backward induction, rational and self-interested firms, 'knowing' that the best response of similarly rational workers would be to supply low effort, would in therefore offer low wages. Yet as Fehr et al (1998) show, both wages offered by firms and efforts



from workers persist above competitive equilibrium in two treatments that allow gift-exchange. In their study they also find that neither gift wages nor efforts decline over time.

**Figure 3: Average Effort Responses for Wages Ranging between 0 and 100.**

Source: Fehr et al. (1998)



The basic finding reported in Fehr et al (1998) has been shown to be robust to a variety of subject pools (e.g. Hannan et al (2002), robust to both small and large stakes (Fehr and Tougareva (1995), much stronger in repeated interactions (Brandts and Charness (2003), and weaker when the exchange is double-blind and anonymous (Rigdon (2002)) and also weak when there is incomplete information (Sadreih et al. (2003)).

An important insight gathered from the experiment in Charness (2004) underscores the importance that workers understand that firms are intentionally making an effort to provide a gift to workers. In their unique field-experiment, Gneezy and List (2006) similarly note that the process of implementation of the gift wage is a large factor

in the levels of reciprocation. Specifically, they find that when subjects are surprised with a higher wage than they expected, they work harder than workers earning the same wage without being surprised.

## **Ownership**

Researchers in organizational and industrial psychology, social psychology, organizational behavior, and management have long postulated over how different aspects of ‘ownership’ interact with the psychology of workers (e.g. Rosen, et al., (1986); Klein, (1987); Pierce et al., (1991)). But ownership—or the feeling that something is mine—remains a topic that has not been evaluated experimentally. There are two tangentially related areas of research that we comment briefly on below.

### *Behavioral Property Rights*

The Dictator Game is a simple experimental paradigm that has been used to evaluate determinants of fairness and deservingness. The baseline game endows one player with  $x$  (i.e. the dictator). This player can then, at her own discretion keep all of the endowment for herself or give some or all of it to a second player. The rational actor model predicts that all players that receive the endowment of  $x$  would not share any of it with anyone else. The modal offer, however, typically hovers near 20% of the endowment (Camerer, (2003)). Recent research, however, shows that dictator offers vary with the sense of *deservingness* that can be widely affected by introducing simple antecedents to the decision environment. For example, when the origin of the

endowment to be used in the DG bargain is not simply given to her by the experimenter, but instead arises from pre-play labor of the participants, sharing drops to near-zero offers when the proposer's effort created the endowment (Cherry et al (2002)) and strikingly *increases* when the responder's effort created the endowment (Oxoby and Spraggon (2008)). The authors attribute dramatic shifts in giving behavior as attempts to by subjects to "legitimize" implicit property rights over the endowment by allows individuals to keep the fruits of their own labor. Employee ownership or similar institutions that tie payment to performance support this basic intuition.

### *The Endowment Effect*

An endowment effect occurs when people value a good that they own more highly than the same good when they do not own it. Scores of experimental studies have shown that subjects exhibit a systematic endowment effect. Perhaps the most famous demonstration results from Kahneman et al (1990) where participants were given a mug and then offered the chance to sell it or trade it for an equally priced alternative good (pens). The authors found that participants required nearly twice as much compensation for the mug once their ownership of the mug had been established than they would be willing to pay to acquire the mug.

One recent experiment from Morewedge, et al (2009) attempts to separate explanations for the endowment effect that owe to loss aversion—the psychological pain of losing something, from ownership—or the feeling that the good is a part of oneself. In many endowment effect experiments, one group of subjects are given a good and sell

this good to a buyer. Because sellers are usually owners, loss aversion and ownership have been confounded in previous studies of the endowment effect.

In the two experiments from Morewedge, et al (2009) that aim to deconfound ownership from loss aversion, the authors find that ownership was responsible for the endowment effect, but loss aversion was not. Specifically, in Experiment 1, buyers were willing to pay just as much for a coffee mug as sellers demanded if the buyers already happened to own an identical mug, and in Experiment 2, buyers' brokers and sellers' brokers agreed on the price of a mug, but both brokers traded at higher prices when they happened to own mugs that were identical to the ones they were trading.

## **Conclusion**

This paper examines how experimental economics might advance our understanding of employee ownership. Naturally, a better understanding of employee ownership will require the continued development of better theory and the accumulation of empirical results. But there are significant challenges for advancing both theory and empirical analyses. Theorists must invoke a behavioral model to analyze how individuals might respond to a given set of firm institutions, yet our current understanding of what this behavioral model is, or should be, is in flux. Further, conventional empirical analysis often draws from data that is insufficiently disaggregated or prone to bias owing to the inability to control for self-selection or unobservable heterogeneity. Experimental results can be used to complement theory by developing foundations for new theories on choice and motivation under conflicting

institutional frames, and they can also be used to complement conventional empirical analysis particularly in cases where naturally occurring data required to inform specific questions does not exist.

Though there are a number of potential linkages from the existing experimental literature to questions germane to employee ownership, it should be clear that there is an immense amount of work required before a reliable knowledge base for predicting how specific corporations or workers respond to the introduction employee ownership or related institutions. There remains a massive gap between the work done in industrial psychology and the work in economics investigating the motivational effects of different workplace governance practices and asset ownership distributions. Though most of the research has been conducted in the friendly confines of the laboratory, these insights will need to also be evaluated in field settings. Overall, we echo the optimism from Pencavel (2012) who notes that the experimental method offers “a propitious direction” of research on employee ownership that complements other forms of empirical work.

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