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Asymmetries in risk preferences and risk behavior between public and private sector employees: Experimental evidence on sector-specific probability discounting

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Abstract:

Public sector employees are often stigmatized in public opinion: Even though they are entrusted with the creation and maintenance of public goods and services, reports on public opinion show that they are often perceived as inefficient and irrationally risk-averse – in contrast to private sector employees. This creates a large number of problems for public organizations ranging from practical challenges such as difficulties in attracting employees to fundamental questions regarding the legitimacy of public organizations as a whole.

In this study, we explore whether public and private sector employees actually differ from each other in an economic professional context. Are public sector employees indeed more risk-averse than private employees? And if so, are individual character traits predictors of actual risk behavior when employees are confronted with economic choices?

We conduct a situational framing experiment with both public sector (N = 82) and private sector employees (N = 318) measuring individual character traits in respect to risk propensity and impulsivity. Furthermore, participants were asked to complete a probability discounting questionnaire where they had to make a number of financial decisions in a professional context (i.e. for their firm or for their public organization, respectively). The probability discounting questionnaire involved choice tasks between smaller, secure monetary rewards against larger but probabilistic

future rewards. These choice tasks varied systematically in order to hyperbolically estimate discounting rates for each individual based on the points of indifference between each choice task.

Results reveal significant effects of risk propensity but not of impulsivity on probability discounting behavior, with significant differences in these risk preferences between public and private sector employees. Public sector employees are more risk-affine. Canonic correlation analysis and multivariate regression analysis show that personal risk preferences translate very dissimilarly into professional economic risk behavior for both test groups.

We conclude that, first, common stereotyping toward public sector employees' risk behavior represents more than an urban legend since we indeed find sector-specific asymmetries. Second, while these differences might inhibit co-production efficiency in cross-sectoral teams, both risk-averse and risk-affine individuals can foster cross-sectoral partnership excellence.

1. Introduction

Stereotyping public sector employees is very strong in pop culture. The typical role ascribed to public sector employees is a mixture of the stubborn-timid bureaucrat who works - sloth-like - in a never changing environment made of towering, undealt-with files. Such public attitudes deeply shape the relationship between public and private sector actors. This is problematic because, in many cases, public services have to be created by a co-productive effort that needs the active and positive participation of citizens in order to be efficient (Osborne et al. 2012). Negative stereotypes are rooted very deeply in public opinion and persistently distort citizens' perception of public institutions' performance – irrespective of factual evidence of these institutions' efficiency and reliability (Marvel 2015; Hvidman & Andersen 2015). Perceptional biases are so strong that Marvel (2015) finds that what he calls *anti-public sector bias* even persists when information on public organizations' performance is explicitly and reliably updated.

However, very little is known about whether employees working in public organizations actually give evident reason for being confronted with such negativity. Do public sector employees really *behave* differently than private employees, or is it rather a collective stigma they are associated with, which might in turn force them into the role of the "typical public sector employee"?

In a first step we examine the relevance of research into empirical risk preferences and risk behavior of public and private sector employees based on the current – highly ambiguous – scientific discourse. Experimental research on this topic is relatively scarce, especially in respect to quantitative economic behavioral studies. Current scientific discourse is based on studies which use self-reported or semi-derived measures to model risk preferences and risk behavior. Using these explicit scales instead of objective measures always has the drawback of self-assessment and self-reporting biases, as well as the severe short comings of a strong subjectivity issue.

In order to fill this gap, we establish an objective experimental setup and present empirical findings that quantify the extent to which employees in the public sector differ from their peers in the private

sector, in respect to both risk attitudes and risk behavior. Our main measures comprise the personal risk propensity and impulsivity of public and private sector employees as well as their probability discounting behavior in a professional, work-related context. With this measure, we are the first to provide hard evidence that withstands conscious or subconscious biasing by the participants.

In addition - and in contrast to former research - we specifically investigate whether public and private sector employees actually behave dissimilarly in the prospect of risk *in their professional work-life* because it is their decision making on-the-job that is most relevant for public welfare creation, not how employees behave in their leisure time. We discuss our findings with a focus on the efficiency of public service co-creation and give indications for future research.

2. Literature Review

One of the classic topics in both public administration and public management research is comparative is the investigation of sector-specific differences, especially regarding employee behavior (Simon 1976). Every real-life decision incorporates risk. Hence, both public and private sector employees face economic choices that comprise various degrees of risk on a day-to-day basis: Making plans for the future of their team and organization; estimating the outcomes of projects; guessing how many colleagues will be away sick to estimate personnel requirements; making choices on alternative investments, suppliers, and potential partners – every time trying to take the best decision in the prospect of risk.

