

The behaviour of corporate actors: How much can we learn from the experimental literature?

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Abstract: Much of socially relevant behaviour does not originate in isolated individuals. It is embedded in institutional arrangements. Embeddedness can be so pronounced that outsiders no longer focus on judgement and decision making of individuals contributing to the course of action. Instead they ascribe the behaviour to the institution, to which they refer as a corporate actor. This social practice makes it meaningful to compare isolated individuals and corporate actors on the same tasks. This paper surveys the empirical literature on the question from experimental economics, social psychology, and organisation science.

1. Research Question

Industrialised societies are populated by organisations: firms and associations, universities and churches, municipalities and states, non-governmental organisations and international organisations. Colloquially, it is commonplace to speak of organisations' "actions". They are treated as actors, much the same way as individuals. Of course, the corporate will is generated in ways radically different from the generation of the individual will. Yet both from the outside and from within, they are perceived in a way that makes the analogy to the individual meaningful. In first approximation, individual and corporate actors differ in the way how they take decisions, but they do not differ in their being actors.

Of course, not everybody is happy with this approach. In particular, economists in the "corporate governance" tradition tend to be critical (for a survey see Becht *et al.*, 2007). Their research program is analysing individual, utility maximising behaviour at the interior of organizations. Quite a bit of this literature is empirical. One of the ways of measuring the effect of changes in corporate governance is testing their effect on corporate performance (Becht *et al.*, 2007:section 7 provides an overview). This work is an interesting complement to the studies presented here, in that it helps better understand one of the causes of corporate behaviour. But, as the evidence summarized here will make patent, it makes sense to change the level of observation, and to ask for the behaviour of the aggregate, rather than (exclusively) the behaviour of those interacting at its interior.

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While hardnosed individualists dislike the approach because it is too collectivist, hardnosed organization scientists dislike it because it is too individualistic. The papers reported here go one step beyond the individual in that they consider the behaviour of corporations, and of organizations more generally. But they treat them as actors, understood as higher level individuals. Sociological neoinstitutionalism would not subscribe to this (DiMaggio and Powell, 1983; Walgenbach and Meyer, 2008). This research tradition claims that actors should not be conceived of as isolates, but as beings that constitute themselves in interaction with their environment. Again this perspective is a helpful complement to the one adopted here. But the social perspective does not make it meaningless to ask for regularities in the way how corporate actors deal with their environment, and to interpret these regularities as expressions of what the actors want to achieve.

Actually, there is even a more direct way to relate the evidence summarized in this article to the sociological perspective on organisations. One may consider the firm itself as an institutional arrangement. Many have pointed to the crucial role corporate culture plays in moulding the behaviour of those inside the corporation (Deal and Kennedy, 1982; Kotter and Heskett, 1992; Cr mer, 1993; Hodgson, 1996; Hermalin, 2001; Langevoort, 2006; Cordes *et al.*, 2008). "A primary feature of the firm is its capacity to mould the individual perceptions, preferences, abilities, and actions of its personnel" (Hodgson, 1996:254). Systematic differences between individual and corporate behaviour provide evidence for the fact that and how corporate culture moulds behaviour. It allows us to measure the effect of a complex institutional arrangement that would be hard to test directly.

In yet another way the approach of this paper is limited. It adopts a static perspective. It takes corporate actors as a given. It would, of course, be interesting to complement this by a dynamic perspective. There are several candidates for this. There is evolutionary theory of organizations (Nicholson and White, 2006), exploring both genetic transmission, e.g. to explain work attitudes and leadership (Ilies *et al.*, 2006), and cultural transmission (Richerson and Boyd, 2005; McElreath and Henrich, 2007) and conformist learning in particular (Kameda and Diasuke, 2002; Aronson *et al.*, 2007), e.g. to explain the stability of corporate cultures (Henrich and Boyd, 1998). Organizational ecology points to the fact that an organization's perceived audience at the moment when it is founded is crucial for how its founders shape its identity, and that identity is unlikely to change profoundly in the future (Hannan and Freeman, 1989; Carroll and Hannan, 2000; Hannan, 2005). Developmental theory stresses that organizational behaviour rests on cognitive frames, and that these frames change over time in predictable ways (Witt, 2000; Witt, 2007). In light of this literature, this paper can be seen as a first step. It aims at

establishing systematic differences, or their absence, between individual and corporate actors, irrespective of the organization's age and time of foundation. It cannot aim at doing better in that most of the empirical literature reported below creates organizations ad hoc, of course in the interest of establishing full control over the explanatory variable. Later work might want to add dynamic factors as qualifications.

This paper borrows terminology from (Coleman, 1990:chapters 13 - 19). At the most basic level, he distinguishes natural persons and higher-level actors. A natural person combines object self and acting self in one physical corpus. In higher-level actors, these two selves are separated. There are one or more principals. They own the actor and therefore have the right to give it direction. By contrast, it is through one or more agents that the principal's will translates into action. The quintessential higher-level actor is a corporation. Object self are the shareholders. Acting self are the corporation's employees, from the chief executive officer down to the last workman (Coleman, 1990:421). Scharpf has added the distinction between full-fledged corporate and mere collective actors. He defines corporate actors as organizations endowed with substantial autonomy from the ultimate beneficiaries of their actions, whereas collective actors generate behaviour by a mechanism that directly aggregates the will of these beneficiaries (Scharpf, 1997:54-58). Consequently, collective actors are a sub-category of corporate actors broadly speaking, and they differ from full-fledged corporate actors by the fact that, in Coleman's language, there is at least a partial overlap between those individuals enacting object self, and those enacting acting self.

For the sake of definitional clarity, it may be helpful to use legal distinctions originating in Roman law. The law acknowledges legal entities above the individual. For the entity to come into being, the conditions laid down in the respective statute must be met. The quintessential case again is the corporation, which legally speaking only exists once it has been properly incorporated. In most legal orders, the corporation need not have employees. The owner may also be the manager and the only employee. Hence, in Coleman's terminology, physically the object self and the acting self can be identical. Yet they are distinct by legal construction. The distinction matters, for instance for liability. If it has been made clear that the corporation has become active, its owner may not be held liable personally.

Actually, in most legal orders, incorporation is not mandatory. Even if there is only one legal entity, namely the owner in person, the law still makes a distinction between his acting in private and his acting as the owner of a commercial enterprise. Since there is no separate legal entity, if the commercial enterprise fails, creditors may ultimately issue an execution against the owner's personal property. Yet as long as the commercial enterprise is viable, the owner's personal property remains protected. These legal distinctions reflect social perception. Even if there

is no full-fledged, multi-person corporate actor, both those acting for and within the higher-level actor, and those outsiders dealing with them, see them as different from the ordinary natural person.

When presenting the empirical evidence, this paper will start with full-fledged corporate actors, but will also touch upon all the just mentioned lesser degrees of corporatisation. The broad scope of the survey is due to the fact that direct evidence on the behaviour of full-fledged corporate actors is very limited. Moreover, as will become clear when presenting the material, lesser degrees of corporatisation may already impact on behavioural dispositions. Full-fledged corporate actors differ from individuals deciding on their behaviour in a setting with no corporate implications by the same features as do actors exhibiting a lesser degree of corporatisation; in full-fledged corporate actors only further differences add. If there is no risk of misunderstanding, the remainder of the paper uses the term corporate actor generically.

The topic of this paper is highly relevant for those founding corporate actors (in the broad sense just defined), joining them, acting at their interior, interacting with them, or regulating them. Does the difference in machinery imply that the behaviour of corporate actors systematically differs from the behaviour of individuals? Specifically, do the many deviations from the assumptions of rational choice models that have been uncovered in individuals (for surveys see Conlisk, 1996; Kahneman and Tversky, 2000) carry over to corporate action? Do corporate actors exhibit other deviations from these assumptions, not characteristic for the behaviour of individuals? To the extent that one observes differences, how can they be explained?

This paper surveys the existing empirical literature on the behaviour of corporate actors, with a focus on studies that compare individuals with higher aggregate actors. Full-fledged corporate actors are hard to study empirically. They are almost impossible to study in the lab. Case studies and field experiments are of course possible, but cannot establish full control. This explains that the direct evidence on the behaviour of corporate actors is at best scattered (2). Therefore, the paper unpacks the concept and also reports the evidence on how acting on behalf of a corporate actor changes the behaviour of individuals (3). If this individual is an employee, for instance a hired manager, in Coleman's terminology we learn something about how adding an independent acting self changes behaviour. If this individual is the owner, we learn something about the behavioural effects of running a commercial enterprise, to be kept separate from personal property. The subtopic that is best understood is the behaviour of small groups, or collective actors (4). There is also some data on the psychological effects of corporate structure (5).

There is too much evidence to give a detailed report of each and every study. Presenting the most representative studies only would leave the

reader without access to a rich literature that is not easy to trace. Therefore, in each section (at least) one characteristic study is reported in greater detail, while the remaining evidence is presented more succinctly.

2. Direct Evidence on the Behaviour of Corporate Actors

Economics

Depending on how one defines the question, there is a universe of empirical findings on the behaviour of corporate actors in economics. In a way, much of econometrics is concerned with corporate actors in that it looks at firms. In most industries, firms are not manager-owned. However, this work is not behavioural in the sense of this paper. It is interested in establishing how firms react to changes in restrictions, not to find systematic deviations from the predictions of the rational choice model.

But there are exceptions. Most pertinent are the scattered experiments that have created "firms" in the lab. In the first such experiment, groups of three students were given the task to be firms in an oligopolistic market with a homogeneous good. Subjects were not allowed to talk across firm boundaries. There was little tacit collusion. Over time, results came closer to the Nash equilibrium. Initially, "firms" were mainly following routines. Although the setting was relatively simple, it took considerable time until firms figured out that they could calculate best responses. Once they had found this technology, firms tended to stick to it. There were, however, motives beyond profit maximisation. For instance, rivalistic action played a role, as did attempts at testing the grounds, or at minimising average cost (Selten and Saueremann, 1959).

A later experiment had a similar setting, but allowed for process innovation. Again collusion played no role. A single "firm" made such a move. But the other firms did not trust its cooperative intentions. Outcomes progressively converged to the Nash equilibrium. But the underlying process was not an attempt at calculating the equilibrium. Rather firms extrapolated the trend, and they assumed that their competitors would behave in pretty much the same way as they themselves (Selten, 1967b).

In a third experiment, firms were again composed of three students. The product was homogeneous. Firms could change prices and invest in capacity. Information about the behaviour of competitors was costly. Again there was very little collusion. However, results deviated from the Nash equilibrium, somewhat to the advantage of firms. The dominant motive was not maximising profit; this motive only accounted for about 10 per cent of the decisions. It was by far dominated by the intention to sell

more, and to stabilise market shares. This motive accounted for more than two thirds of the decisions (Selten, 1967a).

These experiments establish cognitive and motivational deviations from the standard economic model. It took time before firms found profit maximising strategies. They relied on routines and were content with extrapolating trends. The intention to maximise sales, and rivalistic behaviour, deviated from the motive of profit maximisation. All of this has also been reported for individuals.

Psychology

Psychology defines itself as the science of individual behaviour. This explains why there is at best some work related to psychology on the behaviour of corporate actors. Closest are attempts at finding the cause for Bowman's paradox: in most industries, returns are *lower*, the higher the exposure of a firm to risk (Bowman, 1980). Using the industry's median return on equity as the reference point, an econometric study shows that the correlation between the exposure to risk and returns is negative only if the firm is below the reference point for the industry. The paper interprets this as evidence for loss aversion in corporate actors (Fiegenbaum and Thomas, 1988). A later econometric study adds two more factors to the picture: firms do also take higher risks if their industry performs poorly, compared to other industries. And firms become more risk prone if there is little room for slack (Bromiley, 1991). This psychological research thus shows that a bias known from individuals is also present in firms.

Organisation Science

The rich literature on the behaviour of organisations in organisation science, and in management science, on which this survey can only touch (Cyert and March, 1992; Scott, 2003; Berger and Bernhard-Mehlich, 2006) provides additional support. Organisations are likely to focus on what has worked in the past ("exploitation"), and to neglect the need to prepare for the future ("exploration") (March, 1991). For instance, data from railroad accidents shows that railroad companies basically only learn from their own experience as long as their performance is close to aspiration levels. They become sensitive to others' experiences only if they are far enough away from the aspiration level (Baum and Dahlin, 2007).

Organisations also exhibit a functional equivalent to loss aversion (Kahneman and Tversky, 1979). This could be shown with data from the US radio broadcasting industry. Firms regularly receive data on their audience, in a format that facilitates comparisons over time, and comparisons with competitors. If one uses this data to construct an

aspiration level, firms are much more likely to engage in risky change if they are at or below the aspiration level (Greve, 1998). These studies too show that corporate actors are liable to the same biases as are individuals.

Law

The empirical law movement is still nascent. Potentially, legal scholars might, however, be in a good position to generate empirical knowledge on the behaviour of corporate actors. Not only is corporate law a rich field. More importantly even, regulation frequently targets firms. Since it is much easier to govern a small number of professionals, regulation often targets firms as their proximate goal, even if the social problem originates in individual behaviour. A good illustration is car exhausts. Instead of trying to change driving habits, environmental law obliges car manufacturers to endow automobiles with catalytic converters.

In this spirit, it has been shown that corporations are often not deterred by legal sanctions in the way expected utility models predict (Braithwaite and Makkai, 1991; Axelrad and Kagan, 2000). A study has used a questionnaire to ask farmers, homebuilders and the owners of marine facilities why they comply with regulation specific to their business, if they do. Marine facilities typically are corporations, while farmers and homebuilders tend to be manager owned entities. While more than 80% of farmers and homebuilders say they comply since this is their civic duty, only 60% of boatyard owners say the same (May, 2005:330). Moreover the paper shows that this sense of civic duty is driven by different forces. In farmers, reputation plays practically no role. In homebuilders, reputation is mildly important. In boatyards it is crucial (May, 2005:334). We thus have found a first systematic difference, both in terms of behaviour and of driving forces. Yet strictly speaking it is not one between individual and corporate actors, but rather one between different degrees of corporatisation. For farmers and homebuilders too run a commercial enterprise.

3. Individuals Acting on Behalf of a Corporate Actor

Not so rarely, a single individual is able to determine the behaviour of a corporate actor (Hambrick and Mason, 1984). In that event, in principle the rich empirical knowledge on the behaviour of individuals can be used to explain or predict the behaviour of the corporate actor (Payne, 1997:357; Shapira, 1997:4; Gibbons, 2003:16). The only question one has to answer is whether the corporate setting moderates the effect established by experimental economics or psychology. There is some evidence on this question in three different settings: the corporate actor consists of just one individual. Managers are competent to decide in isolation. Other agents have the right to represent the corporation.

Manager-Owned Firms

A study tested Dutch hog farmers, who were all running their own businesses. In computer guided interviews they were asked to indicate how they would decide on lotteries capturing the key task of their professional lives: at which price to trade their hogs. Their trading behaviour was precisely predicted by prospect theory. They were risk averse in the domain of gains, and risk prone in the domain of losses. The reference point narrowly coincided with production cost (Pennings and Smidts, 2003). In this respect, the corporate setting did thus not change behaviour.

Managerial Behaviour

If individual managers have power to act for the corporation, the rich body of knowledge on the behaviour of experimental (student) subjects is a good first approximation (Kiesler and Sproull, 1982; Schwenk, 1984; Horide, 2003; Bazerman, 2006). Yet managers act on behalf of a legal person. In so doing, they engage foreign money. Their decisions change their employees' lives. The decisions are taken as signals on the labour market for managers. Boards, and ultimately shareholders, can later hold them liable. Does any of this systematically affect deviations from the standard rational choice model?

The effect that is best studied in managers is overoptimism (Moore, 1977; Langevoort, 1997b). Many managers believe that their companies, and they themselves, are better than average (Larwood and Whittaker, 1977). A third of them says that their probability of failure is just zero. More than 80% say that this probability is between 0 and 30% (Cooper *et al.*, 1988). Managers systematically underestimate the strength of their competitors (Zajac and Bazerman, 1991). Overoptimism is stronger if there are no clear benchmarks (Alicke *et al.*, 1995); this effect is much stronger in managers than in ordinary subjects (Palich and Bagby, 1995). Overoptimism leads to too much investment from internal funds, and to too little outside financing (Malmendier and Tate, 2005). It also makes bidders overly aggressive in corporate takeovers (Roll, 1986; Hayward and Hambrick, 1997). Interestingly, managers seem to distinguish between corporate and personal risk. On average, they are not willing to invest more of their own money in their firm when they are directing the firm into major acquisitions (Boehmer and Netter, 1997).

Managers are prone to self-serving reinterpretations of reality (Cox and Munsinger, 1985:88; Langevoort, 1997a:638). They take credit for good outcomes and lay blame on the environment for bad outcomes (Clapham and Schwenk, 1991). They tend to pay selective attention to regulatory concerns, like safety (Mendeloff and Gray, 2005), and to perceive reality

in a filtered way (Starbuck and Milliken, 1988b). They even misperceive objective facts that are key to assessing their position in the market, like last year's sales, or the percentage change in their industry's sales in the previous year (Mezias and Starbuck, 2003). In all of these respects, manager behaviour does not seem to systematically deviate from the behaviour of independent individuals. The managerial setting just gives the respective bias its specific form.

This is different in the following findings. Managers act more strategically than non-managers in a game that models the interaction with regulators, the so-called ratchet effect game. In this game, players are assigned the roles of firms and of central planning agencies. Firms have high or low productivity, which is their private information. Firms and planners interact sequentially. Planners set targets. If firms produce above target, they receive a bonus. Initially, most firms meet the target if they can do so. Yet implicitly, that way they reveal their type and give up their information rent. In the next round, planners appropriate the rent by raising targets. After a number of repetitions, high productivity firms understand the incentive structure. They stop increasing output. Ultimately, typically planners are forced to treat high and low productivity firms alike, i.e. the pooling equilibrium is reached. In principle, student subjects and professional managers act the same way. However if the planning frame is added, as planners professional managers set much higher targets, and as firms they quicker converge to the pooling equilibrium (Cooper *et al.*, 1999).

Also, the endowment effect can be made to disappear when subjects do not have to decide on their own property, but are assigned the role of agents. Specifically subjects were first endowed with a mug, as in the original experiment of (Kahneman *et al.*, 1990). They then could venture to manage a firm. If they did, they were told that their salary was contingent on the firm's profit, and that the firm needed the mug as a production input (Arlen *et al.*, 2002). These manipulations made the endowment effect disappear.

Behaviour of Representatives

There is a solid body of evidence on behaviour within organisations (for an overview see Greenberg, 2003). But most of this research is concerned with internal viability. It only indirectly touches upon the question how organisations behave in their dealings with the outer world. Yet a number of studies directly address the behaviour of representatives.

One study asked high level managers and partners of accounting firms to decide, in a deliberately complex case, whether they would issue an unqualified opinion, or whether they would express concern regarding the viability of the firm as a going concern. The experiment manipulated the order in which, at the end of the experiment, 5 additional pieces of

evidence were presented. Half of the participants got this evidence in positive/negative order, the remaining half in opposite order. Participants were indeed significantly influenced by the last pieces of information they received. There thus was a recency effect, much as it is known from experiments with (unexperienced) student subjects (Arnold *et al.*, 2000).

Another study has found that fund managers in Japanese institutional investors exhibit short-termism, herding, and self-marketing to improve the appearance of portfolio performance (Suto and Toshino, 2004). Marketing personnel exhibits overconfidence (Mahajan, 1992). Again the corporate setting does thus not induce systematic differences in behaviour.

4. Group Behaviour

There is a rich literature on group behaviour in social psychology (for overviews see Tajfel, 1982; Davis, 1992; Baron and Kerr, 2003; Brown, 2005) and, more recently, in behavioural economics. These experiments work with ad hoc groups that have been formed in the lab. Most relevant for this survey is research that directly compares individuals and groups on the same task (for surveys see Doise, 1978; Heath *et al.*, 1998). It is the most direct way of comparing individuals and collective actors. Section V will be looking specifically at the behavioural effects of those features that distinguish corporate from collective actors. The difference between individuals and groups matters for cognition (1), for risk taking (2) and for cooperation (3). One gains additional insights into the driving forces if one interprets group decisionmaking as a political process, following the sociological tradition (4).

Cognition

A whole industry has tested individual subjects against the rational choice model, taken as a norm for good behaviour. Long lists of biases have been compiled (see only Conlisk, 1996; Kahneman and Tversky, 2000). Are groups prone to the same cognitive effects? There is at least some comparative evidence (for an overview see Kerr *et al.*, 1996).

The following study is characteristic for this literature. In probability judgements, students have been demonstrated to be overly influenced by representativeness, and therefore to violate Bayes' rule by neglecting base rates (Kahneman and Tversky, 1972). In this study, groups of five were asked to estimate the probability that a candidate for admission to a club was an engineer. Participants were either told that 21 of 30 applicants were engineers, and 9 of them were physicians, or the other way round. They were given three vignettes, one with character traits expected in an engineer, one with traits expected in a physician, and a

neutral one. Groups were compared to isolated individuals deciding silently; individuals instructed to think aloud (to control for verbalisation effects) and coacting individuals (to control for social facilitation). Groups neglected base rates in about the same magnitude as individuals when deciding on one of the representative vignettes. They however were significantly closer to the base rate when deciding on the neutral vignette (Argote *et al.*, 1990; also see Argote and Seabright, 1986).

Groups are sensitive to framing. In some studies, no characteristic differences between groups and individuals could be found (Tindale, 1993). But the loss aversion of one member of the three-person group could be overridden by a non-loss majority (Kameda and Davis, 1990), and the bias could be attenuated by shifting the choice to the group (Neale *et al.*, 1986; Sutter, 2007). However, group discussion amplified loss aversion, i.e. the dependence of risk preference on the reference point (McGuire *et al.*, 1987), and led to escalating commitments (Whyte, 1993). Yet this effect can be mediated by social and cultural norms, and also by the salience of the new information in group discussions (Paese *et al.*, 1993).

Individuals and groups violate expected utility theory in pretty much the same way when comparing two lotteries that both have the same expected value: a riskier one with a higher gain in the event of success, and a less risky one that, however, also yields a smaller amount of money if the subject wins. If the probability of winning on the safer bet is high, individuals and groups prefer this one. They prefer the riskier one otherwise. Group interaction does not make individuals more consistent with expected utility theory (Bone *et al.*, 1999).

Like individuals, groups tend to reverse preferences in risky tasks. They tend to choose to play more conservative (low variance) gambles, but to set higher selling prices for riskier (high variance) gambles, despite the bets having equal expected values. Their choices depend on how the task is presented to them. This effect is more pronounced in groups (Mowen and Gentry, 1980). However, in a later study, group discussion weakened the effect. The moderation was due to the fact that some choices were easier to justify (Irwin and Davis, 1995).

Groups are not spared from the hindsight bias. They do slightly better in that it is more likely that at least one of the group members recalls the initial assessment correctly and influences the group. The advantage goes away, however, if one controls for decision time (Stahlberg *et al.*, 1995). Groups also exhibit overoptimism (Jourden and Heath, 1996). Being a member of a group buffers individuals from later deception (Heath and Jourden, 1997). Also "groupthink" (Janis, 1972) matters: pessimism is interpreted as disloyalty. Those who show pessimism risk being shunned (Kahneman and Lovallo, 1993).

In Western societies, individuals have a strong tendency to attribute behaviour to personality, rather than to situational factors (Nisbett *et al.*, 2001). This tendency is attenuated if judgement is shifted to groups (Wright and Wells, 1985; Wittenbaum and Stasser, 1995).

Groups are not immune, but less liable than individuals to overconfidence (Snizek and Henry, 1989; Plous, 1995). In defining an aspiration level, groups do not significantly differ from individuals. In one study, the goal was defined with respect to the perceived probability of success, and with respect to its attractiveness. A more difficult goal was more attractive than an easier one. The group raised the aspiration level if it had been successful, and it lowered it after failure. Goals tended to be slightly above the previous level of performance (Zander and Medow, 1963).

In terms of cognition we thus get a mixed result. In principle, cognitive biases known from individuals also work on groups. Yet it is possible that they are moderated by specific rules for taking group decisions, by group discussion and by norms prevalent in a group.

Risk Preferences

Initially, comparisons between individuals and groups seemed to show that groups are consistently more risk prone (for a review see Vinokur, 1971b; Zaleska, 1976). However, at closer sight, instead of a "risky shift", experimenters sometimes found a "cautious shift" (for a review see Cartwright, 1971; Fraser *et al.*, 1971).

One colourful study uses data from a favourite pastime of Alaskans. At a small fee, people can bet on the exact date and the hour when the ice in the Tanana river will break in spring. The individual that comes closest to the truth wins the jackpot. A considerable number of bettors are betting pools, which can be reliably identified by their names. Comparing their guesses with those handed in by individuals, it turns out that groups are more sensitive to the distribution of historical break up dates, and that the distribution for groups has less mass in the tails and exhibits lower variability. This implies that groups are neither more risk prone nor more risk averse, but more risk neutral than individuals (Adams and Ferreira, 2009).

Recently, experimental economists have also become interested. They have found that individuals holding constant absolute risk aversion become risk neutral maximisers of expected utility if deciding collectively (Bone, 1998). Another study does not find a shift towards expected utility. But when deciding collectively, subjects make more profit since they come closer to the norms of portfolio selection theory (Rockenbach *et al.*, 2007). However, investment clubs have been shown to perform less well than individual investors (Barber and Odean, 2000).

The underlying mechanism is complicated (Clark, 1971). It is not due to leadership of particularly risk prone members (Hoyt and Stoner, 1968). The aggregation of information within the group matters (Vinokur, 1971a), as does group homogeneity (Crott *et al.*, 1986), the impact on members' affects (Vinokur, 1971b), group norms (Brown, 1965), framing (Paese *et al.*, 1993), reference points (McGuire *et al.*, 1987), the tendency to perceive a "false consensus" (Ross *et al.*, 1977), and the way how interaction within the group is organised: is there open discussion (Zaleska, 1974)? Is there an (informal) leader (Brown, 1965)? Is individual responsibility for group outcomes clearly established (Wallach *et al.*, 1964)?

Most importantly, in the generation of the group's risk attitude, polarisation takes place (Doise, 1969; Moscovici and Zavalloni, 1969; Myers and Lamm, 1976; Isenberg, 1986). The group is more radical than the aggregation of individual attitudes supports. Recently, economists (Cason and Mui, 1997; Luhan *et al.*, 2007) and lawyers have also become interested in the phenomenon (Sunstein, 2002). For the explanation of the phenomenon, two hypotheses compete. In order to preserve self-esteem and influence within the group, group members compare their behaviour to the behaviour of other group members (Brown, 1965). Alternatively, group discussion asymmetrically exposes members to persuasive arguments in favour of either caution or risk taking (Burnstein and Vinokur, 1973).

Cooperation

The most prominent contribution of experimental economics to group research has been testing groups on standard games. In the dictator game, in one study groups were more selfish than individuals (Luhan *et al.*, 2007). However, in another study, the most other-regarding member of the group won the day (Cason and Mui, 1997). In the ultimatum game, groups offered less than individuals (Robert and Carnevale, 1997). But they were also willing to accept less than individuals (Bornstein and Yaniv, 1998). This held irrespective of the internal rules for making decisions (Messick *et al.*, 1997). Also in signalling games, groups played more strategically than individuals. They were more successful, and they learned more effectively (Cooper and Kagel, 2005). Likewise in a gift exchange game. The rationalising effect of group decision was robust to changes in the internal procedure for making decisions (Kocher and Sutter, 2007). In a trust game, groups were less trusting than individuals, but just as trustworthy (Bornstein *et al.*, 2007b; also see on the relationship between interpersonal and interorganisational trust Zaheer *et al.*, 1998). However, an earlier study on the trust game had found little difference between individuals and groups (Cox, 2002; see also Insko and Schopler, 1998). In a power to take game, groups took and destroyed about the same as individuals (Bosman *et al.*, 2006).

When playing a one shot prisoner's dilemma, groups were less cooperative than individuals (for a summary of the evidence see Schopler and Insko, 1992; Lodewijkx *et al.*, 1999; Schopler and Insko, 1999; Bornstein, 2003). If given a choice, groups were more likely to use threats, rather than promises, to bring cooperation of their competitors about (Lindskold *et al.*, 1977). The effect even remained stable if a dilemma game alternated with a bargaining game (Morgan and Tindale, 2002), where groups were more effective than individuals (Polzer, 1996). Likewise, in a common pool dilemma, although groups were less myopic than individuals, they were more competitive and therefore less efficient (Gillet *et al.*, 2007).

To study the underlying forces, an experiment using the minimum effort game is revealing. In this game, each member of a larger group has to indicate an integer between 1 and 7. The group payoff is distributed according to these numbers. Yet the group payoff is the higher, the lower the minimum number posted by a group member. The game has seven equilibria in pure strategies, where all members choose the same integer. If the game is repeated, mean and minimum choices quickly converge to a fairly low value, leaving group members with a low payoff (Van Huyck *et al.*, 1990). If, however, two groups compete such that the one with the minimum integer gets all, mean integers are almost stable, and minimum integers go up over time. The competition motive helps groups coordinate on a much more favourable equilibrium (Bornstein *et al.*, 2002).

Intergroup competition also improved intragroup cooperation (Bornstein *et al.*, 1990; Bornstein and Erev, 1994). The effect was particularly strong if groups were allowed to communicate internally before acting (Bornstein and Rapoport, 1988). If group size increased, however, group members were less prepared to overcome the internal dilemma since they perceived their personal contribution as less relevant (Kerr 1989; also see Levine and Moreland 1990). If two groups of unequal size competed, the effect was stronger on the larger group (Rapoport and Bornstein, 1989). These findings have triggered a line of research on the relationship between firm size and performance (Gooding and Wagner III, 1985; also see Gladwell, 2000)

Group cooperation remained stable in repeated interaction if communication was permitted (Bornstein *et al.*, 1994); cooperation eroded otherwise (Bornstein *et al.*, 1996). In repeated interaction, in one study groups cooperated more effectively than individuals (Pylyshyn *et al.*, 1966). Individual group members contributed significantly more if they could have defected individually, but if this would have reduced group success in an intergroup prisoner's dilemma game (Erev *et al.*, 1993; Bornstein and Ben-Yossef, 1994). The dilemma was overcome by reciprocity (Goren, 2001).

However, in a centipede game, groups exited significantly earlier than individuals (Bornstein *et al.*, 2004). And groups were less effective in bringing tacit collusion about in a repeated Bertrand game (Bornstein *et al.*, 2007a). They converged faster to the competitive solution than individuals (Bornstein and Gneezy, 2002). However, in a repeated Cournot game, i.e. when teams compete in quantity, there is no difference between individuals and groups (Morrison and Kamarei, 1990; Raab and Schipper, 2004).

In a chicken game, groups were more aggressive than individuals (Bornstein *et al.*, 1997). However, in a game of assurance, they reached the effective result. Groups were thus able to overcome the urge to compete for fear, but not for greed (Bornstein and Gilula, 2003). In a beauty contest game, teams were more effective than individuals since they learned faster (Kocher and Sutter, 2005). Specifically, teams of four outperformed not only individuals, but also teams of two (Sutter, 2005). In common value auctions, groups suffered from the winner's curse at least as much as individuals. They did even worse if they had access to a lot of information about the auctioned item (Cox and Hayne, 2006). Likewise, in an ascending sealed-bid English auction, groups stayed longer and paid significantly higher prices than individuals (Sutter *et al.*, 2005).

The greater competitiveness of groups rests on a combination of fear and greed (Insko *et al.*, 1990; Schopler *et al.*, 1993; Wildschut *et al.*, 2003). Fear results from the fact that there is greater distrust in intergroup relations, compared to interpersonal relations (Insko *et al.*, 2005). Greed results from the fact that there is more social support for aggressiveness in the dealings of the group with its competitors (Wildschut *et al.*, 2002), and that individual contributions to group decisions are not identifiable by members of the outside group, which makes it impossible to hold individual group members accountable for harm inflicted on outsiders (Schopler *et al.*, 1995).

Group Decisionmaking As a Political Process

All of the previous explained group behaviour from an individualistic perspective. One gains additional insights into the driving forces for the differences between individual and group behaviour if, following the sociological tradition, one interprets group decision making as a political process (March, 1962; Shapira, 1993:92; Miller, 1998). In this process, communication matters (Simon, 1997:208-249). It increases risk taking (Wallach and Kogan, 1965), competitiveness (Wildschut *et al.*, 2003) and makes groups more aggressive in a prisoner's dilemma (Goren and Bornstein, 2000). While the mere reading of alternative arguments has hardly any influence on individual decision making, group discussion has (Bishop and Myers, 1974). Persuasive argumentation increases polarisation (Bornstein and Vinokur, 1977; Fitzpatrick, 1989). In buying stocks, compared to individuals, investment clubs are much more

influenced by what sounds like a good reason, although such stocks do not, on average, perform better (Barber *et al.*, 2003). The reported performance of other group members becomes a benchmark and makes group members more risk prone (Payne *et al.*, 1981). Interestingly, however, if an outsider listens to a group discussion, this produces pretty much the same risky shift as in group members (Lamm, 1967).

In the sociological literature on organisations, the claim is centre stage that reality is constructed (Daft and Weick, 1984; Meindl *et al.*, 1994; Lant and Shapira, 2001; March, 2001), and that organisations are institutions for making sense out of an overly complex, uncertain and ambiguous environment (Weick, 1995; Meindl and Stubbart, 1996). This leads to progressive uniformity (Sutcliffe and Huber, 1998), "organisational languages" (Wernerfelt, 2004), causal maps that change over time (Barr *et al.*, 1992; Barr, 1998).

If, in this discourse, a socially relevant risk is coded as an opportunity for learning, organisational decision-makers are much less cautious than if it is constructed as a threat. Past bad experiences have a stronger effect on future organisational decisions if, in organisational memory, risky hazards are stored as graphic narratives (Tamuz, 2001). The disaster of the space shuttle Challenger provides an illustration of the effects. NASA had successfully managed so many space missions, it had proven so many internal and external sceptics to be wrong, that the faulty belief could emerge some of the safety precautions were no longer necessary (Starbuck and Milliken, 1988a).

5. Adding Structure

Corporate actors differ from mere collective actors in that they have structure. Often, structure also makes them more long-lived. In the simple most case, this structure is exclusively horizontal. More complex corporate actors usually also have elements of vertical structure. Through their permanence, corporate actors have a chance to impact on how members define their identity.

Horizontal Structure

Corporate actors have explicit rules for accepting new members. They can exploit these rules to select members with desired personality traits. For instance the life insurer Met Life made a point out of hiring people for their sales force that had an optimistic bias (Seligman, 1990).

Corporate actors also have explicit rules for aggregating their members' views and wishes into collective choice. Different rules produce different group choices (for a review see Kerr *et al.*, 1996). Take the following

experiment as an illustration of this literature. Participants were randomly assigned to groups of six. The decision task was determining the colour of a jar. Individual payoffs depended on whether the group got the colour right. If the jar was red, it held 7 red and 3 blue balls. If it was blue, it held 7 blue and 3 red balls. Each participant privately drew one ball. Decisions were either taken by majority or by unanimity. In the unanimity case, the group decision was red only if all participants voted red. In the majority condition, the very large majority voted in favour of their private signal, whereas in the unanimity condition, quite a few participants who had a blue signal nonetheless voted red (Guarnaschelli *et al.*, 2000).

If members exchange information on evidence, a majority rule improves accuracy more than if members exchange hypotheses (Laughlin, 1988). If group members are presented with easily interpretable, symmetrically informative signals, the majority rule works as a tool for debiasing. The majority rule loses its advantage for accuracy, though, if members receive asymmetrically informative signals (Bottom *et al.*, 2002).

Straw polls may bias group decisions. This for instance happened in a jury like situation when early on the provisional overall assessment was asked for. When a considerable number of members had consistently voted for one verdict, later voters were likely to swing. The effect was stronger if the initial row of voters had pleaded non-guilty. This reflected the fact that convicting an innocent is seen as the much graver mistake (Davis *et al.*, 1988).

In cognitive tasks, groups are more effective if, internally, they are not allowed to interact freely. One superior technique is "nominal group technique". In the first phase, members independently and silently generate their ideas in writing. Subsequently, each member presents exactly one idea to the group, one speaking after the other. Eventually, members independently rank the ideas. Another superior technique is the Delphi method. All interaction is in writing. In the first phase, members independently respond to a questionnaire. From these responses, a feedback report is generated. Members independently react to this report in writing (van den Ven and Delbecq, 1974; Surowiecki, 2004).

In any group of more than two, there is room for the formation of subgroups and coalitions (for a review see Goodman *et al.*, 1987). In a cognitive task, the predetermined majority and minority influenced each other by the exchange of evidence; there was no influence by the exchange of hypotheses; the majority had more influence on the minority than the other way round (Laughlin, 1988). In another cognitive task, being exposed to alternative minority views improved accuracy (Nemeth and Kwan, 1987).

Vertical Structure

Corporate actors with a purely horizontal structure are relatively rare. Small partnerships are the best illustration. Usually, some of the structure is vertical. There is some form of hierarchy. Employees depend on employers. Managers depend on boards and shareholders. Due to a contract, agents have to act on behalf of principals.

The psychology of principal-agent relations is still relatively tentative. It is being speculated that the main concern of agents is not being held liable (Shapira, 1993); this might be backed by the general research on accountability (for overviews see Tetlock *et al.*, 1989; Lerner and Tetlock, 1994; Lerner and Tetlock, 1999). The effect might be aggravated by the fact that most organisational reward systems punish failure much more than they reward success (Shapira, 1995). This might increase loss aversion (Kahneman and Lovallo, 1993), and might induce uncertainty avoidance (Cyert and March, 1992:167), narrow framing, such that managers can present success stories at every next reporting date (Kahneman and Lovallo, 1993), and ultimately even outright cheating (Harris and Bromiley, 2007).

The effects of team structure on performance depend on further variables. One study tested medical students on team diagnosis. Three students were presented with information on one and the same patient. Each of them held some pieces of information in private. In one condition, one of them was *ex ante* determined to be the leader. The presence of a leader improved accuracy for two reasons: leaders took care that the group did not overlook shared information and, once it had been presented for the first time, made sure that unshared information was sufficiently taken into account (Larson *et al.*, 1998). In another study, hierarchical teams of one leader and three subordinates were better at generating new knowledge if they knew each other well, if team membership was stable, and if the team had time to gain experience (Hollenbeck *et al.*, 1995).

There is also some data on the psychology of principals. When a principal has to generate a single estimate from conflicting evidence agents have reported, principals have a cautious bias. From the same list of numbers they tend to privilege the higher one if the task is predicting cost, and they tend to privilege the lower one if the task is predicting sales (Cyert and March, 1992:80-85). If the principal is aware of a tendency, in different agents, to bias reports, she quickly learns to compensate for the bias, so that her ultimate assessment is unbiased (Cyert and March, 1992:85-92). However, superiors overrate their ability to detect cheating agents (DePaulo *et al.*, 1989; Ekman and O'Sullivan, 1991).

Identity

If the narrow incentive view of principal-agent models were a true description of corporate reality, most corporations would be doomed to failure. There is a high premium for firms that are able to induce non-self-interested internal cooperation (Miller, 1998). The most important tool to bring this about is the formation of corporate identity (Akerlof and Kranton, 2005). A good illustration is Henry Ford's five dollar day. At a time when this was outrageously more than any worker earned in the car industry, Henry Ford created a long-term commitment to a system of political authority. For Ford workers, the labour market no longer mattered (Miller, 1998:11).

One way of experimentally testing the effect is making different aspects of identity salient for different treatment groups. The task was making money while preserving the sustainability of a common pool resource. Common pool resources have a non-linear harvest function. The non-linearity is due to the fact that the resource is replenishable, but only at an exogenously given rate. Consequently, in optimality total catch is defined by maximum sustainable yield. In the experiment, participants could go on harvesting only as long as the stock was not empty. Two groups had access to the resource: students and elderly citizens. If the fact was made salient that both were members of the same community, participants were much more cautious than if the experimenter indicated that he wanted to study "how the behaviour of young people compares to the behaviour of elderly persons" (Kramer and Brewer, 1984).

In line with this, members of college fraternities have been more willing to cooperate with members of their fraternity in a prisoner's dilemma (Kollock, 1998). However, making group identity salient was counterproductive if the good was framed as a public good, and if the group was large. Since group members felt that their own contribution was negligible anyhow, they became greedy (Brewer and Kramer, 1986). Also, the effect is weaker the more attractive the outside options (Berninghaus *et al.*, 2004). The willingness to engage in costly altruistic punishment is much higher if the victim is a member of the group that defines the identity of the punisher. The effect has been shown in tribal Papua New Guinea (Bernhard *et al.*, 2006) and in the Swiss army alike (Goette *et al.*, 2006). The causal arrow may even be reversed. Not only does a sense of identity induce members to cooperate more. If subjects are continuously exposed to a social dilemma, this also creates an identity (van Dijk *et al.*, 2002; Sonnemans *et al.*, 2006).

Organisations do not only have formal structure. Over time, their members also assume roles, which adds informal structure to the organisation. Roles do not fully determine behaviour, but they influence how organisation members see the task at hand (Simon, 1997:24 f.). They shape normative expectations (Gross, 1958), but may also engender role conflicts (Kahn, 1964; for alternative role concepts see Biddle and

Thomas, 1979; Biddle, 1986). For instance, when presented with the rich narrative of an artificial business case, executives had a strong tendency to see the central problem in their own area of expertise (Simon, 1997:299 f.). With fixed roles, internal coordination is smoothed by tacit routines (Rick *et al.*, 2006). In coordination-intense groups, leaders emerge, even without explicit institutional intervention, and even if group members are not allowed to talk (Guastello and Bond, 2007). If leaders are highly typical for the in-group, they are strongly endorsed irrespective of their distributional fairness. Leaders who are less prototypical must compensate by stronger distributional fairness for being equally endorsed (Platow and van Knippenberg, 2001).

6. Conclusion

As one would have expected, there is no simple yes or no answer to the question addressed in this survey. In many respects, collective and corporate actors suffer from the same biases as individuals. Sometimes they do better, in the sense of being closer to standard rational choice assumptions, sometimes they do worse.

We have identified a number of reasons for real differences. Corporate actors are more focused on their area of activity. This can make their decisions more selfish (Cooper *et al.*, 1999) and more sensitive to reputation effects (May, 2005). If overcoming a bias is directly relevant for business success, this is likely to happen (Arlen *et al.*, 2002). Corporate actors may select agents according to personality traits (Seligman, 1990). The rules for aggregating individual views and preferences within the group play themselves out (Kerr *et al.*, 1996), as does leadership (Larson *et al.*, 1998). Group discussion can have a rationalising effect (Wright and Wells, 1985; Neale *et al.*, 1986; Sniezek and Henry, 1989; Argote *et al.*, 1990; Kameda and Davis, 1990; Plous, 1995; Wittenbaum and Stasser, 1995; Sutter, 2005), but it can also radicalise judgement and decision making (McGuire *et al.*, 1987; Kahneman and Lovallo, 1993; Whyte, 1993). The communication pattern matters (Simon, 1997). Whether groups are more risk prone or more cautious depends on a multitude of factors (Cartwright, 1971; Fraser *et al.*, 1971). If groups interact with other groups, this generally helps them coordinate internally (Bornstein *et al.*, 1990). Making identity salient can change behaviour (Kramer and Brewer, 1984).

Much as physicists or chemists aim at formulating general laws of nature, social scientists have been attracted by the goal of isolating "human universals" (Brown, 1991). Yet even if undertaken with isolated individuals, behavioural research has a hard time formulating broad range laws and principles. To date, it much more resembles the maps drawn by adventurers who embarked on expeditions into uncharted territory. Using this metaphor, corporate actors are an even less explored province of behavioural territory. This article could report on a few islands of

knowledge, but mainly had to content itself with indicating directions and with formulating hypotheses. Many more expeditions have to be started before we possess safe knowledge about the behaviour of corporate actors. But as this article has demonstrated, we know much more than nothing, and there is hope for more, to the benefit of those dealing with corporate actors, or those setting them up.

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