Political economy with affect: On the role of emotions and relationships in political economics

Article *in* European Journal of Political Economy · June 2015

DOI: 10.1016/j.ejpoleco.2015.05.005

CITATIONS
8

READS
78

1 author:

Frans van Winden
University of Amsterdam
145 PUBLICATIONS **3,399** CITATIONS

SEE PROFILE

European Journal of Political Economy 40 (2015) 298–311

Contents lists available at ScienceDirect

European Journal of Political Economy

journal homepage: www.elsevier.com/locate/ejpe

Political economy with affect: On the role of emotions and relationships in political economics

Frans van Winden *

Universiteit van Amsterdam, CREED—Amsterdam School of Economics, Roetersstraat 11, 1018 WB, Amsterdam, The Netherlands
Universiteit van Amsterdam, Amsterdam Brain and Cognition, The Netherlands

ARTICLE INFO

Article history:
Received 29 November 2014
Received in revised form 5 May 2015
Accepted 28 May 2015
Available online 3 June 2015

JEL classification:
D72
D74
C90

Keywords:
political economy
emotions
relationships
appropriation
conflict
collective action

ABSTRACT

This paper discusses and provides experimental evidence on the role of emotions and, in particular, the neglected role of endogenous affective relationships (bonding) in three key areas of political economy: (i) appropriation, with compliance or resistance as response; (ii) competition for access to appropriation and its potential for escalation and de-escalation of the inherent conflict; and (iii) determinants of (large scale) collective action. To that purpose, a series of experiments on power-to-take games and public good games are presented and put into perspective. Furthermore, the relevance of an affective social ties model for explaining these experimental findings is investigated. Finally, some important political economic implications are addressed.

1. Introduction

Behavioral political economy fits into a broader recent strand of literature, labeled behavioral economics, which is trying to adapt the way behavior is modeled in economics. Instead of the exclusively self-regarding and extremely rational *homo economicus*, gifted with sheer unlimited calculative capacity and skills, a more realistic *homo sapiens* with severely constrained cognition and emotions, facing uncertainty rather than risk, is presently being carved out as model agent.

From an evolutionary perspective, the primate brain has developed more reflective (deliberative, cognitive) mechanisms only very recently, not as part of a complete overhaul of the brain, but as an adaptation of older more reflexive (impulsive, emotional) systems. For most of the time, these older systems (apparently) served us well to survive. Through innate behavioral repertoires like the fight–flight response, simple stimulus–response reinforcement learning, and affective bonding to beneficial others (*e.g.*, attachment to caregivers),[1] they enabled us to cope with environments characterized by deep uncertainty, complexity, and danger.

In stark contrast, economic theory has developed an extreme focus on highly sophisticated (strategic) reasoning, often assuming unrealistic amounts of information, and taking a purely individualistic and self-regarding approach. Even though classic scholars like Spinoza (*Tractatus Politicus*), Smith (*The Theory of Moral Sentiments*) and Edgeworth (*Mathematical Psychics*) have already emphasized

* Tel.: +31 205254251.
E-mail address: F.A.A.M.vanWinden@uva.nl.

[1] Affective bonding involves kin as well as non-kin (friendships), see Seyfarth & Cheney (2012).

http://dx.doi.org/10.1016/j.ejpoleco.2015.05.005
0176-2680/

the importance of emotions and sentiments towards others, it is only now that more rigorous new theory, acknowledging these evolutionary old mechanisms, is taking shape through the efforts of behavioral economists.

Behavioral public finance and behavioral political economy have joined forces (McCaffery & Slemrod, 2006; Weingast & Wittman, 2006; van Winden, 1999, 2007). Cognitive issues that are being addressed are, for example: Do people focus on marginal effects (like marginal taxes) or more on average effects? Do people have sophisticated beliefs and long time horizons, or are they rather naive and myopic? Are individual choices consistent or – perhaps in particular contexts – subject to biases and heuristics? Can the influence of social groups be captured via standard methodological individualism? Important topics regarding emotions are: To what extent, and under what circumstances, can emotions (impulsivity) be controlled? Are emotions at best not costly or are they (sometimes) beneficial? Many scholars have argued that – for better or for worse – emotions play an important role in political economic matters (Rawls, 1983, Marcus, 2000, Walzer, 2004, Glaeser, 2005, Moïsi, 2009, Nussbaum, 2013, Jasper, 2014). According to Walzer (2004, p130): "*No political party that sets itself against the established hierarchies of power and wealth, no movement for equality or national liberation, for emancipation or empowerment, will ever succeed unless it arouses the affiliative and combative passions of the people at the lower end of the hierarchies. The passions that it arouses are certain to include envy, resentment, and hatred (…) They are also the emotional demons of political life (…).*"

This paper focuses on emotions and, particularly, the neglected role of endogenous affective relationships (bonding) in three key areas of political economy: (i) appropriation, with compliance or resistance as response, (ii) competition for access to appropriation and its potential for escalation and de-escalation of the inherent conflict, and (iii) determinants of collective action. To that purpose I will discuss a series of experiments on power-to-take games and public good games and the relevance of a social ties model for explaining the experimental findings. Because of my focus and the space constraints of a single paper no exhaustive treatment of the role of emotions in political economy can be given. References should help the interested reader to navigate to additional literature.[2]

The organization of the paper is as follows. Section 2 goes into appropriation and the role of emotion in the response to comply or resist. It discusses the power-to-take game and the main experimental findings obtained with this game so far. Section 3 addresses the incentives and consequences of competition for access to appropriation. Section 4 goes into collective action and the role of relationships. An affective social ties model is presented and discussed regarding its scope and performance in explaining collective action in public good contexts. Section 5 uses the estimates of this model to explain some of the main findings presented before. Section 6 concerns important determinants of large(r) scale collective action related to emotions and relationships, while Section 7 ends the paper with some concluding remarks.

2. Appropriation and emotion[3]

Appropriation of others' resources is intimately connected to politics. It can be with or without the consent of the people that are targeted. Taxation easily comes to mind as an example. More generally, it involves the regulation and intrusion of people's life space, including such components as freedom of speech. In the past people have endured substantial appropriation against their will (including slavery), albeit with resistance where feasible (such as via tax evasion) and occasional outbreaks of revolt (Passarelli & Tabellini, 2013). Timely examples are the Arab Spring revolts and demonstrations in countries harshly hit by the Euro crisis. Such protests often show a large element of seemingly emotion driven behavior, although part of it – for instance, protest leadership – may be based on cold, calculative, strategic behavior (Kuran & Sunstein, 1999, Schram & van Winden, 1991).[4] It is important to improve our understanding of the driving factors of such responses to appropriation because of the material and non-material (psychological) costs involved. Due to its neglect of emotions, standard expected utility theory is not well equipped to do so.

Interestingly, classical writers like Thomas Hobbes and Adam Smith explicitly referred to emotions in the context of taxation. In *Leviathan* it is argued that: "*(…) in all places, men that are grieved with payments to the Publique, discharge their anger upon the Publicans, that is to say, Farmers, Collectors, and other Officers of the publique Revenue.*" (Hobbes, 1979 [1651], p53). In his maxims with regard to taxation in *The Wealth of Nations* Smith even suggested an emotional excess burden of taxation, due to vexation: "*though vexation is not, strictly speaking, expense, it is certainly equivalent to the expense at which every man would be willing to redeem himself from it*" (Smith, 1971, 1776, Book V). Manifestations of anger evoked by taxation and regulation abound in history (van Winden, 2007).

Anger is not the only emotion that is to be reckoned with, however. Two other prominent emotions are shame and guilt, which are evoked if the violation of a (social) norm is involved, in which case they trigger an action tendency to hide and to make up for one's misbehavior, respectively (Tangney & Dearing, 2002). These emotions may be relevant for understanding both the taxpayer's and the tax authority's behavior. For example, the taxpayer may experience guilt when evading taxes (Erard & Feinstein, 1994, Coricelli et al., 2010), while the tax authority may feel ashamed if confronted with enraged tax payers. When anticipated, these emotions may inhibit the behavior that will trigger them, because of the foreseen hedonic cost.[5] If the underlying brain mechanisms

[2] For an excellent introductory textbook on emotions, see Oatley & Jenkins (1996). An emotion arises when an event is being appraised as relevant to one's interests. Emotions have a direct hedonic quality. The processes underlying emotions are unconscious and cognitively impenetrable. One cannot simply choose an emotion. Emotions involve physiological changes (arousal, visceral responses) and bodily changes, like facial expressions. Central to an emotion is an action tendency. Affect is a general term for emotions, moods, feelings, sentiments.

[3] This section borrows from van Winden (2007).

[4] Passarelli & Tabellini (2013) take as starting point the idea that political unrest is largely motivated by emotions: "Individuals participate in costly political protests because they are aggrieved and feel that they have been treated unfairly." (Passarelli & Tabellini (2013), p2).

[5] Erard & Feinstein (1994) incorporate guilt and shame directly into the utility function, assuming that a taxpayer will experience guilt when s/he underreports and escapes detection, and shame when s/he underreports and gets caught. Their results show that accounting for moral sentiments this way helps explain tax compliance behavior. See also van Winden & Ash (2012).

are underdeveloped in people (Adolphs, 2003) or if the relevant norms are insufficiently internalized via the sanctions of educators these emotions cannot bite. In that event people will feel less inhibited to evade taxes or to practice excessive (grabbing hand) taxation. As I will demonstrate below, neglect of such affective reactions creates an *emotional hazard*, that is, a chance of welfare losses (or gains) related to emotional responses.[6] It is important to note that emotional hazard makes even lump-sum taxation no longer a guaranteed efficient tax instrument, which is one of the main tenets of optimal tax theory.[7]

With field research it is difficult to investigate the role of emotions in appropriation due to a lack of control of the relevant factors which also severely limits the possibility of replication. In this paper, therefore, I will mostly rely on laboratory experimentation. Note, however, that the evolutionary old emotional mechanisms revealed by laboratory experimentation are likely to be relevant as well for decision making in the real world outside the lab. This is not so surprising as in both environments real decisions are made by real people for real money (Plott, 1991). The world of finance may perhaps serve as an instructive example, because ot its reputation of coolness. In his discussion of the external validity of experimental finance, Bossaerts (2009) points at substantial evidence suggesting that professional traders are highly emotional, in contrast to what seems to be the conventional wisdom. In this context, it is further useful to note that allowing subjects more time for decision making in the lab need not lead to 'cooling off', and might in fact induce more 'heated up' decision making (Cardella & Chiu, 2012).

2.1. Experimental evidence from the power-to-take game

Starting with Bosman & van Winden (2002) a series of studies have investigated the role of emotions in appropriation using the *Power-To-Take* (*PTT*) *game*. The basic version of this game involves two players who play the game only once. Players are randomly and anonymously matched in the role of *taker* (T) and *responder* (R), and start the game with an equal amount of money (y_T and y_R, respectively, with $y_T = y_R$). In the first stage of the game T chooses a *take rate* (t), indicating the share of R's money that T claims (like a tax rate). In the second stage R decides how much to destroy of this (R's own) money by choosing a *destruction rate* (d). The money that is destroyed (dy_R) is no longer available to both players and, thus, a pure welfare loss. Consequently, R's payoff (P_R) from the game can be written as: $P_R = (1 - t)(1 - d)y_R$, while T's payoff (P_T) equals: $P_T = y_T + t(1 - d)y_R$ Note that by explicitly assigning the money to each player (or, alternatively, having them first earn the money in an individual task before the game) any doubt about property rights is avoided. Moreover, by taking care that the amount of money is identical there is no inequality issue to start out with. Emotions are measured via self-reports, consisting of the scores of participants on emotional intensity (Likert) scales linked to a list of positive as well as negative emotion names (like anger and joy).

The PTT game is a very simple game that, nevertheless, captures fundamental aspects of appropriation (like taxation, regulation, or monopoly pricing). The standard game theoretic prediction, which assumes rational and self-regarding players, is fairly straightforward. Because R will accept any take rate that leaves a positive amount of money to R, it is predicted that T will take virtually everything and R will not destroy anything: $t \approx 1$ and $d = 0$. What is observed, however, is very different (Bosman & van Winden, 2002; Bosman et al., 2005).

On average, takers claim about 60% of the responder's resources ($t = 0.6$) while responders destroy about 20% ($d = 0.2$).[8] Thus, takers earn: $y_T + (0.6x0.8)y_R$ and responders: $(0.4x0.8)y_R$. Since $y_T = y_R$, this implies that takers earn more than 4½ times the earnings of responders. Moreover, destruction causes a substantial welfare loss, which equals 10% of the total resources, even though the take rate can be seen as a lump-sum tax! Interestingly, about 60% of the Rs destroy 100% of their y_R if $t \geq 0.8$. This seems similar to results found for the rejection rate in the Ultimatum Game (Camerer, 2003). Note, however, that in the PTT game only the money of the Rs is at stake and not the total pie. I will return to this below.

Remarkably, the estimated probability of destruction is not only (positively) related to the take rate but also (negatively) to the expected take rate; the larger the gap between the two the more destruction is observed. The latter is hard to explain, even with an inequality aversion model *à la* Fehr & Schmidt (1999), a reciprocity model *à la* Rabin (1993), or a types model *à la* Levine (1998). In all these models it is the observed take rate that should matter. The more so, because the expected take rate does not seem to be related to fairness (a normative expectation). No evidence is found of a relationship between destruction and reported fair take rates (Reuben & van Winden, 2008).

The observed effect of the expected take rate can be naturally explained, though, if emotions play a role, because expectations are a key factor driving emotional intensity. And, this turns out to be the case. The self-reported intensity of anger (including irritation and contempt) that is experienced when observing the take rate is positively related to the take rate and negatively related to the expected take rate (fairness beliefs do not seem to matter). Furthermore, destruction is related to the intensity of anger. Mediation analysis shows that the impact of the take rate on destruction is fully mediated by emotions (Bosman et al., 2014).

In summary, particularly *anger* mediates the effect of the take rate on destruction. It follows that takers are confronted with the emotional hazard of evoking anger-induced destruction of resources when choosing how much to appropriate.[9]

[6] Moral hazard can be seen as a form of emotional hazard to the extent that it is influenced by moral emotions such as shame and guilt. Feelings are more widely regarded as a source of morality (as, *e.g.*, by Smith, Rawls, Nussbaum).

[7] Interestingly, Passarelli & Tabellini (2013) find that the threat of emotion-driven political unrest, more than electoral outcomes, is what makes governments reluctant to engage in budgetary consolidations. Their finding suggests that policymakers are aware of the emotional hazard involved in fiscal retrenchments.

[8] Similar results are obtained with groups (consisting of three members) as players, where the groups have to arrive at a take rate/destruction decision after a within-group video-taped discussion (Bosman et al. 2006). Interestingly, fairness perceptions are hardly discussed and prone to a self-serving bias; moreover, the other group is seen as a single agent. Furthermore, Sutter et al. (2009) investigate the role of gender. They find that gender per se has no effect, but gender *pairing* does. Higher take rates and more destruction (and, thus, lower efficiency) is observed if players know that their counterpart has the same gender, irrespective of the type of gender.

[9] For a tentative model of emotional hazard in the power-to-take game, integrating emotion and cognition, see van Winden (2001).

Takers are also influenced by emotions but in a very different way, where experiencing (no) destruction appears to be key. Furthermore, in this case also fairness beliefs turn out to play a role. The following findings are from a one-time repeated power-to-take game, where the second round was played with a new randomly chosen responder (Reuben & van Winden, 2010). Takers who experience zero destruction in the first round increase their take rate in the second round if and to the extent that they report higher intensities of *regret*. Takers who experience positive destruction in the first round decrease their take rate in the second round if and to the extent that they report higher intensities of *shame and guilt*. This effect is modulated by the gap between their chosen take rate and what they consider to be a fair take rate (which varies quite a bit) as it affects the intensity of these social emotions. The anticipation of shame and guilt may motivate takers to restrain themselves, in order to avoid the hedonic cost of the emotional experience.

Some additional findings concerning the PTT game are the following.

2.1.1. Real effort

Having participants first earn their resources (y) in a seperate task before the PTT game is presented to them does not affect the take rate but leads to less destruction. The driving factor here is a higher expected take rate on the responder's side which seems not anticipated by the takers (Bosman et al., 2005). This change in expectation is attributed to the fact that the "sweat of one's brow" (effort) not only evokes a stronger emotional response to appropriation – due to a stronger ego-involvement – but also a counteracting greater emotional attachment to the earned y. The more pessimistic belief regarding the take rate may then function as a kind of *emotional hedging* (preparing oneself for the worst).[10]

2.1.2. Hot–cold empathy gap

The finding in the previous result that takers apparently do not anticipate the change in destruction under 'effort' illustrates the difficulty of emotional forecasting. This fits the more general finding that people have problems gauging an affective state that they are not in themselves (Loewenstein, 2000).

2.1.3. Physiological responses

Using galvanic skin conductance responses (SCR) – a standard physiological measure of emotional arousal – Ben-Shakhar et al. (2007) find corroborative evidence of the emotional nature of destruction in the PTT game. Destruction appears to be related to an increase in SCR, in contrast with non-destruction which shows a decrease in SCR. Moreover, they find that the SCR is correlated with self-reported anger (including rage and contempt), while the latter is again related to destruction.[11]

2.1.4. Cost of destruction

In the baseline PTT experiment the cost of destruction, $(1-t)dy_R$, decreases with the take rate, while the impact of destruction, tdy_R, increases with the take rate. Similar findings regarding emotions and destruction are obtained, however, if the costs and impact of destruction are kept constant (Galeotti, 2013).

2.1.5. Stake size

In an experiment run in China, Bosman et al. (2014) find that increasing the stake size tenfold to an amount equivalent to several weeks of local average net income does neither significantly affect the take rate nor the destruction rate. And again – as in the other experiments run in various European countries – emotions appear to drive destruction and mediate the impact of the take rate.

2.1.6. Verbal expression

Grosskopf & López-Vargas (2014) investigate whether people are willing to pay for expressing themselves verbally even if it can no longer affect the outcome of their interaction. They use a modified (real effort) PTT game where the responder cannot destroy but instead can send a costly or a costless message to either the taker or a third party to read. They find a positive willingness to pay, and that both purely expressive and reciprocal motives appear to play a role.[12] Furthermore, using mood and emotion measures of subjective well-being, they find that the possibility of verbal expression independently impacts welfare. When expression is allowed the vulnerable side experiences a smaller decrease in subjective well-being.

3. Competition for access and its aftermath

A general finding in PTT game experiments is that the average take rate is about 60% and the average destruction rate around 20%. Consequently, the taker and the responder end up with earnings amounting to, respectively, 1.5 times and 0.3 times the resources they started out with (more precisely: $P_T = 1.48y_T$ and $P_R = 0.32y_R$ with $y_T = y_R \equiv y$). As takers can expect to substantially gain, and responders to substantially lose, a willingness to compete for access to the taker position in a PTT environment is predicted. The experimental conflict study of Lacomba et al. (2014) shows the consequences of having to compete first for the opportunity to appropriate. In their design players first enter a contest, where their relative contest expenditures determine the probability to win the contest. Subsequently, a (modified) PTT game is played, with the winner of the contest as taker. Related to the options for the

[10] Besancenot et al. (2012) find that, given the opportunity, takers will manipulate the expectation of responders in a negative way enabling them to take more.

[11] Self-reported emotions are also found to be correlated with other physiological measures, like heart rate (Bradley & Lang 2000).

[12] Relatedly, Yamagishi et al. (2012) find with a modified ultimatum game (an impunity game), where the responder can reject but the proposer cannot be affected and is not informed about the responder's decision, that responders still reject. Negative emotions are referred to for explanation.

responder, three experimental conditions are investigated: first, Total Conquest, where the responder (the loser of the contest) cannot react at all to the take rate; second, Resistance, where a standard PTT game is played; and, third, Scorched Earth, where the responder decides on destruction before the taker decides what to take. I will call this game the *Contested-PTT game* and focus here on the Total Conquest and Resistance cases. Letting c_i and c_j indicate the contest expenditures by the two players i and j, respectively, note first that if $c_i + c_j = 0$ no conflict (*i.e.*, *peace*) entails and players retain their resources y. If $c_i + c_j > 0$, however, the expected payoffs for i (similar for j) are determined by the following expressions, where the superfix e indicates an expectation:

Total Conquest:

$$P_i^e = \frac{c_i}{c_i + c_j^e}\left[y - c_i + t_i\left(y - c_j^e\right)\right] + \frac{c_j^e}{c_i + c_j^e}\left[\left(1 - t_j^e\right)(y - c_i)\right] \tag{1}$$

Resistance:

$$P_i^e = \frac{c_i}{c_i + c_j^e}\left[y - c_i + t_i\left(1 - d_j^e\right)\left(y - c_j^e\right)\right] + \frac{c_j^e}{c_i + c_j^e}\left[\left(1 - t_j^e\right)(1 - d_i)(y - c_i)\right]. \tag{2}$$

The first term in these expressions shows i's expected payoff if she wins multiplied by her probability of winning, while the second term indicates i's expected payoff if she loses multiplied by her probability of losing. Lacomba et al. investigate a repeated version where the game is either played for several periods against a randomly matched counterpart in each period (*Strangers* setting) or with the same counterpart (*Partners* setting).

Table 1 shows the experimental results for Strangers. The results concern average contest expenditures (c), the take rate (t), the destruction rate (d), and the payoffs for takers (P_T) and responders (P_R). In addition, the table shows the sum of (average) total contest expenditure ($2c$) and what is destroyed [$d(y - c)$] as a percentage of the maximal 'rent' y that can be appropriated, labeled 'rent dissipation'. As a benchmark, the first column in the table gives the standard Nash prediction (assuming selfishness, rationality, and risk neutrality). Several observations are of interest. First, note that rent dissipation is theoretically predicted to be 100%, meaning that the equivalent of the maximum potential gain – equal to y from the counterpart – is competed away in the contest. In fact, the results are even worse, as in Total Conquest 126% and in Resistance 106% is dissipated, leaving for both parties together a total payoff of less than y (in the non-contested PTT game dissipation is only about 20%). This only makes sense if one fears the other's expenditure on conflict. I will return to this below. As a consequence, what seems highly attractive at the outset – to contest the position of the taker – must become a great disappointment, as the taker leaves the appropriation game with only about 50% of the payoff obtained in the non-contested PTT game (for the responder the outcome is even worse). Finally, note that giving the defeated the opportunity to retaliate actually leads to better payoffs for both parties. Because of the correct anticipation that responders will destroy their resources with too greedy takers, it substantially lowers the take rate making investment in the contest less attractive, which leads to less dissipation (106% instead of 126%). This suggests an interesting implication for mechanism design against winner-take-all politics. Checking its robustness and whether it is the ex-ante preferred institution, given the choice, are important topics for future research.

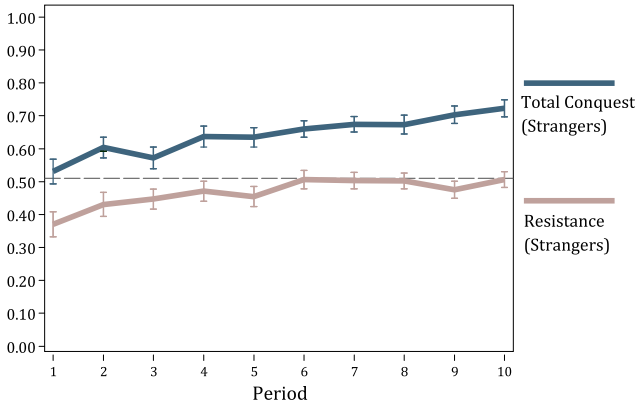
A remarkable further finding is that expenditures in the contest escalate over time, in both settings (Total Conquest and Resistance), while typically a decreasing trend is observed in rent-seeking experiments (Herrmann & Orzen, 2008). Fig. 1 illustrates the escalation of conflict. Expenditures grow about 40% over time, leaving only 30% of total resources in Total Conquest in the end. Analysis shows that this escalation is mainly due to a behavioral ratchet effect: players step up their expenditures c when they observe that their c is lower, while not decreasing them when they are ahead. Existing models cannot explain this phenomenon. Although no direct evidence is available, the finding that one apparently wants to avoid being behind in terms of expenditure and thereby in probability of becoming the taker, joint with the additional finding that the escalation vanishes if the taking is not by choice (agency) but automatic (by computer), suggests that emotions like humiliation play an important role.

4. Collective action and relationships

So far I have focused on the role of emotions in appropriation, where I mainly relied on experimental evidence concerning interaction in dyads. But, what about larger groups? A key issue in that context concerns the incentives for people to participate in collective action, for example, to contribute to a public good. A conventional (textbook) *homo economicus* perspective would enter here the

Table 1
Contested-PTT game outcomes (Strangers; based on Lacomba et al., 2014).

	Prediction	Total conquest	Resistance
Expenditure (c)	$0.5y$	$0.63y$	$0.46y$
Take rate (t)	1	0.98	0.65
Destruction (d)	0	–	0.25
Payoff (P)	$P_T = y\ P_R = 0$	$P_T = 0.73y\ P_R = 0.01y$	$P_T = 0.80y\ P_R = 0.14y$
Rent dissipation $[2c + d(y - c)]/y$ x 100%	100%	126%	106%



Note: Mean fraction of *y* spent on contest across periods. Error bars correspond to ± one standard error. (Based on Lacomba et al. 2014.)

Fig. 1. Mean contest expenditures in Total Conquest and Resistance (Strangers).

free-rider problem, predict a failure, and conclude that there is a rationale for government intervention. In sharp contrast is the experimental evidence of collective action in larger groups (*e.g.*, Isaac et al., 1994, Reuben et al., 2014), the field evidence of voluntary participation in elections and riots with often substantial danger (*e.g.*, Chong, 1991), and the self-governance of common pool resources (*e.g.*, Ostrom, 2010). However, the driving factors of particularly large-scale collective action are still unclear.

One factor that has attracted little attention in political economics concerns the role of *endogenous affective relationships*. That is, relationships that develop while people are interacting and which make them care about each other.[13] In the past well-known scholars from various fields in the social sciences – *e.g.*, Smith, Edgeworth, Homans, Simon, Granovetter, and Coleman – have pointed at its potential importance. Also, evolutionary arguments can be offered why we developed this capacity (see Diamond, 2005, Seyfarth & Cheney, 2012). This section will introduce social bonding mediated by emotions – labeled (*affective*) *social ties* – as facilitating factor of collective action. Experimental evidence is presented, as well as a simple theoretical model that seems promising because of its intuitive character and empirical performance. Subsequent sections will show how this model can explain also some of our earlier findings regarding appropriation and conflict, and further discuss how emotions and relationships can facilitate large-scale collective action.

4.1. Retaliation against appropriation coordinated by social ties

What happens if takers in the PTT game are confronted with multiple responders that either know each other (*friends*) or do not know each other (*strangers*)? With multiple responders, responder *i*'s payoff becomes: $P_{Ri} = (1 - t_i)(1 - d_i)y_{Ri}$, while the payoff of the taker equals: $P_T = y_T + \sum_i t_i(1 - d_i)y_{Ri}$. Reuben & van Winden (2008) investigate the case with two responders ($i = 1,2$), identical resources (y) and a uniform take rate (t). Again, the standard prediction is that takers will take virtually everything ($t = 1$) and that responders will not retaliate with destruction ($d_i = 0$). However, the results obtained for one responder make this very unlikely. Inequality aversion would predict a higher take rate (as taking is more profitable now) and less destruction (from fear of disadvantageous inequality with respect to the other responder). Reciprocity models are silent here because a responder is not directly affected by the other responder's action (no intentionality).

The main experimental findings are as follows. First, compared to the two-player game, the mean take rate (60%) is similar, but destruction is different with friends destroying more (30%) and strangers less (13%); friends also destroy much more frequently than strangers, see Fig. 2. (Incidentally, note that also in this case takers apparently do not anticipate the change in responder behavior due to a different setting.) The difference in destruction appears to be due to high destruction rates among friends when take rates are high. Although anger related emotions – triggered by frustrated expectations regarding the take rate – appear to play an important role again in the decision to destroy (Fig. 2), somewhat surprisingly, friends and strangers are equally angry at high take rates. What explains the difference in destruction, however, is that friends turn out to be better at predicting each other's behavior and at coordinating due to facilitating emotional responses towards the other responder. Whereas, compared to friends, strangers experience stronger negative emotions if they happen to destroy more than the other responder, friends experience stronger positive emotions if they happen to coordinate on the same destruction rate. Compared to strangers, friends get a positive emotional boost if they succeed in coordinating, but feel bad if they destroy less than the other. Assuming that friends care about each other's utility is seen as the most promising way to explain why friends destroy more.[14] I will return to this after presenting and discussing next a social ties model that allows such caring relationships to develop endogenously.

[13] Our interest has affinity to a key issue in an emerging 'relationship science' in psychology (Reis et al., 2000) concerning 'close relationships', that is, affect-laden relationships where people care about each other, have a concern for each other's welfare, and respond to each other's needs, without necessarily expecting any benefit in terms of goods or services. In the sequel we allow such relationships to be more or less 'close'.

[14] Although inequality aversion may predict greater destruction with better coordination (and, thus, less uncertainty about the other's behavior), it cannot explain why this particularly happens at high take rates when unilateral destruction leads to only a small payoff difference between responders.

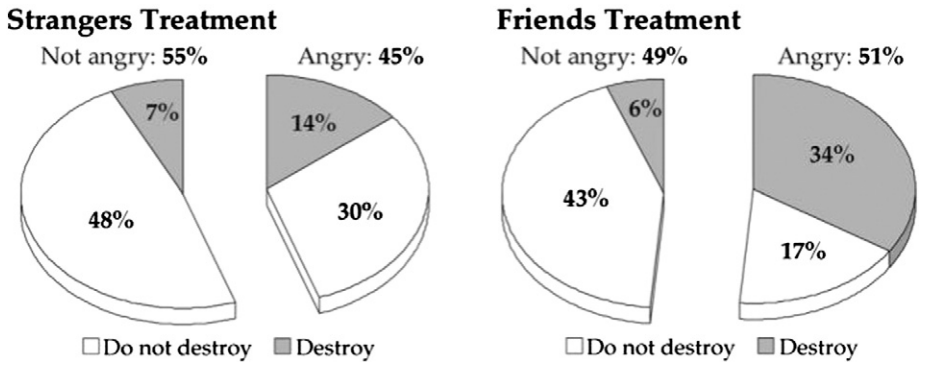


Fig. 2. Destruction by angry and non-angry responders.
(Reuben & van Winden, 2008)

4.2. Affective social ties: the AST model

Existing social preferences models incorporating inequality aversion (Fehr & Schmidt, 1999, Bolton & Ockenfels, 2000) or reciprocity (Rabin, 1993) do account for the fact that people may care about the utility of others. However, they show some shortcomings from a relationship perspective. Even though reciprocity models refer to affect, the care about others is represented by a static weight in an interdependent utility function. They do not explain where this weight comes from nor the dynamics of relationships, like the formation of good (caring) or bad (hateful) relationships. An exception is the affective social ties model of van Dijk & van Winden (1992, 1997). This theoretical model – in the sequel referred to as the *AST model* – concerns voluntary contributions to a local public good. Focusing on a two-player public good game, ties between the players are assumed to be generated through emotional impulses, which are determined by the difference between the other's contribution and a reference contribution. A change in the tie is a function of the existing tie and the current impulse (a formalization follows). The tie is incorporated in an interdependent utility function through a weight attached to the utility of the other player. Importantly, the impact of impulses on the tie is assumed to be uncontrollable (autonomic). The model may be seen as a simple dual-process model, with the tie-mechanism as the uncontrolled emotional part and the choice-mechanism as the controlled cognitive part.[15] Given the tie, players are assumed to maximize their (interdependent) utility in the standard way. A differential equations analysis shows the dynamics and potential equilibria of the model. Positive as well as negative relationships can develop, with convergence to very different equilibria. For example, in addition to the standard free-riding outcome, a Pareto-efficient equilibrium (with weights equal to $+1$) but also a bad equilibrium (with weights equal to -1) may result. In the latter case the outcome can even be worse than the free-riding outcome because then the players derive utility from hurting their counterpart.

Several experimental studies have investigated the upshot of this model that having interacted with an individual should (generally) affect one's behavior towards this specific individual in a subsequent non-strategic context (excluding reputation incentives). To that purpose, these studies have participants make a number of choices between two alternatives, where each alternative involves an amount of money to Self and an amount to an anonymous randomly matched Other (Liebrand, 1984). The summed choices provide a measure of one's *social value orientation* (SVO), that is, how willing one is to help or hurt a generalized Other. By applying this test again after interaction in a (public good) game, with the Other now being the interaction partner in the game, one can investigate whether – in addition to the SVO – the quality of the interaction matters for the individual's choices in this post-test, and, thereby, whether a tie has been established. And, this turns out to be the case (van Dijk et al., 2002, Sonnemans et al., 2006). Moreover, emotions are found to mediate the effect of the other's behavior (contributions) on this tie measure (Brandts et al., 2009).[16]

Recently, the AST model has been implemented and extended for estimation and testing on various datasets (Pelloux et al., 2014, Loerakker et al., 2014). Furthermore, the estimated model has been used for a model-based neuroeconomic (fMRI) application to see whether a neural substrate for the tie-mechanism exists (Bault et al., 2014). For clarity, I will present the applied model first and then some of the main findings of these studies.

Individuals are supposed to have the following intertemporal utility function, assuming one-period foreward-looking behavior[17]:

$$V_{it} = U_{it} + U_{it+1} \text{ with : } U_{it} = P_{it} + \sum_j \alpha_{ijt}.P_{jt} \tag{3}$$

[15] Evidence is accumulating that evolutionary old subcortical (emotional) processes in the brain are implicated in the establishment of social bonds among humans and non-humans, among kin (*e.g.*, mother–child relationships) as well as non-kin (*e.g.*, romantic relationships and, more generally, friendships); see Panksepp & Panksepp (2000), Seyfarth & Cheney (2012).

[16] For other supportive experimental evidence, see Malmendier & Schmidt (2012), and Liang & Meng (2013).

[17] Experimental evidence suggests that people are quite myopic (*e.g.*, Keser & van Winden 2000, Bone et al. 2009).

where V stands for intertemporal utility and U for instant (period) utility, P stands for payoff, and α_{ijt} indicates i's tie with counterpart j at time t. The *social-tie mechanism* is specified as:

$$\alpha_{ijt} = \delta_{1i} \cdot \alpha_{ijt-1} + \delta_{2i} . I_{ijt-1} \tag{4}$$

where δ_{1i} is the *tie persistence* parameter (related to memory), δ_{2i} the *tie proneness* parameter (related to emotionality), while I denotes the *impulse* determined by the difference between counterpart j's behavior (contribution g_{jt}) and a reference behavior (contribution g_{ijt}^{ref}):

$$I_{ijt} = g_{jt} - g_{ijt}^{ref} \tag{5}$$

The model allows for strategic behavior, exploiting reciprocity (conditional cooperation), through the following adaptive expectation mechanism:

$$g^{e}_{jt+1} = \gamma_i . g_{it} + (1-\gamma_i) . g^{e}_{jt}. \tag{6}$$

Making the standard assumption of payoffs being linearly additive in contributions and allowing for (logit type) errors, leads to the following probabilistic choice expression:

$$\pi_{ikt} = \frac{\exp(\theta_i \cdot V_{ikt})}{\sum_{k=0}^{k=K} \exp(\theta_i \cdot V_{ikt})} \tag{7}$$

with π_{ikt} denoting the probability that i chooses contribution level k at time t, and θ a choice intensity parameter (the smaller ϑ the more random the choice becomes). It turns out that, for given g^{e}_{jt}, π_{ikt} is a function of g_{it} only.

4.3. Some main findings

First of all, the AST model is a very flexible model. For specific parameter values, it generates behaviors that are most prominent in the literature, such as selfishness, altruism, spite/envy, behavior resembling inequality aversion, and tit-for-tat or direct reciprocity (van Winden 2012). Discipline is provided by the fact that the model can be tested and its parameters estimated.

Estimation of the model on various datasets shows that social ties are formed (group-level estimates: $\delta_1 > 0$ and $\delta_2 > 0$). People do not only care about what happens to interaction partners but they do so in an interaction history dependent way (in contrast with fixed social preferences models). On the other hand, there is little evidence of forward-looking behavior, at the group level ($\gamma = 0$). At the individual level only a minority shows such behavior (in line with Bone et al., 2009). The estimated model tracks the behavioral dynamics in public good game experiments very well and outperforms other models (within-sample and across samples), including fixed social preferences models and the learning model of Roth & Erev (1995).

In *Fragile Public Good* settings, which offer individuals the option to take from and destroy the public good joint with the standard option to contribute, substantial destruction and negative ties ($\alpha < 0$) are observed (see also Hoyer et al., 2014). Interestingly, the group-level parameter estimates that are obtained can be shown to support stable cooperative relationships (including those consistent with Pareto efficiency), but not stable destructive relationships (negative ties).

Model-based fMRI analysis – linking the individually estimated tie (parameters) to brain activity data – shows the existence of a neural substrate for the tie-mechanism. The *pSTS* (posterior Superior Temporal Sulcus) appears to function as key area for the encoding and updating of the tie, while areas associated with emotions (such as the Insula) are involved in the encoding of the impulse.[18]

The next section shows how the AST model can help explain some of the previously discussed findings regarding appropriation and conflict. Its usefulness to explain large-scale collective action will be addressed in the section thereafter.

5. Back to appropriation and conflict

The experimental evidence presented above suggests that affect plays an important role in retaliation against appropriation (Section 2) and the escalation of conflict (Section 3). An interesting question is to what extent the AST model can help explain some of these experimental findings. More particularly, can these results be explained using the parameter estimates of the tie-mechanism (δ_1 and δ_2), even though these estimates are based on public good game experimental data. This section not only provides a positive answer to this question, it will also shed an interesting light on some further findings obtained in the Contested-PTT game experiments related to the de-escalation of conflict.

[18] The pSTS plays a prominent role also in autism, for example. For further evidence of a tie — pSTS relation and the involvement of affect, see Fahrenfort et al. (2012).

5.1. Explaining destruction in the PTT game and the related ultimatum game

In the baseline PTT game experiment participants appear to become indifferent between destroying and not destroying (50% probability of destruction) at a take rate of around 0.75 (see Bosman et al., 2005). Can we explain this using the estimated AST model? According to this model, the relevant interdependent utility function reads:

$$U_R = P_R + \alpha_{RT} \cdot P_T. \tag{8}$$

Denoting the first stage of the game by the subscript "0" and taking the difference between t^{ref} and t as the relevant impulse, the tie-mechanism can be written as:

$$\alpha_{RT} = \delta_1 \cdot \alpha_{RT0} + \delta_2 \cdot I_{RT0} = \delta_1 \cdot \alpha_{RT0} + \delta_2 \cdot (t^{ref} - t). \tag{9}$$

Assuming that $\alpha_{RT0} = 0$, and using $\delta_2 = 1$ based on the estimated AST model (rescaled value, see Loerakker et al., 2014), this equation reduces to: $\alpha_{RT} = (t^{ref} - t)$.[19] Using as reference take rate: $t^{ref} = 0.5$ (the mean expected take rate in Bosman et al., 2005), it then follows that indifference towards destruction is predicted if: $\alpha_{RT} = -(1-t)/t$, with $\alpha_{RT} = 0.5 - t$, which happens at $t = 0.78$.,[20] [21] As this value is close to the take rate of 0.75 reported in Bosman et al., it is concluded that the social ties model helps explain the observed behavior.

The PTT game is related to the *Ultimatum Game*.[22] It is therefore of some interest to see whether the AST model can be informative for this game as well. Applying the AST model it is straightforward to show that a similar prediction holds, if one uses the responder's expected share of 50% as reference (Chang & Sanfey, 2009). At offers implying a share of 0.78 for the proposer, leaving 0.22 of the pie to the responder, the latter becomes indifferent between accepting and rejecting. This is suggestive of the common finding for ultimatum games that offers of around 20% for the responder have about 50% chance of being rejected (Sanfey et al., 2003).

The AST model is further successful in predicting the observed larger destruction by friends in the *PTT game with two responders* (R_1 and R_2). The interdependent utility function for a responder is accordingly extended to:

$$U_{Ri} = P_{Ri} + \alpha_{RiT} \cdot P_T + \alpha_{RiRj} \cdot (P_{Rj} + \alpha_{Ri} \cdot P_T) \text{ with : } i, j = 1, 2; i \neq j \tag{10}$$

where it is assumed that i takes α_{RiT} as measure of α_{RjT}. Note from this function that it is not the fact that the other responder gets hurt by the take rate that affects a friend-responder's behavior, because P_{Rj} cannot be influenced. It is only by taking into account the other responder's tie with the taker, via $\alpha_{RiRj} \cdot \alpha_{RiT} \cdot P_T$, that behavior is affected, as P_T can be influenced. The effect becomes clear by looking at the marginal utility of destruction, which equals: $-(1 + \alpha_{RiRj}) \cdot \alpha_{RiT} \cdot ty - (1-t)y$. The first term of this expression shows that when the tie with the taker becomes negative ($\alpha_{RiT} < 0$) the marginal utility of destruction increases in the tie (α_{RiRj}) between the responders. Friends are thus predicted to destroy more and more often, in line with the experimental findings. Friends internalize in their decision the additional utility that the other responder gets from hurting the taker, which is neglected by strangers-responders. Full internalization only happens, though, if $\alpha_{RiRj} = 1$, in which case the responder maximizes the sum of both responders' utilities, as required by efficient retaliation (collective action). What is not explained with the AST model yet is why friends-responders did not feel more angry at high take rates and why they particularly increased destruction at these higher rates. The finding that they did not feel more angry would suggest that the impulse is not influenced by the context of having a friend as fellow-responder. One could imagine, however, that the impulse increases through empathy to: $I_{RiT} = (1 + \alpha_{RiRj}) \cdot (t^{ref} - t)$.[23] Unfortunately, the data do not permit to control for the level of friendship (nor the level of empathy) among the participants, which may confound the results. The finding that higher destruction particularly manifested itself at higher take rates could further be related to an attentional effect, as the concern for one's friend may be more strongly activated at higher rates.

The AST model also helps explain the finding in three-player ultimatum game experiments, involving an inactive *dummy player*, that responders focus on their own payoff and the proposer's payoff but mostly ignore the payoff of the dummy player (Güth & van Damme, 1998, Kagel & Wolfe, 2001, Bereby-Meyer & Niederle, 2005). The reason is that no tie with a randomly matched inactive player will exist or develop, whereas stingy proposals generate negative ties with proposers. It is only to the extent that a positive SVO exists that a more general care for others, including a dummy player, is to be expected according to this model.

5.2. Accounting for escalation of conflict and peace in the contested-PTT game

Fig. 1 illustrated the escalation of conflict observed in the Contested-PTT game experiment when players are randomly re-matched each period (Strangers condition). The escalation was related to the emotion of humiliation. Shortlived emotional reactions can play a

[19] Alternatively, if available, the Ring-test measure of the SVO could be used here as an approximation of α_{RT0} (see below).

[20] Because of the assumed linearity, the AST model predicts here that everything will be destroyed if the take rate becomes larger than 0.78, unless errors are allowed for as in Eq. (7).

[21] van Dijk et al. (2002) find a mean angle of 3° with their Ring-test measuring the SVO, which corresponds to $\alpha_{RT0} = 0.05$. Using this value the predicted take rate for indifference becomes 0.80.

[22] The PTT game differs from the UG in three respects: (1) each player has its own endowment (resources), (2) only the endowment of the responder is at stake, and (3) the responder can destroy any part of this endowment (instead of zero or everything).

[23] More generally, emotional intensity factors could be accounted for by adding a parameter to the impulse which captures such factors (like α_{RiRj} here). Incidentally, in that way one could also account for the finding that responders having earned their resources first (real effort condition) show a greater emotional response to appropriation in the PTT game.

role because, first, the target of retaliation need not necessarily be the transgressor but can be someone who is simply at hand, and, second, there may be a ratchet effect because negative experiences – like losing the contest and being confronted with appropriation – may have a stronger impact than positive experiences – winning the contest and being able to appropriate. Here, however, I would like to suggest that it may also be due to a spillover relationship effect via an adaptive social value orientation (SVO). Although an SVO is typically seen as a personality trait, I conjecture that it is continuously adjusting to an individual's social ties over time.[24] In that case even one-period experiences with re-matched counterparts, like in a Strangers setting, can have a longer-run impact. Under the stronger impact of relatively higher contest expenditures by the counterpart, as observed in the experiment, it can then drift in a negative direction and offer an explanation for escalation (as SVO is represented by α_0 in a period). Suggestive experimental evidence of such an adaptive SVO exists (Brandts et al., 2009, Murphy & Ackermann, 2013; see also Fowler & Christiakis, 2010).

A more direct challenge for the AST model concerns a striking additional finding with the Contested-PTT game if players are not re-matched each period but stay together in fixed groups for the whole experiment (Partners condition). Fig. 3 shows the development of contest expenditures for Total Conquest in that case. The overall expenditure level turns out to be substantially (about 40%) lower than in the Strangers case; see the curve labeled TC-Partners. This difference is mostly due to the fact that a sizeble minority of groups (about 34%) cuts down their expenditures to 0 after some initial conflict (*Peaceful TC-Partners*). Note that with zero expenditures no appropriation can take place (peace outcome), and that only one unit of expenditure suffices in that case to win the contest and appropriate, which makes peace extremely vulnerable. Interestingly, the remaining groups (*Aggressive TC-Partners*) pretty much behave like the Strangers groups (see Fig. 1). Whereas, in Partners, peace occurs in 26% of the periods, it almost never happens in Strangers (only 0.3% of the time). The typical pattern for the peaceful groups is to engage in some conflict first, followed by one player choosing at some point zero contest expenditures, and then the winner of the contest choosing a low take rate. From a tie formation point of view the latter two actions are likely to generate positive impulses. Particularly in combination with a more positive SVO – suggested by the relatively lower expenditures at the start – sufficiently large ties can then develop to trigger and help maintain the peace outcome. The visible end-effect suggests some strategic forward-looking behavior. For the condition Resistance similar reasoning holds, except that low contest expenditure by the winner takes the place of a low take rate, because the latter can be interpreted as motivated by a fear of destruction. Moreover, a regression analysis shows that also destruction is not an effective signal of a peace intention.

All in all, this section has shown that the AST model can be quite helpful to understand the dynamics of appropriation and conflict. However, the evidence was mainly based on (very) small groups. This raises the issue whether the model can be helpful also in the investigation of larger groups and large(r)-scale collective action, a topic that I turn to next.

6. Large(r)-scale collective action

There are various affective mechanisms that can facilitate and moderate larger-scale collective action without any outside intervention.[25]

6.1. Spillover effects and indirect bonding

As discussed in the previous section, evidence exists suggesting that social ties impact people's social value orientation (SVO) which helps collective action in other environments (if the SVO is positive). Affective bonds may not only predispose people to care about specific others in the environment where the tie has been established but also in other environments ("once a friend forever a friend"). In addition, they are likely to generate indirect ties, like: "the friend (enemy) of my friend is my friend (enemy)", as we have in fact already encountered when discussing the PTT game with two responders (for further evidence, see Liang & Meng, 2013). That is, if $U_i = P_i + \alpha_{ij} \cdot U_j$ and i perceives the utility of j as $U_j = P_j + \alpha_{jh} \cdot P_h$ then i is likely to start caring about h as well: $U_i = P_i + \alpha_{ij} \cdot P_j + \alpha_{ij} \cdot \alpha_{jh} \cdot P_h$.[26]

6.2. Engagement in multiple AST networks

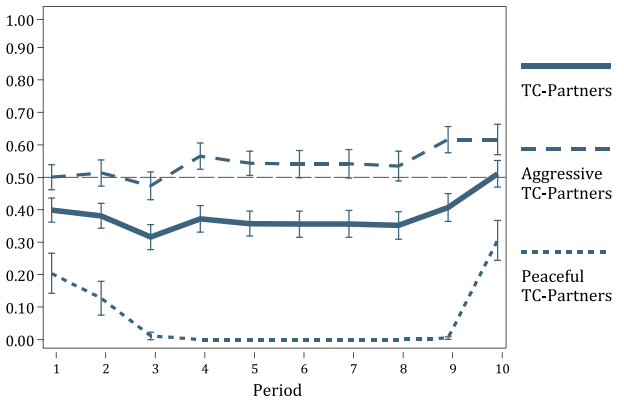
Suppose that an individual i maintains social ties in different settings, for example, with neighbors, people at work, and people at the local sports club. Let the set of people in the first setting be denoted by A (with ties α_{ia}, $a \epsilon A$), in the second setting by B (with ties β_{ib}, $b \epsilon B$), and in the third setting by C (with ties γ_{ic}, $c \epsilon C$). Furthermore, let the attentional weights attached to these sets be denoted by α_i, β_i, and γ_i, respectively. Then, if i is approached to contribute to the voluntary provision of a local public good involving all, it seems likely that i's contribution will be determined by the following interdependent utility function (assuming that the sets do not overlap and neglecting any indirect bonding, for simplicity):

$$U_i = P_i + \alpha_i \sum_{a \epsilon A} \alpha_{ia} . P_a + \beta_i \sum_{b \epsilon B} \beta_{ib} . P_b + \gamma_i \sum_{c \epsilon C} \gamma_{ic} . P_c \quad (11)$$

[24] The particular measure that one uses to gauge a social value orientation may further constrain the contexts (class of games) for which it is predictive.

[25] Our focus here is on the role of affect. While beliefs (like trust) are likely to be influenced by emotional experiences – *e.g.*, why would one mistrust a friend? – they may also be related to more cognitive judgments (*cf.* Levine 1998). These two mechanism may trigger very different processes in terms of information treatment (Rakow & Newell 2010).

[26] Such indirect bonding requires that people know each other's relationships. According to evolutionary scholars like Jared Diamond this is possible up to a group size of a few hundred, with important consequences for conflict management. Once this threshold has been crossed: "*increasing numbers of dyads become pairs of unrelated strangers. When strangers fight, few people present will be friends or relatives of both combatants, with self-interest in stopping the fight. Instead, many onlookers will be friends or relatives of only one combatant and will side with that person, escalating the two-person fight into a general brawl.*" (Diamond 2005, p286.)



Note: Mean fraction of y spent on contest across periods. Error bars correspond to ± one standard error. (Lacomba et al., 2014)

Fig. 3. Mean contest expenditures in Total Conquest (Partners). *Note*: Mean fraction of y spent on contest across periods. Error bars correspond to ± one standard error. (Lacomba et al., 2014)

where in this case $\alpha_i = \beta_i = \gamma_i$ may hold. Consequently, larger-scale collective action can occur based on social ties developed in smaller settings. The potential reach of such nested AST networks is as yet unclear.[27]

6.3. Social norms and indirect reciprocity

Social norms – such as that one should contribute to a public good – and related moral emotions, like shame if one violates the norm oneself and outrage in case of violation by someone else, can be extremely helpful for larger collective action. In the instilment of such norms by educators, basic emotions triggered by reward and punishment play a key role, because they gradually make them an intrinsic concern to people (Adolphs, 2003). Their maintenance depends on the sanctioning of violations. AST networks can be helpful in this respect because a violation negatively affects one's utility not only directly but also indirectly through the affective bonds with people that can be expected to maintain the same norm.

6.4. Emotional leadership and bridging

Several recent experimental studies have investigated and found support for the importance of leadership in solving free-riding problems in voluntary contribution settings (*e.g.*, Güth et al., 2007, Houser et al., 2014). Reciprocity between leader and follower appears to play a role (Gächter et al., 2012, Glöckner et al., 2011). However, mixed evidence exists concerning the effect of group size (Figuières et al., 2012, Komai & Grossman, 2009). The role of emotional (charismatic) leadership in this respect has been speculated on in the past and investigated more rigorously in various recent studies, but its precise role is still unclear (Yukl, 1999; Choi & Mai-Dalton, 1998; Humphrey, 2002). A leader's emotional displays are found to be more important than the content of messages, at least under some circumstances. And the competent management of group members' emotions (frustration, optimism), based on empathy and emotional intelligence, appears to have a large impact on a group's performance (Humphrey 2002, in a special issue of *The Leadership Quarterly*). Furthermore, the relevant literature suggests that charismatic leadership involves the followers' trust in the leader, and emotional attachment to and identification with such a leader. In this respect, an important role is assigned to unambiguous self-sacrificial behaviors by the leader, which are seen as a starting mechanism triggering followers' enactment of similar behaviors through reciprocity (Choi & Mai-Dalton, 1998; see also Glöckner et al., 2011, Houser et al., 2014).[28] In the language of the AST model, emotional (charismatic) leadership appears to be related to strong impulses emanating from the leader (to be), which support the development and maintenance of strong affective ties and, consequently, trust and identification. Such impulses are likely to be stronger the more powerful – and thereby potentially beneficial – and likeable the leader comes across. A strong tie with a leader goes together with a relatively large weight being attached to the leader's utility, and the interests that are involved, in the follower's extended utility function. Also, by emphasizing the importance of the relevant group's interests (the relevant social identity), a leader can influence the attentional weights in that function (see Eq. (11)), which can explain the observed impact of identification (De Cremer & van Knippenberg, 2005). While the behavior of the leader may still have a standard rational explanation – for instance, to get group members turn out and vote – the behavior of the followers is more difficult to explain (Schram & van Winden, 1991). Their responses become rational again if one allows for a preference transformation through the development of affective social ties, as in the AST model.

[27] Simulations with the van Dijk & van Winden model suggest that substantial effects may still occur with groups involving around hundred people (van Dijk 1997). Evolutionary biologists have suggested a number of around 150 as a maximum for the number of stable social relationships that people can maintain ("Dunbar's number"; see Dunbar, 1998).

[28] In this context, recall the importance of unambiguous signals in the production of peace discussed in subsection 5.2.

Experimental evidence further suggest that inter-group competition will increase cooperation within a group to defeat the other group (Halevy et al., 2008, Abbink et al., 2010). According to De Dreu et al. (2010) 'parochial altruism' plays an important role: "*Humans (…) self-sacrifice to contribute to in-group welfare and to aggress against competing out-groups.*" The AST model would predict the former in case of positive social ties among group members, and the latter (aggression) in case of negative ties between in-group and out-group members. The role of leaders is extremely interesting in this respect but unclear at this stage. A key question is: under what circumstances are leaders willing and able to promote collectively efficient outcomes instead of their own (group's) special interests only, neglecting externalities for others? An interesting perspective in this regard is offered by the work of Lijphart (1975) on pacification politics. In his view, even in strongly segmented societies peaceful and productive coexistence can be arranged through overarching contacts at the top between the leaders of the different groups. The AST model indeed suggests that affective ties generated through such bridging contacts may have such effects, because leaders will then take into account each other's interests and, if competent emotional (charismatic) leaders, they may then be able to contain collectively inefficient behavior within their separate groups. Thus, the potential influence of leaders can be very negative, but also very positive.

6.5. Emotional intensity factors

It is important to note that emotions, such as those underlying the impulses in the AST model, can have different intensities. Impulses can be stronger or weaker dependent on their vividness, realness, the proximity of the agent, and the stake involved. When discussing the PTT game with friends responders, I referred already to the relevance of the size of the stake. The fact that unambiguous information about the self-sacrifice of a leader is important demonstrates the relevance of vividness. Technology can be important as well in this respect. For example, (social) media can nowadays make impulses appear very close, real, and vivid.[29] Also important is to what extent people are sensitive to emotional displays of others. *Empathy*, the capacity to share the emotions of others (without becoming one with the other), is obviously a key trait in this respect. Another factor often referred to is *emotional contagion*: the tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person's and, consequently, to converge emotionally (Hatfield et al., 1993). This mechanism has been proposed for explaining 'ripple effects' – such as panics – in social groups (Barsade, 2002).[30] Finally, the impact of *social identification* can be mentioned here, which involves greater attention for the interests of the group identified with (Akerlof & Kranton, 2000, Shayo, 2009).

Future research should make clearer to what extent the above mechanisms facilitate and moderate large(r)-scale collective action.

7. Concluding remarks

This paper argues that emotions and (affective) relationships play a significant role in key issues of political economy related to appropriation, competition for access to appropriation, and collective action. Evidence exists for other relevant topics as well, like lobbying and favoritism (Schoenherr, 2014) and crime (van Winden & Ash, 2012). By way of conclusion I shortly discuss four important implications.

7.1. Emotional hazard

Emotions entail potential welfare effects. This may be related, for instance, to a risk of destruction of resources in the retaliation to taxation or in the competition for political access. In this context, it is noted that lump-sum taxation need no longer be efficient, and also that moral hazard in insurance may be related to insufficient emotionality, namely too little anticipation of guilt or shame feelings.

7.2. Endogenous social preferences and group formation

Through the formation of affective ties social preferences become endogenous and, thereby, the formation of affective networks. These networks will manifest themselves as in-groups (reference groups) with an appearance of parochial altruism. In the absence of negative ties this need not necessarily lead to offensive aggression towards others (out-groups).

7.3. Consequences for analysis and modeling

The endogeneity of social preferences and group formation has to be taken into account in (political) economic models. The AST model shows that this is possible and could dramatically change predictions. Furthermore, the dynamics of social interaction should receive greater attention in political economic analyses.

7.4. Governance

Emotions and affective relationships are a missing link in the theory of public as well as private governance. Allowing for these human responses will affect the way we think about government intervention and political communication. Regarding the former,

[29] Dramatic examples in this respect are the 9/11 (2001) assaults on the World Trade Center in New York and the recent videos posted on social media of beheadings by ISIL (Islamic State of Iraq and the Levant).

[30] So-called mirror neurons seem at work here (Adolphs, 2003).

for instance, the standard rationale for government intervention in case of (local) public goods – the free-riding problem – becomes weaker (stronger) if positive (negative) ties exist among people. *Ipso facto*, the nature of migration policies will be affected as well, given their potential impact on the social fabric. Finally, I mention some potential implications for choice architecture (mechanism design). Allowing for a social ties mechanism, for example, may affect the way we think about: (i) political units, like their optimal size,[31] infrastructure, and architecture (as, for one thing, ties rely on interaction); (ii) political participation, as direct democracy, for instance, may be better fit for maintaining positive social ties (that may decay otherwise, with a concommittant crowding out of intrinsic motivation); and (iii) education, because the development of emotional management skills, self-control, and norms needs attention and educational input at a young age.

The affective social ties mechanism is simple and flexible. It can lead to constructive as well as destructive relationships. It seems honed in evolution for decision making in an environment characterized by deep uncertainty and great potential danger. Its fundamental nature makes it relevant to all social decision making, and opens up an interesting agenda for future research.

Acknowledgements

This paper is based on my invited presentation at the Workshop Behavioral Political Economy of the CESifo Venice Summer Institute 2014. Comments by participants, in particular Jan Schnellenbach, and by two anonymous referees are gratefully acknowledged.

References

Abbink, K., Brandts, J., Herrmann, B., Orzen, H., 2010. Intergroup conflict and intra-group punishment in an experimental contest game. Am. Econ. Rev. 100, 420–447.
Adolphs, R., 2003. Cognitive neuroscience of human social behaviour. Nat. Rev. Neurosci. 4, 165–178.
Akerlof, G., Kranton, R., 2000. Economics and identity. Q. J. Econ. 65, 715–753.
Barsade, S., 2002. The ripple effect: emotional contagion and its influence on group behaviour. Adm. Sci. Q. 47, 644–675.
Bault, N., Pelloux, B., Fahrenfort, J., Ridderinkhof, K., van Winden, F., 2014. Neural dynamics of social tie formation in economic decision-making. Soc. Cogn. Affect. Neurosci. http://dx.doi.org/10.1093/scan/nsu138.
Ben-Shakhar, G., Bornstein, G., Bosman, R., van Winden, F., 2007. Reciprocity and emotions in bargaining, using physiological and self-report measures. J. Econ. Psychol. 28, 314–323.
Bereby-Meyer, Y., Niederle, M., 2005. Fairness in bargaining. J. Econ. Behav. Organ. 56, 173–186.
Besancenot, D., Dubart, D., Vranceanu, R., 2012. The value of lies in a power-to-take game with imperfect information. ESSEC Working paper 1205. ESSEC Business School, Cergy.
Bolton, G., Ockenfels, A., 2000. ERC: a theory of equity, reciprocity, and competition. Am. Econ. Rev. 90, 166–193.
Bone, J., Hey, J., Suckling, J., 2009. Do people plan? Exp. Econ. 12, 12–25.
Bosman, R., van Winden, F., 2002. Emotional hazard in a power-to-take experiment. Econ. J. 112, 147–169.
Bosman, R., Hennig-Schmidt, H., van Winden, F., 2006. Exploring group decision making in a power-to- take experiment. Exp. Econ. 9, 35–51.
Bosman, R., Hennig-Schmidt, H., van Winden, F., Yang, C., 2014. Emotion at stake: an experimental investigation of monetary incentives in a power-to-take game in China. Mimeo, Bonn University, Bonn.
Bosman, R., Sutter, M., van Winden, F., 2005. The impact of real effort and emotions in the power-to-take game. J. Econ. Psychol. 26, 407–429.
Bossaerts, P., 2009. What decision neuroscience teaches us about financial decision-making. Annu. Rev. Financ. Econ. 1, 383–404.
Bradley, M., Lang, P., 2000. Measuring emotion: behavior, feeling, and physiology. In: Lane, R., Nadel, L., Ahern, G. (Eds.), Cognitive Neuroscience of Emotion. Oxford University Press, Oxford, pp. 25–49.
Brandts, J., Riedl, A., van Winden, F., 2009. Competitive rivalry, social disposition, and subjective well-being: an experiment. J. Public Econ. 93, 1158–1167.
Camerer, C., 2003. Behavioral Game Theory. Princeton University Press, Princeton NJ.
Cardella, E., Chiu, R., 2012. Stackelberg in the lab: the effect of group decision making and "Cooling-off" periods. J. Econ. Psychol. 33, 1070–1083.
Chang, L., Sanfey, A., 2009. Unforgettable ultimatums? Expectation violations promote enhanced social memory following economic exchange. Front. Behav. Neurosci. 3, 1–12.
Choi, Y., Mai-Dalton, R., 1998. On the leadership function of self-sacrifice. Leadersh. Q. 9, 475–501.
Chong, D., 1991. Collective Action and the Civil Rights Movement. University of Chicago Press, Chicago.
Coricelli, G., Joffily, M., Montmarquette, C., Villeval, M., 2010. Cheating, emotions, and rationality: an experiment on tax evasion. Exp. Econ. 13, 226–247.
De Cremer, D., van Knippenberg, D., 2005. Cooperation as a function of leader self-sacrifice, trust, and identification. Leadersh. Org. Dev. J. 26, 355–369.
De Dreu, C., Greer, L., Handgraaf, M., Shalvi, S., van Kleef, G., Baas, M., ten Velden, F., van Dijk, E., Feith, S., 2010. The neuropeptide oxytocin regulates parochial altruism in intergroup conflict among humans. Science 328, 1408–1411.
Diamond, J., 2005. Guns, Germs, and Steel. Norton, New York.
van Dijk, F., 1997. Social Ties and Economic Performance. Kluwer, Boston.
van Dijk, F., Sonnemans, J., van Winden, F., 2002. Social ties in a public good experiment. J. Public Econ. 85, 275–299.
van Dijk, F., van Winden, F., 1997. Dynamics of social ties and local public good provision. J. Public Econ. 64, 323–341.
Dunbar, R., 1998. The social brain hypothesis. Evol. Anthropol. 6, 178–190.
Erard, B., Feinstein, J., 1994. The role of moral sentiments and audit perceptions in tax compliance. Pub. Financ. 49 (Supplement), 70–89.
Fahrenfort, J., van Winden, F., Pelloux, B., Stallen, M., Ridderinkhof, K., 2012. Neural correlates of dynamically evolving interpersonal ties predict prosocial behavior. Front. Neurosci. 6, 1–14.
Fehr, E., Schmidt, K., 1999. A theory of fairness, competition, and cooperation. Q. J. Econ. 114, 817–868.
Figuières, C., Masclet, D., Willinger, M., 2012. Vanishing leadership and declining reciprocity in a sequential contribution experiment. Econ. Inq. 50, 567–584.
Fowler, J., Christiakis, N., 2010. Cooperative behavior cascades in human social networks. PNAS 107, 5334–5338.
Gächter, S., Nosenzo, D., Renner, E., Sefton, M., 2012. Who makes a good leader? Social preferences and leading-by-example. Econ. Inq. 50, 953–967.
Galeotti, F., 2013. On the robustness of emotions and behavior in a power-to-take game experiment. CBESS Discussion paper. CBESS - University of East Anglia, Norwich (13-07).
Glaeser, E., 2005. The political economy of hatred. Q. J. Econ. 120, 45–86.
Glöckner, A., Irlenbusch, B., Kube, S., Nicklisch, Normann, H., 2011. Leading with(out) sacrifice? A public-goods experiment with a super-additive player. Econ. Inq. 49, 591–597.
Grosskopf, B., López-Vargas, K., 2014. On the demand for expressing emotions. Mimeo, University of Exeter, Exeter.

[31] According to the "optimal fragmentation principle" of Diamond (2005) smaller political units can benefit from affective ties effects and between-unit competition leading to innovation. If they get too small, however, there will be little new information generated within the unit for innovation, few economies of scale, and many externalities.

Güth, W., van Damme, E., 1998. Information, strategic behavior and fairness in ultimatum bargaining: an experimental study. J. Math. Psychol. 42, 227–247.
Güth, W., Levati, M., Sutter, M., van der Heijden, E., 2007. Leading by example with and without exclusion power in voluntary contribution experiments. J. Public Econ. 91, 1023–1042.
Halevy, N., Bornstein, G., Sagiv, L., 2008. "In-group love" and "out-group hate" as motives for individual participation in intergroup conflict: a new game paradigm. Psychol. Sci. 19, 405–411.
Hatfield, E., Cacioppo, J., Rapson, R., 1993. Emotional contagion. Curr. Dir. Psychol. Sci. 2, 96–99.
Herrmann, B., Orzen, H., 2008. The appearance of homo rivalis: social preferences and the nature of rent seeking. CeDEx Discussion paper 2008–10, CeDEx. University of Nottingham, Nottingham.
Hobbes, T., 1979 [1651]]. Leviathan. Dent, London.
Houser, D., Levy, D., Padgitt, K., Peart, S., Xiao, E., 2014. Raising the price of talk: an experimental analysis of transparent leadership. J. Econ. Behav. Organ. 105, 208–218.
Hoyer, M., Bault, N., Loerakker, B., van Winden, F., 2014. Destructive behavior in a fragile public good game. Econ. Lett. 123, 295–299.
Humphrey, R., 2002. The many faces of emotional leadership. Leadersh. Q. 13, 493–504.
Isaac, R., Walker, J., Williams, A., 1994. Group size and the voluntary provision of public goods: experimental evidence utilizing large groups. J. Public Econ. 54, 1–36.
Jasper, J., 2014. Constructing indignation: anger dynamics in protest movements. Emot. Rev. 6, 208–213.
Kagel, J., Wolfe, K., 2001. Tests of fairness models based on equity considerations in a three-person ultimatum game. Exp. Econ. 4, 203–219.
Keser, C., van Winden, F., 2000. Conditional cooperation and voluntary contributions to public goods. Scand. J. Econ. 102, 23–39.
Komai, M., Grossman, P., 2009. Leadership and group size: an experiment. Econ. Lett. 105, 20–22.
Kuran, T., Sunstein, C., 1999. Availability cascades and risk regulation. Stanford Law Rev. 51, 683–768.
Lacomba, J., Lagos, F., Reuben, E., van Winden, F., 2014. On the escalation and de-escalation of conflict. Games Econ. Behav. 86, 40–57.
Levine, D., 1998. Modeling altruism and spitefulness in experiments. Rev. Econ. Dyn. 1, 593–622.
Liang, P., Meng, J., 2013. Love me, love my dog: an experimental study on social connections and indirect reciprocity. Working paper (available at SSRN 2251575).
Liebrand, W., 1984. The effect of social motives, communication and group size on behavior in an N-person, multi-stage mixed-motive game. Eur. J. Soc. Psychol. 14, 239–264.
Lijphart, A., 1975. The Politics of Accommodation: Pluralism and Democracy in The Netherlands. Second Edition. University of California Press, Berkeley, Revised.
Loerakker, B., Bault, N., Hoyer, M., van Winden, F., 2014. Affective bonding, destructive social behavior, and observed behaviors in social dilemma games: Theory, experiment, and application. Mimeo, CREED – University of Amsterdam, Amsterdam.
Loewenstein, G., 2000. Emotions in economic theory and economic behavior. Am. Econ. Rev. 90, 426–432.
Malmendier, U., Schmidt, K., 2012. You Owe Me. Working paper 18543. NBER, Cambridge, MA.
Marcus, G., 2000. Emotions in politics. Annual Review of Political Science 3, 221–250.
McCaffery, E., Slemrod, J., 2006. Behavioral Public Finance. Russell Sage Foundation, New York.
Moïsi, D., 2009. The Geopolitics of Emotion. Doubleday, New York.
Murphy, R., Ackermann, K., 2013. A review of social preferences measurement methods. Working paper. ETH, Zurich.
Nussbaum, M., 2013. Political Emotions: Why Love Matters for Justice. Harvard University Press, Cambridge MA.
Oatley, K., Jenkins, J., 1996. Understanding Emotions. Blackwell, Oxford.
Ostrom, E., 2010. Beyond markets and states: polycentric governance of complex economic systems. Am. Econ. Rev. 100, 641–672.
Panksepp, J., Panksepp, J., 2000. The seven sins of evolutionary psychology. Evol. Cogn. 6, 108–131.
Passarelli, F., Tabellini, G., 2013. Emotions and political unrest. CESifo Working Paper Series 4165. CESifo, Munich.
Pelloux, B., Bault, N., Fahrenfort, J., Ridderinkhof, K., van Winden, F., 2014. On the Dynamic development of social ties: theory and application. University of Amsterdam, Amsterdam.
Plott, C.R., 1991. Will economics become an experimental science? South. Econ. J. 57, 901–919.
Rabin, M., 1993. Incorporating fairness into game theory and economics. Am. Econ. Rev. 83, 1281–1302.
Rakow, T., Newell, B., 2010. Degrees of uncertainty: an overview and framework for future research on experience-based choice. J. Behav. Decis. Mak. 23, 1–14.
Rawls, J., 1983. A Theory of Justice. Oxford University Press, Oxford.
Reis, H., Collins, W., Berscheid, E., 2000. The relationship context of human behavior and development. Psychol. Bull. 126, 844–872.
Reuben, E., Traxler, C., van Winden, F., 2014. Advocacy and political convergence under preference uncertainty. Working paper, CREED. University of Amsterdam, Amsterdam.
Reuben, E., van Winden, F., 2008. Social ties and coordination on negative reciprocity: the role of affect. J. Public Econ. 92, 34–53.
Reuben, E., van Winden, F., 2010. Fairness perceptions and prosocial emotions in the power to take. J. Econ. Psychol. 31, 908–922.
Roth, A., Erev, I., 1995. Learning in extensive-form games: experimental data and simple dynamic models in the intermediate term. Games Econ. Behav. 8, 164–212.
Sanfey, A., Rilling, J., Aronson, J., Nystrom, L., Cohen, J., 2003. The neural basis of economic decision-making in the ultimatum game. Science 300, 1755–1758.
Schoenherr, D., 2014. Rise of a network – political connections and allocative distortions. Working paper. London Business School, London.
Schram, A., van Winden, F., 1991. Why people vote, free riding and the production and consumption of social pressure. J. Econ. Psychol. 12, 575–620.
Seyfarth, R., Cheney, D., 2012. The evolutionary origins of friendship. Annu. Rev. Psychol. 63, 153–177.
Shayo, M., 2009. A model of social identity with an application to political economy: nation, class, and redistribution. Am. Polit. Sci. Rev. 103, 147–174.
Smith, A., 1971, 1776. The Wealth of Nations Vol. 2. Dent, London.
Sonnemans, J., van Dijk, F., van Winden, F., 2006. On the dynamics of social ties structures in groups. J. Econ. Psychol. 27, 187–204.
Sutter, M., Kocher, M., Bosman, R., van Winden, F., 2009. Gender pairing and bargaining – beware of the same sex! Exp. Econ. 12, 318–331.
Tangney, J., Dearing, R., 2002. Shame and Guilt. The Guilford Press, New York.
Walzer, M., 2004. Politics and Passion. Yale University Press, New Haven.
Weingast, B., Wittman, D. (Eds.), 2006. The Oxford Handbook of Political Economy. Oxford University Press, Oxford.
van Dijk, F., van Winden, F., 1992. Dynamics of social ties and local public good provision. Research Memorandum 9226, Department of Economics, University of Amsterdam. Amsterdam; also Tinbergen Institute Discussion Paper TI 93-104, Amsterdam-Rotterdam.
van Winden, F., 1999. On the economic theory of interest groups: towards a group frame of reference in political economics. Public Choice 100, 1–29.
van Winden, F., 2001. Emotional hazard: exemplified by taxation-induced anger. Kyklos 54, 491–506.
van Winden, F., 2007. The affect component of democracy. In: Casas, J., Schwartz, P. (Eds.), Public Choice and the Challenges of Democracy. Edward Elgar, Cheltenham.
van Winden, F., 2012. Affective social ties—missing link in governance theory. Ration. Morals Mark. 3, 108–122.
van Winden, F., Ash, E., 2012. On the behavioral economics of crime. Rev. Law Econ. 8, 181–213.
Yamagishi, T., Horita, Y., Mifune, N., Hashimoto, H., Li, Y., Shinada, M., Miura, A., Inukai, K., Takagishi, H., Simunovic, D., 2012. Rejection of unfair offers in the ultimatum game is no evidence of strong reciprocity. PNAS 109, 20364–20368.
Yukl, G., 1999. An evaluation of conceptual weaknesses in transformational and charismatic leadership theories. Leadersh. Q. 10, 285–305.