Decision-making is a process guided by individual risk attitudes as well as contextual factors (Ferguson & Fukukura 2012; Kahneman 2003; Perugini 2005). Risk attitudes are learned dispositions to regularly act positively or negatively towards choice options that comprise risk (Ajzen 2001; Fazio 2007; Ferguson & Fukukura 2012). For example, if employees regularly prefer secure choice options over risky choice options which might potentially yield higher outcomes, these employees are characterized as comparatively less risk-affine: Their *risk propensity* would be relatively low. Another important factor, which determines individuals' overall risk attitude, is their level of *impulsivity*:

Impulsivity describes the ability to tolerate the potential discomfort from not knowing *a-priori* whether selecting the probabilistic choice option is the most beneficial strategy (Kirby et al. 1999). How do public and private sector employees differ both in their risk preferences and their actual risk behavior?

2.1. Risk Preference

The widely held assumption that public and private employees react differently toward risk has been challenged in studies as early as Barton and Waldron's (1978). In their experimental setup, the authors *do not find significant differences* in stated risk attitudes of public and private sector managers. However, a later study by Roszkowski and Grable (2009) indicates that public sector employees are *more risk-averse* because they were found to be more conservative in their personal financial planning processes. Roszkowski and Grable (2009) conclude that assumed differences in risk preferences were not merely a stereotype about public sector employees. Unfortunately, their study does not control for between-sector differences in job security: Public sector employees on tenure(-tracks) might find it easier to engage in (de facto more conservative) long-term financial planning compared with private sector employees who face more volatile career prospects. In this sense, it is rather the employment sector that would influence financial planning behavior and not individual risk preferences *per se*, which calls into question Roszkowski and Grable's (2009) implications.

Pfeifer's (2010) study with data of more than 2,000 participants from the 'German Socio-Economic Panel' (wave of 2004) also found *no significant relation* between participants' employment sector and their general personal risk behavior when socio-demographics are accounted for. The importance of job security strongly and reliably influenced the employment sector choice. However, preference for job security could be related to a number of other personal factors not controlled for in Pfeifer's study, e.g. having children or other large responsibilities. Still, Pfeifer's findings could indicate that employees who *prefer more stable work environments* – which, again, could be

interpreted as being more risk-averse – are more likely to self-select into public sector employment due to more stable and family-friendly job models.

There are many more secondary factors to be accounted for, among which especially relative job security through tenure positions (Bellante & Link 1981), public service motivation, general altruism (e.g. Cherrington 1980), and lack of profit pressure (Chen & Bozeman 2012) have been found to influence sector choice. Furthermore, public organizations are traditionally regarded as less interesting for potential employees who respond strongly to financial incentives (e.g. Bonin et al. 2007; Dong 2014; Frank & Lewis 2004): Bonin et al. (2007) suggest that public sector employees prefer jobs with *lower earnings variability and lower career risks* – both factors that are also significantly preferred by more risk-averse and less impulsive individuals (Bonin et al. 2007; Pfeifer 2010).

Another argument often put forth to explain differences between public and private sector employees is the potential different nature and the dissimilar objectives of work across the sectors: Public institutions are often charged with maintaining public welfare instead of creatively and actively maximizing it (Boyne 2002; Roszkowski & Grable 2009). This fosters dissimilar paradigms and processes in public and private sector organizations, all of which attract different kinds of employees (e.g. Allison 1986; Boyne 2002; Scott & Falcone 1998). However, it is unclear why exactly operative tasks and functions in public management should differ significantly from the tasks in private sector organizations – at least from the perspective of the individual employee. White-collar work stays white-collar work in both sectors. Therefore, Bozeman and Kingsley (1998) found their empirical results that *public managers differ hardly from private sector managers* in respect to risk preferences very encouraging and concluded that it is rather the structural formalism and organizational risk culture, e.g. the amount of trust put into employees, which influences actual employee behavior in both sectors. However, experimental behavioral evidence transcending the serious shortcomings of self-reporting measures is still lacking.

Using data from the Taiwanese 'National Longitudinal Survey' with four cohorts between 1993 and 2006, Dong (2014) investigates the so-called self-selection mechanism, asking whether workers choose their sector of employment based on their risk preference. This survey uses Kimball et al.'s (2008) range-based estimation for relative tolerance for risk. Dong (2014) provides evidence that *public sector employees have the lowest level of risk tolerance*, followed by nonprofit sector employees and private sector employees. His multi-nominal logit model finds that *risk-aversity can actually serve as a valid predictor of employment sector choice* and that individuals whose level of risk tolerance is one standard deviation below the mean are 11% more likely to work in the public sector. However, in a large survey-based study with more than 10,000 participants on actual mortgage investment decisions, Tzioumis (2012) finds little to *no significant evidence* that public sector employees behave any differently than private sector employees – neither more nor less risk-aversely.

This short literature review shows that previous research is highly ambiguous. Table 1 summarizes current findings on sector specific differences in employees' risk preference:

Study	*Measure*	*Indications for public sector employees' preferences as compared with private sector employees*	
		Results[a]	*Interpretation*
Barton & Waldron (1978)	Individual risk attitudes	n.s.	
Bozeman & Kingsley (1998)	Managers' professional risk preference	n.s.	
Bonin et al. (2007)	Preference for volatility in earnings	prefer lower volatility	risk-averse, less impulsive
Bonin et al. (2007)	Preference for career risk	prefer lower career risk	risk-averse, less impulsive
Roszkowski & Grable (2009)	Financial planning process	more conservative	risk-averse
Roszkowski & Grable (2009)	Long-term orientation	stronger long-term orientation	less impulsive
Pfeifer (2010)	Personal risk behavior	n.s.	
Pfeifer (2010)	Job security	prefer higher job security	risk-averse
Tzioumis (2012)	Private mortgage investments	n.s.	
Dong (2014)	Individual risk tolerance	lower risk tolerance	risk-averse

Table 1: Comparative empirical studies on differences in individual risk preferences between public and private sector employees, including each study's interpretation of findings. [a] n.s. indicates no significant difference between public and private sector employees' preferences.

While one half of the studies reviewed find no significant differences in the risk preferences between public and private sector employees, the other half concludes that public sector employees are more risk-averse than private sector employees. Also, public sector employees are found to act less

impulsively than private sector employees. Even though previous studies often failed to control strictly for sector-specific organizational differences in their comparative measures, they give strong indications that sector-specific dissimilarities in employees' risk preferences exist. We, therefore, formulate hypothesis *H1* as follows:

H1: *There are significant differences in individual risk preferences between public and private sector employees* (*cet. par.*):

H1a: *Public sector employees are more risk-averse compared with private sector employees*, and

H1b: *public sector employees are less impulsive than private sector employees.*

2.2. Professional Risk Behavior

It is likely that sector-specific differences are not limited to *risk preference* and *impulsivity* but also manifest as quantifiable asymmetries in actual *risk behavior*. Preferences manifest in attitudes and thereby guide behavior (e.g. Ajzen 2001; Dohmen 2011; Dolan & Sharot 2012; Fishbein & Ajzen 1974; Greenwald et al. 2002; Kahneman 2003; Rohde & Rohde 2011). It is, therefore, possible that individual risk preferences translate into professional behavior on the job. However, employees' behavior under risk is not necessarily dependent on individuals' attitudes toward risk in a static way. In order to find out whether public and private sector employees really differ as fundamentally as public stereotyping suggests, it is important to specifically address *risk behavior* in a professional work-life context across both sectors.

Empirical evidence is scarce. One comparative study by Bellante and Link (1981) uses revealed consumer behavior in the prospect of personal risks, e.g. usage of seatbelts, medical and automobile insurance, as well as smoking and drinking behavior, to conclude that individuals who behave risk-aversely in their private life are significantly more likely to choose the public sector for employment.

However, an extensive study by Baarspul and Wilderom (2011) finds *only very limited evidence* that individual employee behavior differed across the public and the private sector.

In an experiment based on a survey study with more than 2,600 employees in The Netherlands in 2000, Buurman et al. (2012) find that *cet. par.* public sector employees are significantly more likely to donate their substantial earnings from being a survey participant to charity – in contrast to private sector employees who were more likely to choose direct or probabilistic ("lottery") payouts. Buurman et al. (2012) deduce from these findings that *public sector employees behave more risk aversely* as they prefer secure outcomes over risky options. However this interpretation has been called into question by recent findings of Tonin and Vlassopoulos (2015) who show that public sector employees are *per se* significantly more likely to engage in pro-social and charitable behavior, leaving Buurman et al.'s (2012) findings hard to interpret as indicators of risk-aversity in public sector employees.

Table 2 summarizes the few comparative empirical studies that deal with differences in individual *risk behavior* between public and private sector employees:

Study	*Measure*	*Indications for public sector employees' preferences as compared with private sector employees*	
		Results[a]	*Interpretation*
Bellante & Link (1981)	Private life risk behaviors	less risk-taking	risk-averse
Baarspul & Wilderom (2011)	Employee behavior	n.s.	
Buurman et al. (2012)	Choice behavior (probabilistic vs. secure charity reward)	preference for charity	risk-averse

Table 2: Comparative empirical studies on differences in individual risk behavior between public and private sector employees. [a] n.s. indicates no significant difference between public and private sector employees' behavior.

It indicates how strongly research on public sector employees' behavior actually focusses on preferences instead of measuring *actual behavior under risk*. Thereby, the current discourse severely neglects the possibility that individuals could act differently in their personal matters in their private lives compared to their behavior in a professional employment context: There is a strong implicit assumption that *risk preferences* translate into *risk behavior* one-to-one. It is unclear if – and if so to which extent – *risk preferences* represent valid predictors for *risk behavior* in professional contexts – neither for the public nor the private sector. As current research on actual behavior of public sector

employees in their professional environment is very limited, it is currently unclear whether public sector employees who shun risk in their personal life also behave risk-aversely in their role as a public sector employee.

Existing evidence gives slight indications for dissimilar behavior across the sectors but, due to inconsistence, strongly calls for further investigation in order to shed light onto how precisely public and private sector employees react to risky outcomes. We seek to close this gap and further scrutinize the stereotype of the public sector employee and formulate hypothesis *H2* as follows:

H2: *There are significant differences in individual risk behavior between public and private sector employees (cet. par.):*

H2a: *Public sector employees behave more risk-aversely compared with private sector employees*, and

H2b: *being more conservative, public sector employees show more consistency in their risk behavior*.

3. Data and Methods

3.1. Individual Traits of Risk Preference

In this study, we scrutinize the stereotype that public and private sector employees hold different *risk preferences* and, consequently, show dissimilar *behavior under risk*. We assess individual traits of risk preference in a two-fold approach, measuring both individual *risk propensity* and *impulsivity* to later pool these results on personal character traits with participants' experimental *probability discounting behavior* conducted in a work-life related setting.

3.1.1. Risk Propensity (*RPS*)

We measure participants' explicit attitude toward risk applying a slightly revised version of Nicholson et al.'s (2005) seven-item scale on personality and domain-specific risk taking – called the Risk

Propensity Scale (*RPS*). The *RPS* as applied here closely resembles the original measure that assesses personal risk behavior in six different areas of everyday life. It results in an individual sum-scored parameter for risk propensity. In order to fit the other measures applied in this study, the *RPS* was changed to a seven-point Likert scale (originally five-point) with opposite value labels from 1 = "strongly disagree" to 7 = "strongly agree". The *RPS* scale items were translated into German following the procedure of Meyer et al. (2011), who also find high face validity for this scale. With the *RPS*, high sum-scores indicate a higher absolute explicit risk propensity. This means that high-scoring individuals can be assumed to have a relatively higher propensity to generally behave more risk-affinely than the general population (Nicholson et al. 2005).

3.1.2. Impulsivity (*BIS10/11*)

Participants' impulsivity in the prospect of risk was measured with a translated and adapted version of Barratt's Impulsiveness Scale (*BIS10/11*): This explicit direct scale measure comprises 34 items integrated from both versions 10 (34 items) and 11 (30 items) of Barratt's original scale from 1959 (Patton et al. 1995). This 4-point self-report measure comprises items ranging from 1 = "rarely/never" to 2 = "occasionally" to 3 = "often" and 4 = "almost always/always". The final degree of impulsivity is sum-scored over all items. The higher respondents score the stronger their regular tendency to act impulsively compared with the general population (Patton et al. 1995). The *BIS10/11* scale is found to possess high construct validity and internal consistency as well as highly significant correlations among its internal item clusters (Gerbing et al. 1987; Patton et al 1995).

3.2. Risk Behavior: Probability Discounting Questionnaire

To measure job-related risk behavior, we asked participants to make a series of decisions on financial investments for their (imaginary) employer organization. Framed within this professional context, these choice tasks systematically assessed participants' economic risk behavior in respect to probability discounting – not in their private matters but how they would act as an employee. We follow Meyer et al.'s (2011) German adaption of Madden's (2009) *Probability Discounting*

Questionnaire to assess participants' *probability discounting* behavior under risk. Respondents have to complete a number of choice tasks each of which offers two choice alternatives: One alternative yields an *immediate* and *secure non-probabilistic smaller reward*, the other alternative a fixed *probabilistic larger reward*, e.g. €20 million against a .5 (50%) prospect of receiving €80 million instead.

Prior research on discounting behavior – e.g. Andrade & Petry (2012); Green & Myerson (2004); Green et al. (2013); Kirby & Herrnstein (1995); Kirby & Maraković (1996); Kirby et al. (1999) – shows that the steepness of the hyperbolical discounting function decreases with an increase in absolute amount of reward. To control for potential magnitude effects, questionnaire items were subdivided into three ranges of rewards (*large*, *medium*, and *small probabilistic rewards*) while absolute probabilities of reward of the risky choice options remain constant.

Across subsets, reward amounts, the probability of rewards, as well as the combination of both is varied systematically to create the impression of randomness and inhibit response fatigue. Based on the patterns of systematic preference reversals across these choice tasks, we use binary matrices to assess and relatively weigh these shifts in risk behavior for each individual. It results in three free probability discounting parameters *h,* one for *large* (h_{large}), *medium* (h_{medium}), and *small probabilistic rewards* (h_{small})*,* respectively.[1]

h signifies the individual hyperbolic discounting parameter that modulates the *relative value* (*V*) of a choice option as a function of the *prospect amount of reward* (*A*) and the *odds against receiving the reward* (*Θ*) with *Θ = (1-p)/p*, where *p* refers to the *probability of obtaining the reward*:

$$V = \frac{A}{1+h*\Theta} \quad (1)$$

[1] For further details see Madden et al. (2009) as well as Andrade and Petry (2012), who both provide detailed description of the conditional estimation procedure. If participants showed inconsistent choice behavior, *h* was estimated in an iterative process in accordance to Madden et al. (2009), based on Kirby et al. (1999) and Kirby and Maraković (1996). In the case that two or more ranges yielded equal consistency, the subject was assigned the geometric midpoint of those ranges.

Equation 1 illustrates this relationship algebraically (Andrade & Petry 2012). The endpoint scale values of *h* range from 0.33 to 16.17; higher *h*-values indicate a stronger devaluation of the perceived value of an alternative with probabilistic outcome, i.e. that respondents with high *h*-value are relatively more risk-averse.

3.3. Study sample

We raised an original sample with N = 400 participants using a professional online-access panel provider. The sample comprised 82 public sector employees and 318 private sector employees aged 18 to 69 years. The sample is representative for the German population with respect to age, gender, and level of education.[2] Participants were encouraged to answer spontaneously in order to increase validity.

Since economic experiments are relatively new to the field of public administration and public management research (Baekgaard et al. 2015; Groeneveld et al. 2015), we estimated the required sample size conservatively using power estimation functions in *R* (version 3.1.2) with Cohen's *d* (level of significance .05, power .8, two-tailed) *a-priori*, presuming that the treatment effect should yield results to effect sizes comparable with other studies on risk preference and behavior such as Madden et al. (2009) or Andrade and Petry (2012). After the main experimental framing task, participants completed a socio-economic questionnaire.

4. Results

The main analysis was conducted with Stata 13.1. Baseline characteristics between public and private sector employees were analyzed using independent *t*-tests and chi^2-tests. Data inspection shows no missing data. However, 18 respondents answered the filter question on whether they had ever been employed negatively. Missing experience with the professional work-life might confound experimental results in the probability discounting questionnaire. Consequently, these participants

[2] The survey was conducted anonymously in December 2015.

were screened out, and the final sample amounts to N = 382 participants. Table 7 in the appendix gives detailed comparative descriptions of the baseline characteristics for all participants by employment sector in respect to age, country of birth, nationality, education, vocational training, and occupation. Public and private sector employees differed significantly in respect to the distributional levels of school-based education, tertiary and vocational education, level and status of employment, and employment category.

Prior to main analysis, we tested the distributions of the *RPS* and *BIS10/11* results as well as the mean estimated discounting parameters (*h*-values) for normality with the Doornik-Hansen test (see results in Table 9 in the appendix). With the exception of *RPS* ($chi^2(2) = 2.217$, Prob > $chi^2 = 0.330$) in the subsample of public sector employees, all constructs test negatively for normality (Prob > $chi^2 = 0.000$). Consequently, hypotheses were tested with multi-group comparisons of means using the Wilcoxon (1945) rank-sum test, also known as the Mann-Whitney two-sample statistic (Mann & Whitney 1947).

4.1. Individual risk preferences (H1)

First, we analyze respondents scoring for their risk preferences. Table 3 displays the absolute results of the risk propensity (*RPS*) and the impulsivity (*BIS10/11*) scales for each subsample. In absolute numbers, public sector employees score slightly higher than private sector employees in both risk propensity and impulsivity.

	Range	Subsample	Mean	Std. Err.	[95% Conf. Interval]		Wilcoxon[b]		
							z	Prob > |z|	Sign.
RPS	1 - 9	Public sector	5.498	.0951	5.311	5.685	0.132	0.895	n.s.
		Private sector	5.478	.0478	5.384	5.573			
BIS10/11	1 - 4	Public sector	2.276	.0283	2.221	2.332	1.900	0.058	*
		Private sector	2.229	.0159	2.198	2.261			

Table 3: Results for individual risk propensity (RPS) and impulsivity (BIS10/11) for public and private sector employees. Test for significance of findings with Wilcoxon rank-sum (Mann-Whitney) test. [b] *p < .10.

RPS and *BIS10/11* scores comprise dissimilar variances for public and private sector employees. Applying the Wilcoxon rank-sum (Mann-Whitney) test, we find *no reliable evidence* for differences between public and private sector employees *in respect of their risk propensity* (*RPS*: z = 0.132, Prob >

|z| = .895). This means that employees from both sectors hold similar attitudes to the prospect of probabilistic rewards, indicating that public sector employees are *neither more nor less risk-affine than private sector employees*. We, therefore, reject *H1a*. However, we find significant differences between subsamples for impulsivity (*BIS10/11*) (z = 1.900, Prob > |z| = .058). Thus, *H1b* holds true and cannot be rejected. Public sector employees consistently score lower in the *BIS10/11* scale, which indicates that they are less impulsive than individuals working in the private sector. Results show that in respect of their risk propensity, public and private sector employees are in fact very similar: Public sector employees are not more risk-averse than private sector employees. However, public sector employees are less impulsive. In this way, results cannot falsify *H1* but constitute that there are *both significant differences* and *significant similarities* between public and private sector employees – at least in these two dimensions of risk preferences.

4.2. Probability Discounting Behavior (H2)

But how do these individual differences influence actual behavior under risk? Table 4 shows the mean estimated results of the delay discounting questionnaire for each magnitude of reward (h_{medium}, h_{large}, and h_{small}) as well as the overall score ($h_{overall}$). Because *h*-values are very sensitive to marginal distortion, $h_{overall}$ was estimated as the geometric mean of h_{large}, h_{medium}, and h_{small}.

Magnitude of probabilistic rewards	*h*-value range	Employee subsample	Mean	Std. Err.	[95% Conf. Interval]		Wilcoxon[b] z	Wilcoxon[b] Prob > |z|	Wilcoxon[b] Sign.
h medium: €20 vs. €80	0.33 –15.17	Public sector	6.886	0.652	5.605	8.168	-1.827	0.068	*
		Private sector	8.022	0.328	7.377	8.666			
h large: €40 vs. €100	0.33 – 14.65	Public sector	5.483	0.644	4.217	6.750	-2.092	0.037	**
		Private sector	6.831	0.345	6.153	7.509			
h small: €40 vs. €60	0.33 – 16.17	Public sector	0.733	4.018	6.901	0.733	-1.547	0.122	n.s.
		Private sector	0.377	5.408	6.889	0.377			
h overall[a]	0.33 – 1.185	Public sector	0.523	0.050	0.424	0.622	-1.728	0.084	*
		Private sector	0.621	0.025	0.572	0.670			

Table 4: Results for differences in Probability Discounting (*h*-values by margins of reward) between public and private sector employees. Rewards in million €. Test for significance of findings with Wilcoxon rank-sum (Mann-Whitney) test. [a] h_{total} represents the geometric mean of h_{large}, h_{medium}, and h_{small}. [b] *p < .10, ** p < .05.

H2a assumes that public sector employees behave more risk-aversely and, consequently, discount probabilistic rewards more steeply. However, results of the Wilcoxon rank-sum (Mann-Whitney) tests indicate that public sector employees discount large probabilistic rewards significantly *less*

steeply than private sector employees (z = -2.092, Prob > |z| = .037, p < .05). The same holds true for medium-size probabilistic rewards (z = -1.827, Prob > |z| = .068) and for the overall effect (z = -1.728, Prob > |z| = .084), however, these last two findings are but marginally significant on a p < .10 level of confidence. