Satisficing or Maximizing in Public-Private Partnerships?

A Laboratory Experiment on Strategic Bargaining

Kristina S. Weißmüller [a], Robin Bouwman [b], and Rick Vogel [c]

[a] Universität Bern
KPM Center for Public Management
Schanzeneckstrasse 1
3001 Bern, Switzerland

Phone: +41 31 684 4768
E-Mail: kristina.weissmueller@kpm.unibe.ch

[b] Erasmus University Rotterdam
Erasmus School of Social and Behavioural Sciences
Burg. Oudlaan 50
3062 PA Rotterdam, The Netherlands

E-Mail: bouwmam@essb.eur.nl

[c] Universität Hamburg
Fakultät für Wirtschafts- und Sozialwissenschaften
Von-Melle-Park 9
20146 Hamburg, Germany

E-Mail: rick.vogel@uni-hamburg.de

Author Note

Kristina S. Weißmüller: http://orcid.org/0000-0001-7697-6550
Robin Bouwman: http://orcid.org/0000-0003-1218-4540
Rick Vogel: http://orcid.org/0000-0002-1361-5085
Correspondence concerning this article should be addressed to Kristina S. Weißmüller, Universität Bern, KPM, Schanzeneckstrasse 1, CH-3001 Bern, Switzerland. Email: kristina.weissmueller@kpm.unibe.com

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Abstract

Cross-sectoral strategic negotiation is a key challenge in PPPs. Based on framing and game theory, we investigate the effect of sectoral agency, affect, and bargaining domain on sectoral agents' bargaining behaviour in a PPP renegotiation scenario. Results confirm that public agents are more likely to bargain for satisfactory, 'good enough' contracts than private agents, who maximize their utility. This difference is stronger in the loss vis-a-vis the gain domain. These experimental findings advance our understanding of psychological mechanisms underlying cross-sectoral negotiations, suggesting that public managers and policy-makers account for partners' dissimilar bargaining logics to prevent asymmetric loss socialization in PPPs.

INTRODUCTION

As decision making is contingent on the organizational context (March and Simon 1958, 1976), it is likely to differ profoundly between organizations that are as different as public organizations and private corporations (Rainey, Backoff, and Levine 1976; Rainey and Bozeman 2000). While some scholarship in public administration and policy has demonstrated that such differences in decision making do indeed exist (Coursey and Bozeman 1990; Nutt 1999, 2006), this body of knowledge is still sparse. Even less is known about how differences in decision making play out when public and private agents negotiate and make decisions in collaborative arrangements (Burton 1990). Collaborative agreements are common in public private partnerships (PPPs), i.e., formalized long-term oriented arrangements in which public and private sector agents collaborate for mutual benefit, thereby bundling and sharing risks to realize large-scale projects in a synergetic manner (Hodge and Greve 2007; Reynaers and De Graaf 2014; Villani, Greco, and Phillips 2017). PPPs play a major role in the provision of public goods and services worldwide.

Negotiations and renegotiations are ubiquitous modes of coordination in the initiation and operation of PPPs, as PPP contracts are often long-term and necessarily incomplete. Soecipto and Verhoest (2018) estimate that between 40 and 75 per cent of PPPs make changes to the contractual terms and conditions beyond regular adjustments through mechanisms defined in the original contract. For example, the financial crisis triggered renegotiations of toll highway concession projects in Greece, as the traffic revenues decreased unexpectedly (Domingues and Zlatkovic 2015). As a consequence, a new shareholder structure of the PPP was negotiated and the government participated in financing of the construction work. Likewise, a PPP model set up to design, build, finance, and operate a highway bridge in Portugal entered a series of renegotiations over 15 years once government implemented a discount policy for frequent users in response to public protests (Sarmento and Renneboog 2016). To

compensate for the resulting losses, "financial rebalance agreements" were negotiated and the risk allocation matrix was adjusted. (Re-)Negotiations thus occur frequently and in most cases even inevitably in the lifecycle of a PPP, which shows their practical relevance for addressing uncertainty and balancing economic and financial interests.

(Re-)Negotiations in PPPs, however, are challenging, as such arrangements mark the clash of two worlds: On the one hand, public partners socialized in the *satisficing* logic of the public sector strive to balance conflicting demands between economic returns and the general public's long-term interests. On the other hand, private partners are trained to apply the self-centred logics of their private sector firm, striving to *maximize* their subjective utility in the form of (monetary) profits. Maximizing and satisficing are not categorically distinct decision-making modes but poles of a continuum. These poles are often difficult to reconcile and incentivize private partners to exploit opportunities that emerge in PPPs for their own benefit, disregarding the effect of their behaviour on the long-term objectives of the PPP and the general public (Saz-Carranza and Longo 2012; Simon 1947/1997; Weißmüller and Vogel 2021). To date, little is known about the micro-level dynamics of negotiating across sectoral boundaries.

This study investigates the effect of conflicting micro-level interests in cross-sectoral settings and explores how partners' sector affiliation and their sectoral affect influence strategic decision making in allocating gains and losses between partners within the limiting constrains of contractual obligations. We argue that—based on the heterogeneity in logics and the dissimilar attributes associated with the public and private sectors—contractually formalized PPPs may create dysfunctional spaces for re-negotiation once issues between partners arise, incorporating incentive problems on the micro-level, that ultimately impede coordination efficiency. Exploring the micro-level mechanisms of cross-sectoral re-negotiation behaviour in a PPP scenario under risk responds to calls by Bouwman (2018), Wang et al. (2018),

Battaglio et al. (2019), Bouwman et al. (2019), and Weißmüller and Vogel (2021) for more micro-level, behavioural research into strategic choice in a cross-sectoral context, particularly in PPPs.

Three hypotheses were tested by conducting a dynamic multi-stage re-negotiation game (z-Tree laboratory experiment) that systematically manipulates partners' bargaining context with sector-specific vignette-framing treatments. Results show that when faced with the task of risk and benefit renegotiation both public and private sector agents fail to share risks and benefits efficiently, that public agents are less likely than private agents to follow utility maximizing strategies, and that the domain of loss further aggravates their self-serving negotiation behaviour. Conducting this experiment in the domains of both gains and losses advances and challenges prior findings on the reliability of prospect theory across sectors by Bækgaard (2017), Bouwman et al. (2019), and Weißmüller and Vogel (2021). Furthermore, the results contribute to the long-standing discourse on maximizing vis-à-vis satisficing rationalities and the reliability of normative predictions based on rational choice theory in the public sector (Battaglio et al. 2019; Gigerenzer 2005; Simon 2000).

The remainder of this study is structured as follows: in the next section, we present a literature review on the behavioural foundations of individuals' (re-)negotiation behaviour in sectoral context from the perspective of bounded rationality, game theory, and framing theory. Our review converges into three hypotheses on the relation of strategic bargaining, sectoral agency, and affect toward the sectors. In the third section, we present the experimental design and the research procedure. The fourth section reports empirical results from 8,368 observations of offers and counteroffers resulting in n=1,121 contractual agreements nested within a balanced original sample of N=118 participants. Finally, we discuss the findings' theoretical and practical implications and conclude with the major take-aways from our study.

THEORY

Negotiation is defined as a decision-making process between two or more interdependent agents with non-identical preferences but potentially with synergetic goals (Neale and Bazerman 1992).[1] Because some partners' interests are shared and some are opposed, strategic negotiation manifests itself in the form of interactive back-and-forth communication aimed at reaching agreement about what each party will give and take (Bouwman 2018). In this process, each partner will implicitly follow their individual *negotiation strategy* that will guide their negotiation behaviour and determine the negotiation outcome for all partners involved. Burton (1990), Ghere (2001), Hodge (2004), and Kee and Forrer (2012) point out that (re-)negotiating is a central strategic activity in PPPs for both public and private partners, but at the same time, it is a fundamental obstacle for PPP success. Although PPPs are generally designed to allow for the implementation of mutually beneficial and reciprocal negotiation strategies, navigating the fallacies of unexpected events is a complex and largely unexplored issue—especially given partners' contractually regulated interdependence in PPPs and the challenge of negotiating across sectoral boundaries (Bouwman 2018; Klijn and Teisman 2003; Medda 2007). We conclude from this reasoning that in archetypical dyadic PPP settings—consisting of only one public and one private partner—micro-level negotiation behaviour is contingent on three factors: *sectoral agency*, *domain*, and *affect*.

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[1] Note that although some authors have pointed out that there are semantic differences between the terms 'bargaining' and 'negotiation' – cf., Flanders (1968) and Lewicki, Saunders, and Barry (2020) – there is little to no agreement on the significance of those differences. Since the analysis presented in the current study would not suffer from the omission of this distinction, the terms 'negotiation' and 'bargaining' are used interchangeably.

Sectoral Agency

Sectoral agency is the first factor driving micro-level negotiation behaviour. Classic behavioural theories suggest that bargaining between rational, well-informed agents acting on behalf of their respective organizations in a collaborative and (potentially) synergetic PPP should also result in the proportional split of any unforeseeable gains or losses, by allocating them in a fair, efficient, and cost-effective way among the individual partners for mutual benefit through the process of renegotiation (Güth, Huck, and Müller 2001). However, both scholars and practitioners continuously point out that (re-)negotiating in PPPs is especially challenging (Bing et al. 2005; Kee and Forrer 2012; Wang et al. 2018). Once established, contracts serve as reference points priming latter renegotiation behaviour by creating a sense of entitlement that may hinder reaching renegotiation agreement (Hart and Moore 2008; Fehr, Hart, and Zehnder 2011a; Fehr, Hart, and Zehnder 2011b). This matter is complicated by the fact that partnering across sectoral boundaries means that agents guided by dissimilar institutional logics need to balance their—potentially competing—strategic goals with those specified as the partnership's common goals (Klijn and Teisman 2003; Pesch 2008). Already Simon (1947/1997) argues that the institution of private property fosters decentralization of decision making in private corporations, which, in turn, leads to stronger utility maximization by private agents than by public agents. The profit motive makes it comparatively easy to align individual and organizational utility and to evaluate decisions in these terms. In contrast, public organizations follow a much broader range of goals that ultimately serve the maximization of societal value (Rainey and Bozeman 2000; Simon 1947/1997). This brings considerations other than individual and organizational utility maximization into negotiations and makes it more difficult to make decisions that are consistent across the individual, organizational, and societal level.

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This now-classic scholarship does *not* imply, however, that only private actors are utility maximisers, while public actors are unselfishly committed to societal welfare. Public choice theory, including the economic theory of bureaucracy (Downs 1967; Niskanen 2017), suggests that utility maximization is prevalent also in the public sector, culminating in the notion of the budget-maximizing bureaucrat (Simard 2004). In the reverse perspective, the burgeoning literature on corporate social responsibility directs attention to private actors' contributions to wider societal goals and their engagement with multiple stakeholders (Freeman 1984). For instance, participation in corporate volunteering programmes might indicate motives beyond self-interest, although such activities might ultimately (and intendedly) benefit the shareholder value (Rodell et al. 2016). The pursuit of private utility and societal welfare are thus prevalent on both sides on the public-private divide. Our argument above only suggests that utility maximization is more pronounced, and easier to align with organizational goals (Simon, 1947/1997), in the private than in the public sector, with private agents being more likely utility maximisers than public agents.

Given these sectoral differences, public and private partners are also likely to pursue dissimilar strategies when it comes to renegotiating excess gains or losses in PPPs. Normative choice theory suggests that rational partners will independently strive to minimize their individual share of losses by micro-level bargaining in a way that allocates any excess losses (i.e., losses that arise unexpectedly during partnership tenure) to their partner(s), rather than to themselves, using any discretionary means. The opposite holds if excessive gains need to be distributed among partners, i.e., rational partners will try to maximize their share of gains. However, from the reasoning above it follows that public and private agents differ in the extent to which they follow this utility-maximizing negotiation strategy. Public agents' bargaining space is bounded by their sectoral obligations—public values, bureaucratic regulation, political accountability, and wider societal goals—while private agents'

bargaining space is mainly guided by self-serving maxims (Nabatchi 2018; Simon 1947/1997). Since the public agents' negotiation space is more restricted by norms that transcend pure utility maximization, they will be less likely to follow this negotiation strategy:

> *Hypothesis 1 (H1): Public sector agents are less likely to follow utility maximizing negotiation strategies in PPPs than private agents.*

Domain

The extent to which public sector agents follow utility maximizing strategies may be contingent on whether they renegotiate contracts about gains or losses. Unexpected events arising during the lifetime of a PPP can be welcome or unwelcome surprises (Bing et al. 2005; Hodge 2004; Wang et al. 2018), leading to excess gains or losses to be shared among the partners. The domain of negotiation—i.e., gain or loss domain—may affect how sectoral agency translates into renegotiation behaviour. Extant research on strategic choice under risk and uncertainty shows that there is a general tendency of individuals to use dissimilar negotiation strategies in the domain of gains than in the domain of losses (see Neale and Bazerman (1992) for an extensive review). For example, prospect theory suggests that in the expectation of gains, i.e., when negotiating about shares of excess profits, individuals will act more risk-aversely compared with an otherwise equivalent negotiation scenario in which they would bargain about the same amount of losses (Kahneman and Tversky 1979; Thaler 1981). The cognitive mechanism behind this bias is a latent aversion to losses.

Prior research indicates that although the domain may influence bargaining behaviour in the public sector (Bouwman 2018), the direction of this effect in a PPP is still unclear. While public sector agents are generally assumed to use utility maximizing negotiation strategies less than private sector agents (H1), it seems reasonable to assume that this association between sectoral agency and negotiation strategies is weaker in the domain of losses than in

the domain of gains. The reason for the domain's moderating effect is that loss aversion should be particularly prevalent among public sector agents due to their commitment to parsimony in spending tax money, resulting in relatively greater efforts to maximize utility (i.e., to avoid losses) with regard to renegotiating losses, rather than gains, with a private partner. Several experimental studies have replicated predictions of prospect theory in public sector settings, demonstrating that public employees, managers and policy-makers do indeed have a loss aversion when exposed to differently framed decision scenarios (for a review, cf. Battaglio et al., 2019). No study has thus far investigated if loss aversion is stronger among public or private agents on the micro-level of administrative behaviour. This tendency follows from theory and research on blame avoidance in the public sector.

Blame avoidance is a widely observed driver of behaviours in politics and administration (Hood 2007; Weaver 1986). Related research suggests that avoiding blame for failure is a stronger motivation for public managers and policy-makers than claiming credits for success. These incentives can be assumed to be particularly strong for public agents, because public organizations are continuously exposed to public debates and critique by a broad range of stakeholders, whose acceptance is required to maintain organizational legitimacy and to foster individual career advancement (Hood 2007; Soroka 2014; Weaver 1986). As a consequence, and despite their general tendency to be less driven by utility maximization than private agents (H1), public agents are likely to spend more effort on minimizing losses than on maximizing gains. It follows that domain moderates the association between sectoral agency and utility maximizing negotiation strategies in PPPs, such that:

Hypothesis 2 (H2): In the loss domain, public sector agents are more likely to follow utility maximizing negotiation strategies than in the gain domain.

Affect

Affect is another factor moderating the association between sectoral agency and negotiation behaviour. Affect can be understood as emotions, associations, values, and (biased) perceptions that may prime the behaviour of negotiators when exercising their agency in context (Barry and Oliver 1996). A substantial body of scholarship shows that affect plays an important role in negotiation behaviour. For instance, positive affect increases the likelihood of cooperation and equal risk sharing, while negative affect increases the likelihood of engaging in opportunistic behaviour (Barry and Oliver 1996; Bazerman et al. 2000; Tsay and Bazerman 2009).

In the case of PPPs, affect specifically toward the public vis-à-vis the private sector is particularly relevant. In many countries, individuals are negatively biased toward the public sector (e.g., Andersen and Hjortskov, 2016; Hvidman and Andersen, 2016; Marvel, 2015). However, negative affect toward the public sector is neither prevalent in all societies nor equally distributed within a population. The less negative a negotiator's affect toward the public sector is, the stronger the public sector agency will translate into utility maximizing negotiation strategies. Identification with, and commitment to, the mission, goals, and values of the public sector is a potential mechanism behind this effect (Ashforth and Mael 1989; Miao et al. 2019). Individual decisionmakers may identify with the goals and well-being of their organization to varying degrees. The more they internalize organizational goals and develop a sense of loyalty, thereby acquiring an "organization personality" (Simon 1947/1997, 278) distinct from their personality as individuals, the more they will try to maximize the organization's utility.

Positive affect is likely to be associated with higher levels of identification and commitment, whereas negative affect is associated with lower levels and may even reflect alienation,

mistrust, and disloyalty. Consequently, public sector agents will have a stronger motivation to

renegotiate in the best interest of the public sector (i.e., to maximize utility) if they have

positive attitudes toward the public sector. Stronger alignment with public values and goals

should also strengthen the motivation to deliver benefits to a public organization or to protect

it from losses (Kuehnhanss et al. 2017), because such agents tend to perceive their

organization's results as their own (Miao et al. 2019; Simon 1947/1997). It follows that a

positive affect toward the public sector will prime a public sector agent's renegotiation

behaviour toward a more utility-maximizing manner, moderating the association between

sectoral agency and negotiation strategies in PPPs such that:

> *Hypothesis 3 (H3): Public sector agents are more likely to follow utility maximizing*
>
> *negotiation strategies the more positive their affect toward the public sector is.*

In summary, Figure 1 presents the conceptual model of this study.

[**Figure 1** here]

MATERIALS AND METHODS

Sampling

Three hypotheses were tested by conducting a behavioural laboratory experiment based on a

classic strategic bargaining game. Data were gathered in a professional laboratory for

economic experimentation at a large German public university in May 2018 with an original

sample of N=118 participants. In the prospect of small to moderate treatment effects (Cohen's

d<|0.50|, *power*=0.8, α=0.05) the required sample sizes of n=64 participants per treatment

group to detect significant correlations in two-tailed (non-directional) tests between two

treatment groups was met (Ellis 2010). Participants volunteered after being recruited via e-mail. A standing panel of N=2,429 (former) graduate students of PA and PM, business administration, and related economic and social sciences was established. Study participants were incentivized with a minimum show-up fee of €5 and the prospect of winning a considerably larger amount of prize money based on their actual negotiation efficiency during the game. The raw data were strictly pre-stratified for missing and obviously repetitive responses, resulting in a total dataset of 8,368 observations of offers nested in N=118 participants and n=1,121 bargaining agreements.

Experimental Procedure

Dynamic multi-stage games are classic means to research individuals' dynamic bargaining behaviour in context (i.e., the PPP; Ghere, 2001; Walker, James, and Brewer, 2017). Online appendix A provides more detail on the experimental design. Furthermore, we provide z-Tree code (version 3.6.7) to facilitate future replication studies in online appendix A.3. The between-subject experiment comprised five steps: introduction, scenario contextualization, vignette-based role framing treatment (*public* or *private agency*), renegotiation game, and, lastly, survey and debriefing.

After an introduction into the aim and structure of the experiment, participants received written information on the scenario of the game, contextualizing it as a large-scale urban infrastructure project PPP with shared operational risks between one public and one private sector partner. Following Hodge's (2004) PPP risk taxonomy and Hart and Moore's (2008) contract-as-reference-point theory, the scenario stressed that the contractual agreement between partners was to share both profits and losses equally to set an explicit default for negotiation strategies and to increase the validity of findings through increased perceived realism (Duersch and Müller 2017). Participants were then randomly framed into either the

role of a senior civil servant or a senior private sector employee with equal negotiation discretion and space (*treatment*). They were instructed to act on behalf of and in the best interest of their organizations (public or private, respectively) in the following stages of the experiment to elicit realistic contextual negotiation behaviour.

The domain-based bargaining phase commenced with an alternating-offers negotiation game that consisted of two sequential phases of 15 rounds each. In the first phase, the PPP project was portrayed with superior performance generating unexpected excess profits (*domain of gains*). Randomized dyads of participants who were primed with different sector-specific role treatments were asked to negotiate the distribution of those profits. In each round, both players had 45 seconds[2] to simultaneously propose offer and counteroffer divisions of said negotiation amount between the two players until one of them accepted. Player dyads were re-matched after each round to inhibit path dependencies and learning-based carry-over effects (Marks and Gerrits 2018). The magnitude of these excess profits varied systematically across the 15 rounds (range: €20,000 to €300,000 in linear steps of €20,000) to inhibit order effects

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[2] The game mechanics were pretested extensively with focus group laboratory sessions to maximize stimulus realism and minimize response bias. Pretesting revealed that increasing the bargaining phase length (>45 seconds per round) or increasing the number of negotiation rounds did not increase the likelihood of reaching agreement but substantially increased response fatigue, prolonging the whole experimental procedure without additional explanatory value. Following best practice recommendations for designing z-Tree experiments we opted for the parsimonious setup with two times 15-rounds of 45 seconds each as an optimal balance between creating sufficient bargaining amount variation in a framing treatment design and inhibiting response fatigue due to experiment duration (Katok 2019).

(Güth 1995).[3] If the players were unable to negotiate an agreement within 45 seconds, the profit expired and no player received any share of excess profits in this round.

The second phase of the game (*domain of loss*) was introduced by a short description, which portraits the PPP project as underperforming so that the newly randomized mixed dyads now negotiated about splitting the full amount of unexpected losses in each of the remaining 15 rounds.[4] Failure to reach an agreement resulted in the default 50-50 split between the two partners.[5]

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[3] The negotiation amounts and experimental mechanics were designed following best practice recommendations regarding the optimal duration and relative size of incentives in z-Tree bargaining experiments (see, e.g., Güth, 1995, Crawford, 1997, Fischbacher, 2007, and Katok, 2019); see also online appendix A, which explains the theoretical premises, provides an overview of the flow logic (A.1), and the contents of the experiment. The magnitude of rewards and their systematic inter-item variation follows the item magnitude structure of Madden, Petry, and Johnson's (2009) validated *Probability Discounting Questionnaire*, an experimental procedure to reveal implicit individuals' risk preferences by employing rapid economic trade-offs between batteries of probabilistic and secure rewards. This procedure has been confirmed as a highly reliable and structurally robust measure to capture the non-linearity of human risk behavior (Kahneman and Tversky 1979), and across various numbers of magnitudes, see e.g., Myerson et al. (2003) and Green et al. (2013) for item magnitude structure robustness, and Weißmüller (2021) for a recent example of its application in the context of public management research.

[4] The numeric amounts of losses were varied and randomized exactly like the amounts of gains to achieve task balance and to increase internal consistency and measurement validity, see online appendix A.1 for more detail on the game mechanics.

[5] The experiment uses the equal split in the loss domain because it was set as the explicit default in the treatment and to increase scenario realism: In cameralistic accounting traditions of public administrative accounting – such as Germany – failure to successfully negotiate the case of unexpected gains (or parts thereof) often results in the expiration of these opportunities (or parts thereof) whereas failure to successfully negotiate the distribution of unexpected losses does not mean that they will disappear.

Measurements

Dependent variables. The dependent variables reflect participants' utility maximizing bargaining strategy. The first variable is related to the process of negotiation: individuals' *offers*, i.e., the amount of gains or losses that negotiators offer to accept in each round. The second dependent variable is outcome-related: the *amount* of gains and losses finally accepted by each individual. The assumption behind this measurement is that demanding high offers to take gains and high amounts of finally accepted gains (i.e., higher than a fair split) reflect a utility-maximizing strategy in the gain domain, while low offers to take losses and low amounts of accepted losses (i.e., lower than a fair split) indicate utility-maximization in the loss domain.

Independent variables. To test the first hypothesis, the dummy-coded *treatment* serves as predictor (with 0 = private and 1 = public agency). The moderating effect of *domain* (H2) is also tested with a dummy variable, indicating whether participants negotiated in the domain of gains (0) or losses (1). To account for participants' sectoral *affect* (H3), respondents were asked to specify three immediate associations (i.e., attributes) with their sector, which also helped to increase cognitive treatment elaboration (Aguinis and Bradley 2014; Crawford 1997). These associations were coded inductively for their emotional affect using Võ et al.'s (2009) validated affective inventory, revealing respondents' implicit positive or negative affect towards the sectors (Weißmüller and Vogel 2021).[6] This variable is continuous, ranging from -2 (strongest negative affect) to +2 (strongest positive affect).

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[6] Võ et al.'s (2009) BAWL-r inventory is an extensive list of several thousand common German words which were systematically and empirically tested for their emotional valence, emotional arousal, and imageability on a metric scale in order to be used as psycholinguistic indexes and treatment stimuli in psychological and

Control variables. The negotiation game was complemented with a questionnaire on socio-demographic characteristics and individual attitudes to control for potentially confounding covariates and to achieve treatment and group balance. Participants' *risk preference* was measured with Madden, Petry, and Johnson's (2009) probability discounting questionnaire (PDQ) using Weißmüller's (2021) algorithm, and their *tolerance for uncertainty* with Dalbert's (1999) scale. Because trust is a decisive factor for individuals' negotiation behaviour in the context of PPPs (Das and Teng 2001), Yamagishi and Yamagishi's (1994) scale was used to assess participants' general propensity to *trust in others*. The socio-demographic questionnaire assessed individuals' year of birth, gender, nationality, field of study (if applicable), education, and their future intention to apply to jobs in the public sector. Participants' numerical literacy was controlled by using the first seven items[7] of Weller et al.'s (2013) abbreviated *Numeracy* Scale. All scale items were translated into German in a triple-blind procedure with due diligence.

Limitations

As with any empirical research, this study's data and methods are subject to limitations that call for future research. First, laboratory experiments lack external validity due to their level of abstraction (Jilke, van de Walle, and Kim 2016). Outside of the lab, renegotiations may take a long time and the degree to which the outcome of renegotiating complex intersectoral arrangements may be deemed as successful may have personal consequences for public and private negotiators' careers. These meso-level and long-term consequences may affect agents'

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behavioral experiments. The BAWL-r inventory can also be used to associate open semantic responses with BAWL-r's values by qualitative coding and quantifying these semantic responses across subjects to create mean implicit affective scores.

[7] This scale originally comprises eight items of statistical word problems of varying complexity. The last and most complex item was omitted due to expected questionnaire length-related response fatigue.

renegotiation behaviour (leading, for instance, to defensive bargaining strategies and blame avoidance) and are not accounted for in the current lab experiment. While the vignette treatment allowed for some level of detail, it lacks the extensive and idiosyncratic institutional framework of contracts, boundary conditions, and collaborative experiences which usually serve as guiding principle for solving disputes in PPPs (Wang et al. 2018). However, this focus may be considered as a strength rather than a weakness of this bargaining game because it allows for the control over variables that are less relevant for the phenomenon tested while allowing for a systematic manipulation of choice context by the experimenter (Falk and Heckman 2009; Fan et al. 2006). Essentially, the current experiment reveals how sectoral agents act in renegotiation scenario in which they (a) need not fear personal consequences of their bargaining behaviour and (b) are put under severe stress through the temporal constraints to elicit spontaneous decisions untainted by social desirability bias.

Second, relying on graduate university students of PA and related fields without prior work experience, rather than PPP managers, reduces external validity. Yet, this sample is an especially interesting target group for PA research because both the public and the private sectors' future decisionmakers are likely to be recruited from this particular population (Walker, James, and Brewer 2017). Certainly, one caveat for the external validity is that our sample do not have on-the-job socialization and experience senior managers possess, our sample provides a relevant insight into how future bureaucrats and managers think they *should* behave. Using student samples is problematic for ecological validity if the treatment effect is moderated by another (latent) variable that is different in student than in non-student samples (Druckman and Kam 2011; Falk and Heckman 2009). However, following the example of recent experimental research by Weißmüller and Vogel (2021), we believe that that this latent variable – for instance in the form of sector-specific socialization and experience – will rather increase the strength of the hypothesized effects in that on-the-job

experience should actually increase sector-specific behaviour and widen the gap between maximisers and satisfiers in renegotiation.

Third, this study's findings might not directly apply to countries with other administrative traditions (e.g., Anglo-Saxon countries). Germany has a tradition of an explicit legal and organizational separation between the sphere of the public and the private sector resulting in psychologically very salient sectoral boundaries. This concerns, for instance, typical sectoral associations and basic assumptions of adequate administrative behaviour, calling for future replication studies.

RESULTS

Descriptive Results

The dataset comprises responses by N=118 participants, 73.0% were German, 98.3% studying (public) management, economics, political science, or social sciences on the level of a Master's degree or higher. Table 1 presents the descriptive sample statistics and responses to the complementary survey questionnaire for the full sample as well as by treatment group. Two-tailed t-testing reveals that treatment balance was achieved for all control variables. The sample comprises slightly more female participants (54.2%), and respondents are on average M=25.8 (SD=4.76) years old. Control variables reveal that the sample tends to trust other people (M=3.13, SD=0.71), and that their numeracy is above average (M=4.79, SD=2.07). Study participants tend to avoid risk (ln(h): (M=0.75, SD=1.16) and shun uncertainty (M=3.66, SD=0.60).

[**Table 1** here]

Participants were assigned randomly to either treatment group resulting in an equal 50% split with $n=59$ individuals per treatment group. In the process of role treatment immersion, they stated in total $n=385$ sector-specific associations for their respective treatment sector (i.e., public or private). Associations were particular and distinctive between sectors indicating that treatment manipulation through cognitive elaboration was successful (see online appendix B for more detail). On average, respondents hold more positive affect toward the private ($M=0.66$, $SD=0.87$) than the public sector ($M=0.14$, $SD=0.72$). Although this implicit preference is not statistically reliable ($t=-0.130$, $p=0.261$), it serves as a further control to assert treatment balance for the main analysis because it indicates that implicit anti-public or anti-private sector stereotypes (see, e.g. Marvel, 2015, or Weißmüller and Vogel, 2021) will not bias participants' bargaining strategy by default in the subsequent renegotiation game.

Across both domains, the renegotiation game resulted in a total of $n=1,121$ contractual agreements. Table 2 displays the descriptive game outcomes on this aggregate level. The number of offers and counteroffers show that both treatment groups renegotiated more active in the domain of losses than in the domain of gains but managed to reach agreement far more often in the domain of gains ($n_{\text{public|gains}}=481$; $n_{\text{private|gains}}=303$) than in the domain of losses ($n_{\text{public|losess}}=190$; $n_{\text{private|losses}}=147$). Public agents' offers are more likely to result in contractual agreements (loss domain: 56.4% vs. 43.6%; gain domain: 61.4% vs. 38.6%).

[**Table 2** here]

Hypotheses Testing

H1 states that public agents are less likely to follow utility maximizing bargaining strategies in PPPs than private agents. This more satisficing renegotiation strategy should, first, be

reflected in offers to carry higher amounts of losses or smaller amounts of gains, respectively. Second, public agents will agree on a higher amount of money as renegotiation outcome in the loss domain and on a smaller amount in the gain domain. The game statistics (Table 2) reveal that public and private agents indeed differ in their bargaining strategies accordingly, providing support for H1.

[**Table 2** here]

In the domain of losses, public agents generally offered to carry higher amounts of losses (M=€-71,714, SD=€47,214) than private agents (M=€-55,989, SD=€44,821; t=11.325, p=0.000, d=0.343; light-grey bar in Figure 2). They also agreed to settle with substantially higher final amounts of losses for their organizations (M=€-80,511, SD=€48,920) than private agents (M=€-69,231, SD=€42,039; t=2.230, p=0.026, d=0.245; dark bar in Figure 2).

[**Figure 2** here]

In the domain of gains, differences in offers are relatively smaller in effect sizes but still evident (public agent: M=€89,164, SD=€54,713; private agent: M=€95,661, SD=€56,041; t=3.723, p=0.000, d=0.119). However, there is no such difference in the overall renegotiation outcome in terms of the *amounts* finally agreed upon (public agent: M=€81,780, SD=€48,726; private agent: M=€86,017, SD=€45,351; t=1.217, p=0.224, d=0.089).

These results are supported by linear regression analyses (clustered at the level of the individual) across both domains of renegotiation (Table 3). The direct effects models (Model I for offers; Model V for amounts) explain a substantial amount of variance (*adj. R²*=0.797) and show that public agents (b_I=-9.95, p=0.000) claim smaller amounts for themselves and

eventually settle on smaller negation amounts (b_V=-4.77, p=0.030). Since respondents were strictly controlled for potential confounding variables, it follows that H1 can be accepted. Public agents in this renegotiation experiment are, indeed, less likely to follow utility maximizing strategies than private agents, *ceteris paribus*.

[**Table 3** here]

H2 states that, in the loss domain, public sector agents are more likely to follow utility maximizing bargaining strategies when renegotiating contracts than in the gain domain. Investigating bargaining outcomes per negotiation round in more detail reveals tentative evidence supporting an asymmetrical domain effect between sectors. Plotting the bargaining outcomes of each participant by domain and, in case of reaching contractual agreement, the magnitude c_t (Figure 3) shows that private agents (red line) in this sample reach agreements transitively and linearly across both the domain of gains and the domain of losses, whereas public agents' (blue) curved slope is steeper and distinct in the loss domain.

[**Figure 3** here]

Regression analyses adding interaction effects between sectoral agency and domain to the main effect models (Table 3: Model II on offers; Model VI on amount) show that the moderation effect is statistically significant and particularly strong for public agents, who will make less advantageous offers in the loss domain than in the gain domain (b_{II}=-11.14, p=0.014) and will also eventually agree to bargains that are more disadvantageous for

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themselves (b_{VI}=-9.28, p=0.084), although the latter result is only statistically reliable at the 10%-level. This interaction effect is also apparent from Figure 2, which shows that differences in offers and amounts between public and private agents are larger and statistically more significant in the loss domain. Figure 4 also shows that public agents are more likely to accept non-equal split non-pareto optimal divisions between partners, carrying losses in favour of their private sector partners in order to reach agreement. The figure displays the division ratios achieved by public and private agents by negotiation round magnitudes (c_t). Consequently, H2 is refuted; public sector agents are not more likely to follow individually utility maximizing negotiation strategies in the loss domain than in the gain domain but vice versa.

[**Figure 4** here]

H3 suggests that public sector agents are more likely to follow utility maximizing bargaining strategies the more positive their affect toward the public sector is. The regression models (Table 3) provide no indication of this moderation effect, as the interaction terms are not statistically significant. Investigating the marginal treatment effects on our two dependent variables, *offers* and *amounts*, by domain and affect, provides some deeper insights (Figure 5).

[**Figure 5** here]

The dissimilar slopes between public and private agents show that public agents' affect will not substantially influence their offers (upper panel of Figure 5) in the loss domain, while private agents' willingness diminishes the more positive their association with the private

sector is. In contrast, public agents with high positive affect toward their sector will claim lower amounts for themselves in the gain domain whereas private agents will claim higher amounts if they have a positive affect toward their sector. These opposing effects also hold true regarding the amount in the effective outcome of the negotiation process (lower panel of Figure 5), although less pronounced than in the gain domain. The positive relation of positive affect on utility maximizing behaviour is observable in the loss domain for both treatment groups but it is stronger for private agents. These mixed results suggest that H3 finds partial support at best, because it tends to be confirmed in the loss domain but does not hold true in the gain domain.

DISCUSSION

The general idea that public and private organizations are dissimilar when it comes to structures, processes, and outcomes is not new to the public administration literature (e.g., Antonsen and Jørgensen, 1997; Rainey and Bozeman, 2000). However, with few exceptions (Coursey and Bozeman 1990; Nutt 1999, 2006; Weißmüller 2021; Weißmüller and Vogel 2021), research on how negotiations and decision-making differ for public and private agents has been broadly neglected thus far. This applies in particular to cross-sectoral negotiations and renegotiations, which are the modus operandi in PPPs. Based on a highly-controlled experimental design, this article investigates what the effect of sectoral agency (public versus private), bargaining domain (gains and losses), and *affect* (strong or weak) is on negotiation behaviour and outcomes in PPPs in terms of satisficing and maximizing.

This study is the first empirical work that shows that public agents are less likely to follow utility maximizing negotiation strategies than private agents, and that domain affects partners in PPPs differently. Public agents were prepared to carry substantially higher losses than private agents. Moreover, public agents also settled on higher losses than private agents. A

similar pattern appeared in the domain of gains where public agents claimed less gains than private agents but public and private agents settled on comparable outcomes. In contrast to the theoretical expectation, the results show that public agents are even less likely to follow strategies that maximize utility in the domain of losses. Based on these findings, this article makes four contributions which are detailed below.

Studying negotiations in PPPs

Before turning to the substantive contributions, the first contribution this article makes is methodological. Research focusing on strategic choice and bargaining behaviour of individual decisionmakers is still very scarce, particularly in a public sector context and PPPs (Bouwman 2018; Bouwman et al. 2019; Wang et al. 2018; Weißmüller and Vogel 2021). This is not surprising since negotiation is a sensitive topic and field access is often restricted. Furthermore, real-life negotiations are typically complex, multi-layered, and stretched over longer periods of time, adding even more barriers for researchers. Using a bargaining game with the challenge of PPP renegotiation combined with a contextual framing scenario provides a design that offers the opportunity to credibly model and dissect micro-level mechanisms of choice in a context that would otherwise be unobservable. Moreover, the influence of potential unobserved variables confounding behavioural response is limited in this design, leading to more robust results (Falk and Heckman 2009). Of course, this design cannot account for the effect of on-the-job socialization or long years of managerial and negotiation experience, inviting future (replication) studies. Using a similar experimental approach, but adding, for example more mundane realism (Bozeman and Scott 1992) and particularly bringing in practitioner samples will expand our understanding of sector-specific bargaining behaviour even more. This current study is but the first stepping stone with a pure, unsocialized sample of future bureaucrats and future managers.

Decision making in public and private organizations

In a more theoretical vein, this study elaborates on behavioural differences between public and private actors when they are involved in cross-sectoral (re-)negotiations. The findings indicate that public agents are less likely to follow utility maximizing strategies reflected in the bargaining process as well as in the outcomes. It also shows that domain affects partners dissimilarly. These findings are relevant as bargaining theory neglects organizational and sectoral differences, while PPP scholars have noted that the difficulties in cross-sectoral bargaining hamper success but lack systematic empirical evidence (Burton 1990; Klijn and Teisman 2003; Medda 2007). The results confirm that sectoral agency influences public and private agents dissimilarly, pushing public partners more toward *satisficing* strategic bargaining and private partners more toward opportunistic *maximizing* strategies. This finding is all the more noteworthy as power relations in PPPs are often imbalanced, with public partners finding themselves in a superior position (Ran and Qi 2019). Although the experimental setup did not manipulate power distributions directly, describing the PPP as beneficial to societal goals and outcomes may have encouraged participants in the role of public negotiators to act more like public *principals* than as *agents*, feeling in a position that allows them to realize their own utility at the expense of the private agent. This potential effect notwithstanding, the findings suggest the opposite. Turning to prior micro-economic experimental research on negotiation behaviour suggest that fair contracts – such as the one in the case of the current experiment – serve as partially biased reference points for renegotiation behaviour and may lead to psychological (and unfounded) entitlement in renegotiations (Hart and Moore 2008; Fehr, Hart, and Zehnder 2011a; Fehr, Hart, and Zehnder 2011b). From this perspective, we may also interpret our results as an indication that this contractual benchmark effect is stronger for the public agents compared with the private agents in that private agents will be incentivised more strongly by the renegotiation opportunity than the public agents.

Since randomization succeeded and treatment groups were strictly balanced, it is therefore fair to assume that public agency may actually function as a behavioural prime fostering satisficing bargaining behaviour—not unlike notions of publicness priming anti-public sector biases in citizens (Marvel 2015). While the analysis makes it seem as though public agents are somewhat less 'ambitious' than private agents, it is plausible that public agents value outcomes beyond individual and organizational utility. Moreover, public sector agents are known to adhere to a different set of values compared to private sector agents (van der Wal, De Graaf, and Lasthuizen 2008), which may lead them to prioritize democratic values over organizational interest. The public sector context more strongly demands considerations such as procedural fairness (Talbot 2011), legal equality, and public accountability (Bovens, Schillemans, and Goodin 2014). In a similar vein, the societal costs and political risks associated with non-agreement may be perceived as being higher for public than for private agents. Consequently, public agents are less demanding in bargaining situations in the hope that this behaviour will lead to higher agreement rates. If this is the case, analyses show that this behaviour is not without costs, as it leaves them with suboptimal outcomes in a financial sense.

Another way to understand the results is that private agents may perceive the opportunity to renegotiate as a constant-sum game whereas public agents may have additional interests and therefore see the same negotiation setting as a variable-sum game. This distinction is relevant as the so called fixed-pie bias is known to yield higher results in the short term, but is not as successful in repeated interactions (de Dreu, Koole, and Steinel 2000). Moreover, repeated interaction is known to trigger cooperation and public agents tend to behave more cooperatively than private agents in single (Esteve, van Witteloostuijn, and Boyne 2015) and in multiple interaction scenarios (Bouwman et al. 2019).

This study provides a direct empirical response to recent appeals by Bouwman and colleagues (2018; 2019) for more micro-level research into public-sector negotiation as well as to prior conceptual research into the critical success factors of PPPs by Hodge and Greve (2009), Forrer et al. (2010), Kee and Forrer (2012), and Reynaers and De Graaf (2014). While many studies assume that PPPs' capacity for generating synergy originated from public decisionmakers imitating the business-like behaviour of their private partners, the results show that the institutional logics associated with the sectors (maximizing vs. satisficing) persist in bargaining behaviour in PPPs and that public agents will not automatically imitate their private partners' strategies.

Public agents carry the burden of losses

The third contribution relates to the finding that public agents are less likely to follow utility maximizing strategies in the domain of losses than private agents. In dyadic constant-sum games, non-equal splits result in the de-facto loss of utility for one partner and the immediate advantage of the other. The bargaining outcomes show that private agents agreed to carry substantially smaller amounts of losses than public agents. One explanation for this finding is that private organizations may be more strongly impacted by losses than public organizations as the existence of public organizations is less threatened by losses. Effectively, this bargaining strategy resembles *active* opportunism (Seggie, Griffith, and Jap 2013) by violating the premise of equally sharing risks and benefits as set explicitly by the game scenario and simply refusing to agree to close-to-equal splits of gains and losses to the disadvantage of the other partner (Jap and Anderson 2003). Breaching formal or informal partnership agreements and exploiting unexpected events to realize individual benefits are typical examples of active opportunism in PPPs in practice (Kee and Forrer 2012). The bargaining outcomes suggest that negotiators with public agency respond more strongly to the contextual framing effect of the bargaining domain, as predicted by prospect theory. Within its limitations as a laboratory

experiment, this finding seems to contradict the classic assumption of Kahneman and Tversky's (1979) prospect theory and Bækgaard's (2017) empirical finding that citizens prefer risk-affine reforms in the domain of gains (instead of risk-averse reforms) if contextualized in the public sector. The division ratios are especially disproportional in the domain of losses which can be explained by the phenomenon of the fixed-pie bias related to the dynamic multi-stage design of the experiment. Originally detected by Bazerman, Magliozzi, and Neale (1985), the fixed-pie bias suggests that in multi-round games, negotiators primarily focus on the potentially competitive nature of the situation even in non-zero-sum games (such as the gain-leg of the experiment) before recognizing the mutual advantage that can be achieved through collaboration.

Affect matters in the domain of losses

The fourth contribution to the literature involves the role of *affect* on bargaining behaviour. While there is a vast body of negotiation literature that highlights that positive affect will increase the likelihood of cooperation (e.g., Reb, 2010; Roskos-Ewoldsen, Bichsel, and Hoffman, 2002; Cialdini, 2009) and that equal sharing of risks and negative affect will increase opportunism, no unambiguous effects of sectoral affect were found in this study. The effect of implicit emotional affect toward their own sector on utility maximizing behaviour is observable in the domain of losses for both treatment groups but it is stronger for private agents. This finding is in line with extant research suggesting that affect will asymmetrically bias choice behaviour in the context of public sector decision making (Barry and Oliver 1996; Bazerman et al. 2000; Tsay and Bazerman 2009; Weißmüller and Vogel 2021). Prior conceptual work by Barry and Oliver (1996) and empirical research by Arora et al. (2012) on dyadic negotiation point out that individuals' negotiation behaviour is moderated by the strength of affect toward the partners involved. The role of identification and loyalty in organizational decision making was also stressed by Simon (1947/1997). Affect may thus

only be a proximate indicator of the underlying process of identification. Although participants associate the sectors with very distinct cognitive clusters—e.g., *public welfare orientation*, *administration*, and *red tape* for the public sector vs. *for-profit orientation*, *success*, and *pressure* for the private sector (see online appendix B)—the affective valance of these clusters does not significantly influence the agents' choice behaviour in the experiment.

There are two ways to interpret this finding. First, participants' individual attitudes regarding the sectors are simply not strong enough to result in statistically significant effects in both domains. This interpretation would call for future replication studies with participants holding more extreme sectoral preferences. Alternatively, affect may only matter in the domain of losses because prospect theory predicts that losses are considered twice as 'painful' as the same amount of gains—resulting in an asymmetry in negotiation. This finding also calls for future replication.

CONCLUSION

PPPs are justified on the premise of two fundamental assumptions (Burton 1990; Forrer et al. 2010): first, the assumption that public partners lack the strategic resources, capacities, and capabilities to deliver many types of public goods and services in a cost-efficient way—but still retain the ultimate responsibility for PPP success—and, second, public agents can partner with private firms in a mutually beneficial and sustainable way. This cooperation allows the public partner to gain access to the resources required to implement the cost effectiveness of private delivery while creating a choice environment in which both partners' "fortunes are linked to the success of the overall project, providing the incentives for both sides to cooperate, innovate, and work collaboratively toward the success of the enterprise" (Forrer et al. 2010, 477). The experimental results suggest a third fundamental condition for the PPP's success, namely the partners' ability to strategically align their negotiation spaces despite the

fact that public and private agents may satisfice or maximize to different extents. Agents in PPPs may assume that all partners share the same understanding of both the cooperation agreement and the contribution that is expected (implicitly and explicitly) from each partner even if conditions change and issues arise. In PPPs, this fundamental premise may not always hold true because private and public sector logics coexist and call for explicit effort directed at aligning both worlds.

As any conceptual model, the theoretical framework proposed in this study reduces complexity by highlighting and focusing the aspects of interest while neglecting many other factors that also matter in the real world. This sets a rich agenda for enlargement and elaboration in future research. For example, actors have different motivations to enter a PPP (e.g., Osei-Kyei and Chan, 2018), and these motivations might, in turn, influence their negotiation strategies and behaviours. For instance, actors who enter a partnership for reputational spill-over effects might negotiate with a stronger self-interest and shorter time horizon than actors who are predominantly interested in long-term learning and innovation and thus engage in the common purpose of the partnership to a greater extent. Likewise, the governance of PPPs provides many institutional, organizational, contractual, and managerial boundary conditions for strategic (re-)negotiations (Xiong et al. 2019) , limiting actors' degrees of freedom in the choice and execution of a bargaining strategy. Examining agency, domain, and affect in the concert of other predictors will thus further improve the basic understanding of negotiation behaviours and outcomes in PPPs.

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Table 1. Descriptive sample statistics and balance testing

Variable	Full sample				Public agent		Private agent		t-test	
	Min.	*Max.*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*	*p*
Female	0	1	.54	.50	.53	.50	.56	.50	.367	.715
Age (years)	20	45	25.85	4.79	25.76	4.66	25.90	4.87	.157	.876
Trust in others	1	5	3.13	.71	3.11	.73	3.15	.69	.264	.792
Risk preference [a]	-1.10	2.73	.77	.42	.64	1.19	.86	1.13	1.030	.305
Uncertainty avoidance	1	5.06	3.66	.61	3.69	.58	3.63	.63	-.581	.563
Sectoral affect [b]					.91	.40	.98	.32	-1.130	.261
Public sector	-1.62	1.81	.14	.72	.14	.72				
Private sector	-1.40	2.40	.66	.87			.66	.87		
Numeracy	0	7	4.80	2.08	4.85	2.01	4.75	2.16	-.265	.792

Note: N=118; n_{public} = 59; $n_{private}$ = 59; two-tailed t-test. [a] revealed measure normalized with

$\ln(h)$, higher values denote higher risk aversion, risk neutrality at $\ln(h) = 0$. [b] based on n = 385

stated sector-specific associations.

Table 2. Descriptive outcome statistics (agreement level)

	Public agent			Private agent			*t*-test		*Cohen's*
	Obs.	*M*	*SD*	*Obs.*	*M*	*SD*	*t*	*p*	*d*
Loss domain									
Amount	190	-80,511	48,920	147	-69,231	42,039	2.230	.026	.245
Offers	1,967	-71,714	47,214	2,458	-55,989	44,821	11.325	.000	.343
Counteroffers	1,967	-87,351	53,770	2,458	-107,909	70,256	-10.708	.000	-.324
Gain domain									
Amount	481	81,780	48,726	303	86,017	45,351	1.217	.224	.089
Offers	1,907	89,164	54,713	2,036	95,661	56,041	3.723	.000	.119
Counteroffers	1,907	68,747	45,099	2,036	65,098	44,995	-2.542	.011	-.081

Note: Two-tailed *t*-tests. Amounts in Euros.

Table 3. Regression estimates on offers and accepted amounts

Model *Dependent variable*	(I) Offer	(II) Offer	(III) Offer	(IV) Offer	(V) Amount	(VI) Amount	(VII) Amount	(VIII) Amount
Treatment (1=Public agent)	-9.95***	-4.13†	-8.25***	-2.51	-4.77*	-1.93	-3.73†	-.98
	(2.37)	(2.36)	(2.36)	(2.63)	(2.17)	(1.64)	(2.02)	(1.68)
Domain (1=Loss)	-54.92***	-60.70***	-55.01***	-60.74***	-32.60***	-36.39***	-32.79***	-36.52***
	(4.21)	(5.19)	(4.24)	(5.21)	(4.24)	(4.76)	(4.26)	(4.76)
Affect	2.94	2.88	4.73†	4.64†	1.56	1.52	2.90*	2.79**
	(1.78)	(1.76)	(2.55)	(2.53)	(1.33)	(1.28)	(1.29)	(1.25)
Magnitude c_t	.32***	.32***	.32***	.32***	.40***	.40***	.40***	.40***
	(.02)	(.02)	(.02)	(.02)	(.01)	(.01)	(.01)	(.01)
Public agent × Loss domain		-11.14*		-11.05*		-9.28†		-9.16†
		(4.49)		(4.45)		(5.33)		(5.29)
Public agent × Affect			-5.06	-4.95			-2.72	-2.56
			(3.18)	(3.12)			(2.58)	(2.47)
Intercept	45.32***	42.44***	43.99***	41.16***	22.29***	20.50***	21.57***	19.84***
	(2.71)	(2.34)	(2.54)	(2.31)	(2.22)	(2.01)	(2.02)	(1.90)
Observations	8,368	8,368	8,368	8,368	1,121	1,121	1,121	1,121
R^2	.797	.798	.798	.798	.868	.869	.868	.869
adj. R^2	.797	.798	.797	.798	.868	.868	.868	.868
AIC	86,196.95	86,161.92	86,183.23	86,148.78	10,925.40	10,922.42	10,926.20	10,923.35
BIC	86,232.11	86,204.12	86,225.42	86,198.00	10,950.51	10,952.55	10,956.33	10,958.50
F-statistic	1,360.56***	1,368.46***	1,112.73***	1,172.14***	1,207.53***	1,057.30***	968.77***	888.54***

Notes: Linear regression estimates clustered at subject ($N = 118$); heteroscedasticity-robust standard errors in parentheses. Control variables included but not reported. Significance levels denote † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

Figure 1. Theoretical Model [a]
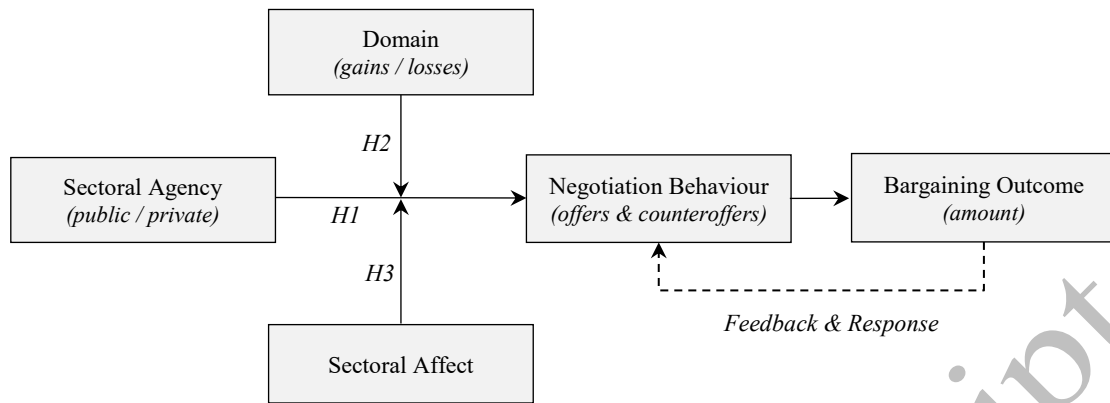
Note. [a] Authors' own framework.

Figure 2. Mean Bargaining Outcomes by Treatment and Domain
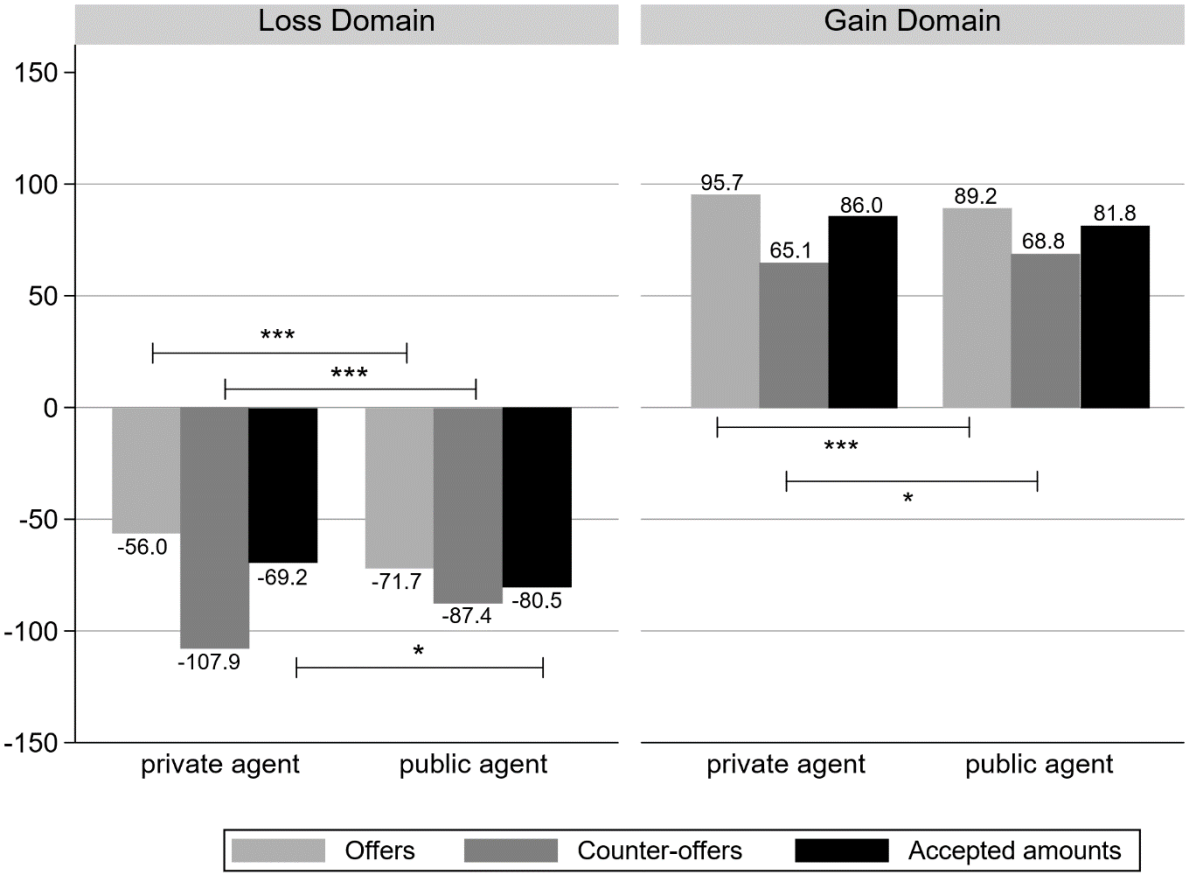
Note: Amounts in thousands of Euros. * *p* < 0.05; *** *p* < 0.001.

Figure 3. Subjective Bargaining Outcomes (*amount*) by Domain and Magnitude
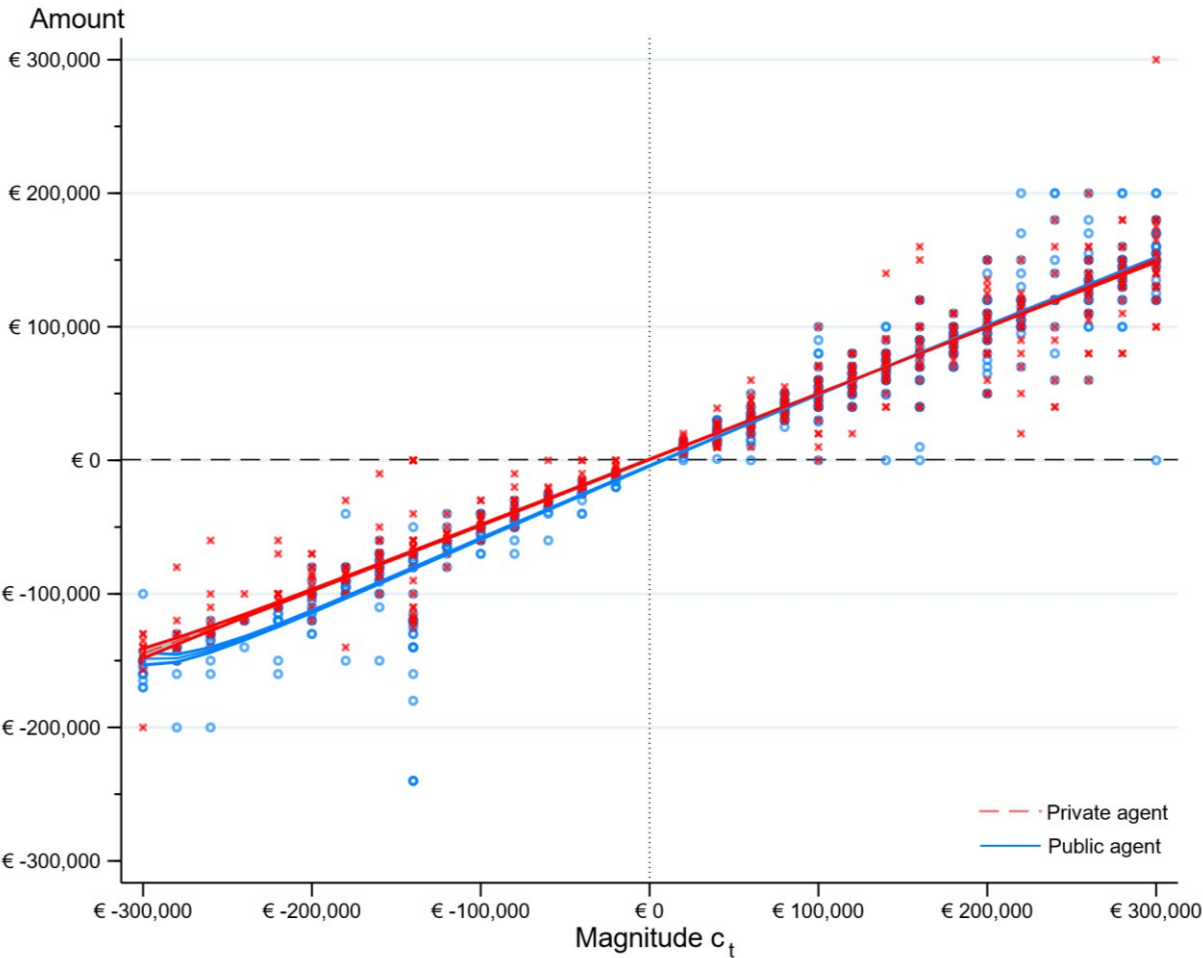
Figure 4. Division Ratios by Domain and Magnitude
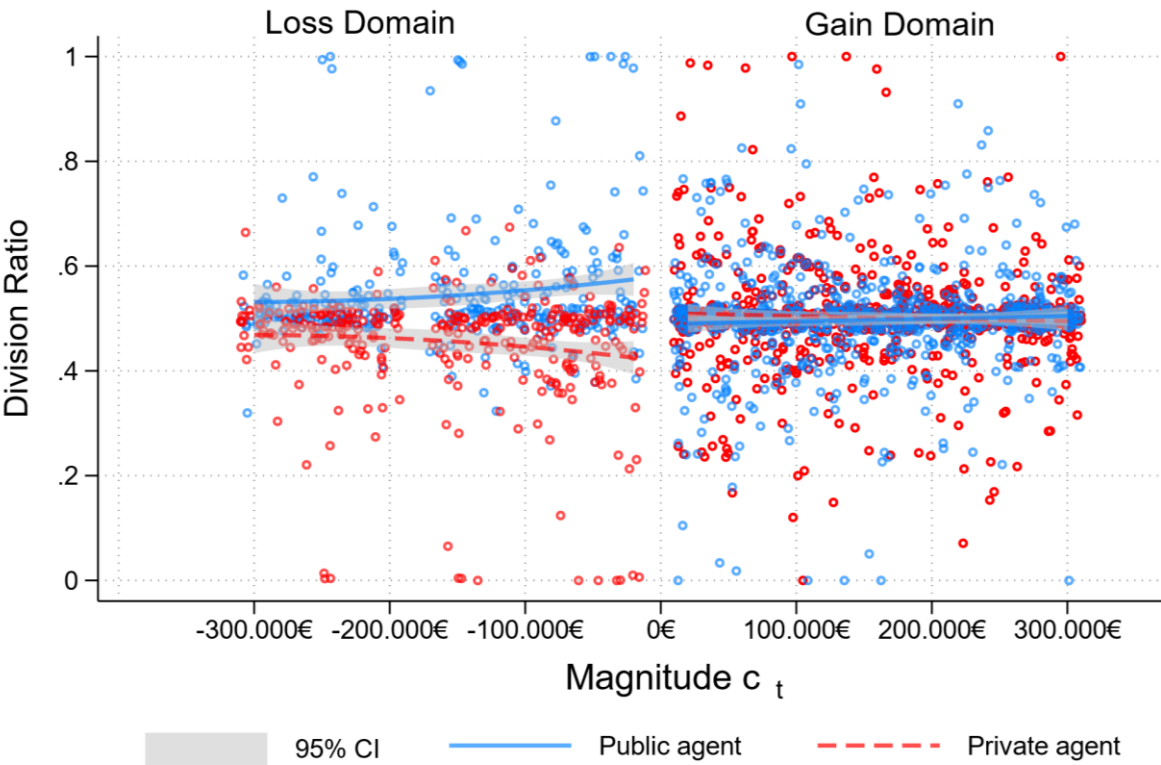
Figure 5. Marginal Treatment Effect by Domain and Sectoral Affect
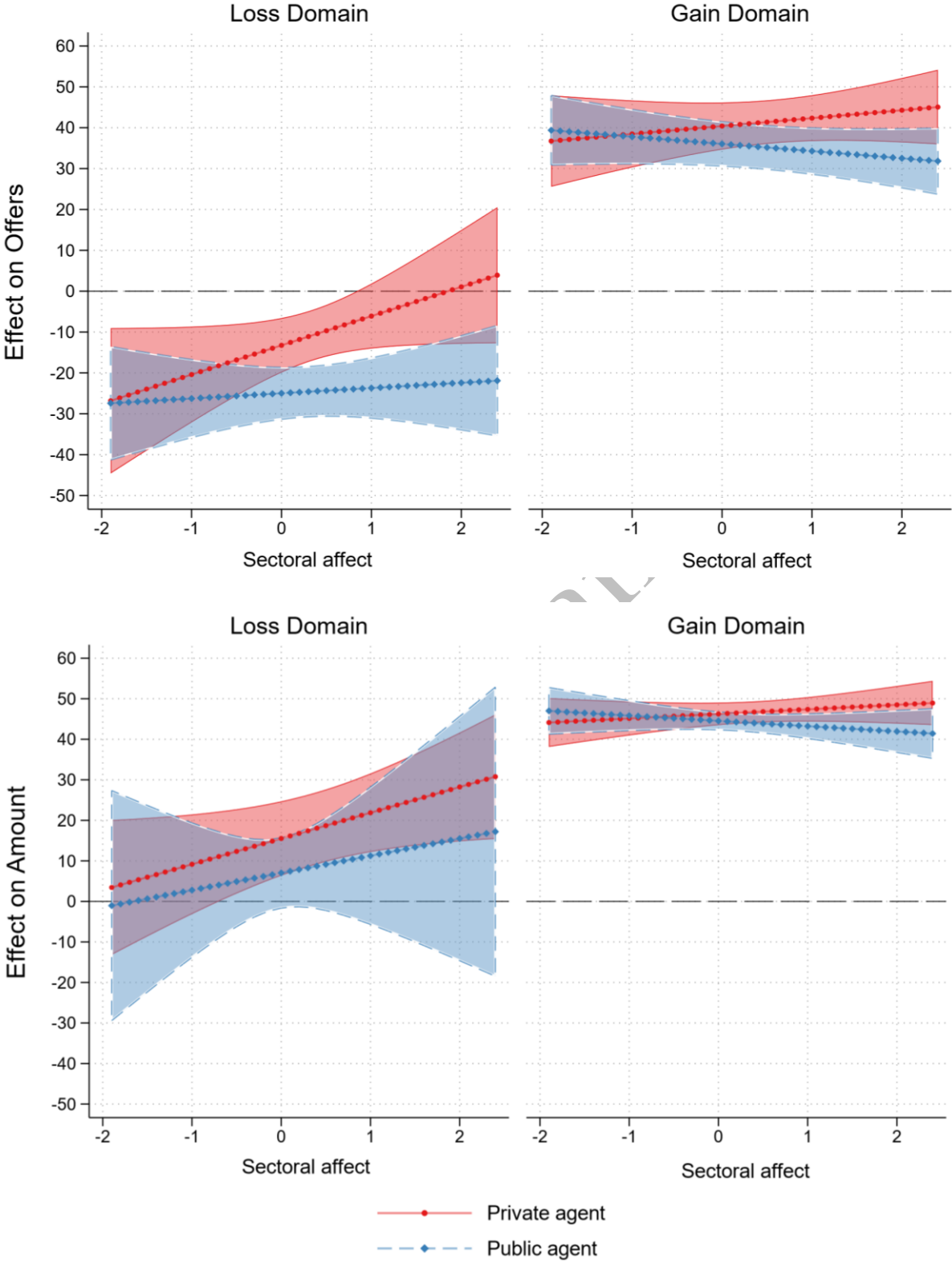
Note: Upper panel: Offers; Lower panel: Amounts. Offers in thousands of Euros.

FIGURE CAPTION LIST

Figure 1. Theoretical Model

Figure 2. Mean Bargaining Outcomes by Treatment and Domain

Figure 3. Subjective Bargaining Outcomes (*amount*) by Domain and Magnitude

Figure 4. Division Ratios by Domain and Magnitude

Figure 5. Marginal Treatment Effect on Offers by Domain and Sectoral Affect

APPENDICES (Supplementary <u>Online</u> Material)

A Experimental Setup and Treatment Stimuli

The between-subject bargaining experiment employed in this study comprises elements of the classic ultimatum game and dynamic dominance through alternating-offers bargaining in multiple negotiation rounds. In alternating-offers bargaining games with dynamic dominance, two players (1 and 2) propose offers on how to share a given monetary amount c_t (*cake)*. Both players can take the initiative and propose as many offers as they like within a certain timeframe. In multi-period-ultimatum bargaining setups like the one used in this study, the game relies on a given number T of possible negotiation rounds and on a given cake size c_t for every possible round $t = 1, \ldots, T$. Players determine their individual demand x_t with $0 \leq x_t \leq c_t$ which the responder can either accept or reject. Acceptance yields a binding agreement implying that the proposer receives x_t and the responder $y_t(x_t)=c_t - x_t - r_t$ (with r_t being the residual of the cake with $0 \leq r_t \leq c_t - x_t$ if the game allows for incomplete cake sharing) and resulting in the end of this round. In classic ultimatum games, dominance, i.e., the right to making offers, is fixed or strictly iterated which means that only one player at a given time can propose offers. In bargaining games, both players can simultaneously propose offers and respond to offers (by accepting or counteroffering) as to exercise dominance (Güth 1995; Crawford 1997, 15).

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A.1 Experimental Design

English translation, original codebook upon request.

1	**General introduction to lab session, random distribution of participants to cubicles**	
2	**Introduction to negotiation scenario [all study participants]:** 'Please consider the following scenario: A few years ago, new building land has been laid out in a town nearby on which a new large town district is to be built. This project is considered to be very positive for future urban development by all stakeholders. However, the investment costs for the construction of roads and for the development of the site are very high so that the city cannot bear these on its own and, consequently, has established a long-term partnership with a large construction company from the private sector. When the partnership was formally established, it has been contractually agreed that scheduled costs and returns of this project are going to be shared equally among both partners. This partnership has been working very well for some time and everything worked out just as scheduled. In the current period, however, the project has become a bit more dynamic, sometimes creating excess costs as well as excess returns from time to time. Unfortunately, no special clause was agreed upon for cases like this. The only option is to directly negotiate about how the extra profits and losses are to be shared between the two partners.	
3	**Role framing vignettes and explicit sector specific associations [prime]** Study participants randomly receive one of two vignette treatments:	
	A	**[Public Sector Treatment]** Imagine that you are a senior civil servant in the higher service of the city administration. You have been appointed as the chief negotiator on behalf of the city to settle this dispute with the construction firm. Please think carefully about the role you are taking on in this experiment. Imagine how it is to work in the public sector, how you would feel in this situation. What are the immediate associations that come to your mind in relation to the public sector and to the people working in the public organizations? Please specify at least 3 attributes: Immediate association with the public sector in general: [open response]

		Immediate association with the people working in the public sector: [open response] How do you feel in the role that you have been given as chief negotiator for the city administration? [open response] As a reminder, you are a senior civil servant in the higher service of the city administration and you have been appointed as the chief negotiator on behalf of the city to settle this dispute with the construction firm. Your salary is fixed and independent of the outcome of the negotiation.
	B	**[Private Sector Treatment]** Imagine that you are working as a senior manager in the private sector construction firm. You have been appointed as the chief negotiator on behalf of the company to settle this dispute with the city. Please think carefully about the role you are taking on in this experiment. Imagine how it is to work in the private sector, how you would feel in this situation. What are the immediate associations that come to your mind in relation to the private sector and to the people working in the private, for-profit organizations? Immediate association with the private sector in general: [open response] Immediate association with the people working in the private sector for for-profit firms: [open response] How do you feel in the role that you have been given as chief negotiator for the private-sector company? [open response] As a reminder, you are a senior manager working at the for-profit construction firm and you have been appointed as the chief negotiator on behalf of the company to settle this dispute with the city. Your salary is flexible and depends on how well you negotiate for your firm. You know that your boss will reward you with a considerable bonus equivalent to how much you score in for your company, the better you negotiate in total, the higher your payout!
4		**Cross-sectoral negotiation game** [15 rounds in domain of gain, 15 rounds in domain of loss, randomized dyads of two partners, negotiators recombined after each round.
	4.1	[**Instructions** round 1 to 15]: "In this period, the partnership has generated excess profits! Please negotiate about the individual share of profits for each partner! You have 45 seconds to come to a conclusion, otherwise the excess profit expires, please negotiate now!" **[Amounts ranging from 20 to 300 * € 1,000; order randomized]**

	4.2	[**Instructions** round 16 to 30]: "In this period, the partnership has resulted in excess losses! Please negotiate about the individual share of losses for each partner! You have 45 seconds to come to a conclusion, otherwise the excess losses will be distributed in a 50-50 share, please negotiate now!"] [**Amounts ranging from -20 to -300 * €1,000; order randomized**]	

	4.3	[**Overview of negotiation amounts for each round by domain:**]

Round No.	Domain of gains	Domain of losses	Round No.
1	€240,000	€-240,000	16
2	€160,000	€-160,000	17
3	€220,000	€-220,000	18
4	€40,000	€-40,000	19
5	€100,000	€-100,000	20
6	€200,000	€-200,000	21
7	€20,000	€-20,000	22
8	€60,000	€-60,000	23
9	€120,000	€-120,000	24
10	€80,000	€-80,000	25
11	€300,000	€-300,000	26
12	€260,000	€-260,000	27
13	€280,000	€-280,000	28
14	€180,000	€-180,000	29
15	€140,000	€-140,000	30

End of z-Tree game, followed by survey and socio-demographic questionnaire

5	**Tolerance for uncertainty (Dalbert 1999)** **Probability discounting questionnaire (Madden, Petry, and Johnson 2009)** **Socio-demographic questionnaire** including year of birth; gender; citizenship; field of study; intention to apply to public sector. **PSM (Kim *et al*. 2012)** **Trust in others (Yamagishi and Yamagishi 1994)** **Numeracy (Weller *et al*. 2013)**
6	**Acknowledgement, payout of incentives, end of study**

Instruktionen zu „VERHANDELN in PPPs"

Herzlich willkommen im Experiment „Verhandeln in PPPs"! Vielen Dank, dass Sie teilnehmen!

Im Folgenden nehmen Sie an einem **mehrstufigen, dynamischen Entscheidungsexperiment** teil. **In dieser Studie geht es darum herauszufinden, wie Menschen in bestimmten Situationen verhandeln.**

Bitte stellen Sie sich hierfür folgendes Szenario vor [dieser Text erscheint auch gleich als erstes auf Ihrem Bildschirm]:

Vor einigen Jahren ist in einer nahegelegenen Stadt neues Bauland ausgewiesen worden, auf dem ein neuer, großer Stadtteil entstehen soll. Dieses Projekt wird von allen Beteiligten als **sehr positiv** für die zukünftige Stadtentwicklung betrachtet.

Allerdings sind die **Investitionskosten** für den Bau von Straßen und für die Erschließung des Geländes **sehr hoch**, sodass die Stadt diese Kosten für die Quartiersentwicklung nicht alleine tragen kann und daher mit einem großen Bauunternehmen in einer **langfristigen Partnerschaft** zusammenarbeitet. Das **Bauunternehmen** stammt aus dem **privatwirtschaftlichen Sektor, d.h. es ist profitorientiert**, während die **Stadt ein öffentlicher Akteur** ist, d.h. **dem Gemeinwohl verpflichtet ist und keine Gewinnabsicht hat.**

Als diese Partnerschaft gegründet wurde, wurde vertraglich festgelegt, dass sich **beide Partner** die **Kosten und die Erträge**, die durch dieses Projekt erzeugt werden, **gleichmäßig teilen wollen**.

Diese Partnerschaft funktioniert nun schon seit mehreren Jahren sehr gut und alles läuft so wie vereinbart.

Allerdings ist in der aktuellen Planungsperiode **etwas Unvorhergesehenes passiert**: Das **Projekt entwickelt sich dynamischer als zuvor angenommen** und manchmal kommt es nun dazu, dass **zusätzliche Erträge** und auch **zusätzliche Verluste** erzeugt werden. Leider wurde für diese Fälle **keine spezielle Vertragsklausel vereinbart**, sodass nun Uneinigkeit darüber herrscht, wie diese unplanmäßigen Posten aufgeteilt werden sollen.

Die einzige Option ist nun, dass die beide Partner direkt miteinander verhandeln um auszumachen, wer welchen Teil dieser ungeplanten Erträge und Verluste tragen soll.

→ Dieses Verhandeln wird gleich **Ihre Aufgabe** sein!

Auf Ihrem Bildschirm erscheinen nach diesem Szenario gleich noch zusätzliche Informationen zu der jeweiligen **Rolle**, **welche sie im Rahmen dieses Experiments einnehmen** und eine **kleine Aufgabe** hierzu. **Bitte lesen Sie die Informationen gleich aufmerksam durch**, sie sind **sehr wichtig** für das Experiment und auch **für Ihre Auszahlung am Ende des Experiments**!

Es gibt **zwei verschiedene Rollen**: Ihre Rolle ist **entweder die eines Beamten** bzw. einer **Beamtin im höheren Dienst der Stadtverwaltung**, d.h. Sie verhandeln zu Gunsten der Stadt und des Gemeinwohls, **oder die eines strategischen Managers bzw. einer strategischen Managerin des**

großen Bauunternehmens, d.h. Sie verhandeln zu Gunsten des privatrechtlichen Bauunternehmens.

Sie verhandeln immer zu zweit, ein Unterhändler für die Stadt, der andere für das Bauunternehmen. **Nach jeder Runde, werden Sie zufällig einem neuen Partner zugelost.**

Ihre Aufgabe wird es sein, in insgesamt **31 Runden** Angebote zu der Aufteilung der zusätzlich entstandenen Erträge und Verluste zu machen, indem Sie eingeben, wieviel Sie für Ihre Organisation beanspruchen und was die jeweilige Partnerorganisation übernehmen soll.
Bitte beachten Sie aber, dass Sie nur **45 Sekunden pro Runde** Zeit haben, um sich zu einigen. Sie können immer auch mehrere (verschiedene) Angebote hintereinander abgeben. Beide Partner können gleichzeitig Angebote machen, Sie müssen nicht aufeinander warten.

In den **Runden 1 – 15** geht es darum, **zusätzliche ERTRÄGE aufzuteilen**. Diese können **ganz oder auch nur anteilig** unter den beiden Partnern aufgeteilt werden! Wenn es Ihnen nicht gelingt, innerhalb dieser Zeit eine Einigung über ERTRÄGE zu erzielen, dann verfällt der Ertrag und keiner der beiden Partner erhält in dieser Runde etwas.
In den **Runden 16 – 31** geht es darum, **zusätzliche VERLUSTE aufteilen**. Diese **müssen vollständig (!)** unter den beiden Partnern aufgeteilt werden! Wenn es Ihnen nicht gelingt, innerhalb dieser Zeit eine Einigung über VERLUSTE zu erzielen, dann trägt jeder Verhandlungspartner die Hälfte der Verluste. Hier müssen Sie immer auch das MINUS miteingeben.

Die nachfolgende Grafik zeigt, wie der **Screen in den Verhandlungsrunden** aussieht:

In der Mitte des Bildschirms erscheint der Betrag, über den in der jeweiligen Runde verhandelt werden soll (entweder ein ERTRAG oder ein VERLUST). In die **blauen Kästen** darunter tragen Sie Ihr Angebot zur Aufteilung dieses Betrags **in ganzen Zahlen** ein (bei den Verlusten das MINUS nicht vergessen!) und klicken dann auf VORSCHLAGEN. Die Angebote, die Sie vorschlagen, erscheinen links unten. Die Angebote, die Ihr Verhandlungspartner Ihnen vorschlägt, erscheinen **rechts unten**. Wenn Sie mit einem Angebot einverstanden sind, **markieren Sie es bitte mit der Maus** und klicken auf AKZEPTIEREN.
Sie können so viele Angebote unterbreiten wie sie möchten, solange bis entweder einer der beiden Verhandlungspartner ein Angebot akzeptiert hat, oder die Zeit abgelaufen ist. Die verbleibende Zeit in Sekunden wird Ihnen rechts oben angezeigt.

Alle durch die Verhandlungen erhaltenen Erträge und Verluste werden aufsummiert und **beeinflussen die Auszahlung am Ende des Experiments**. Bitte versuchen Sie so gut wie möglich zu verhandeln!

Für diejenigen in der **Rolle des Beamten bzw. der Beamtin** gilt: Jeder einzelne Euro, den Sie für die Stadt herausholen, **kommt der Gemeinschaft zu Gute**, schließlich handelt es sich um Steuergelder, die investiert wurden. **Ihr eigenes Gehalt ist von dem Ergebnis der Verhandlungen nicht betroffen!** Das bedeutet, dass Sie unabhängig von Ihrem Verhandlungsergebnis **€10** am Ende des Experiments erhalten werden.

Für diejenigen in der **Rolle des Managers bzw. der Managerin** gilt: Jeder einzelne Euro, den Sie für das Unternehmen herausholen, **kommt indirekt auch Ihnen selbst zu Gute**! Sie wissen, dass Ihr Chef Ihr Gehalt relativ zu Ihrem Verhandlungserfolg erhöhen oder abmindern wird. Je mehr Sie für das Unternehmen heraushandeln, desto höher Ihr Gehalt in diesem Szenario!
Das bedeutet, dass **Ihre Auszahlung am Ende des Experiments davon abhängt, wie gut oder schlecht Sie im Vergleich zu allen anderen Teilnehmern verhandeln**.

Nach den 31 Runden folgt noch ein anonymer Fragebogen. Ihre Antworten dort haben keinen Einfluss auf Ihre Auszahlung. Bitte antworten Sie ganz spontan und so ehrlich wie möglich.

Haben Sie noch Fragen zum Experiment?

Bitte halten Sie sich bereit, gleich geht es los!

A.3 Z-Tree Code of Negotiation Game Treatment (.ztt) and Questionnaire (.ztq)

<<< 2021_Negotiation_Treatment.ztt >>>

<<< 2021_Negotiation_Questionnaire.ztq >>>

B Explicit Sector-specific Associations (English Translation)

		n	f_i [b]	*Valence*			n	f_i [b]	*Valence*	
	Public sector			M [a]	SD	**Private sector**			M [a]	SD
1	Public welfare-oriented	29	15.0	.94	1.10	Profit-oriented	40	21.5	.50	1.64
2	Administration	22	11.3	-1.12	1.25	Success	27	14.5	2.10	.97
3	Red tape	19	9.8	-1.90	.57	Pressure	18	9.7	-1.59	1.05
4	Respectable	17	8.8	2.40	1.42	Respectable	16	8.6	2.40	1.42
5	Procurement	15	7.7	-.70	.68	Security	11	5.9	1.32	1.41
6	Nuisance	15	7.7	-1.90	.57	Egoism	10	5.4	-1.10	1.37
7	Neutrality	14	7.2	.75	.97	Relevance	10	5.4	.94	1.07
8	Rules	11	5.7	-.40	1.19	Power	9	4.8	.10	1.37
9	Security	11	5.7	1.32	1.41	Goal-oriented	8	4.3	2.00	1.10
10	Due-diligence	9	4.6	1.40	1.08	Neutral	7	3.8	.00	.00
11	Power	8	4.1	.10	1.37	Amorality	5	2.7	-2.05	1.19
12	Federal state	6	3.1	-.53	1.26	Identity	4	2.2	1.26	1.21
13	Money	6	3.1	1.60	.97	Audacity	4	2.2	2.20	0.63
	Sub-total	182	93.8				169	90.9		
	other terms [c]	12	6.2			other terms [c]	17	8.1		
	Total	194	100.0				186	100.0		

Notes: [a] Mean affective valence range: *min*. = -3.0, *max*. = 3.0; [b] Frequencies in percent; [c] all other items f_i < 3.0%; [d] all other items f_i < 2.0%.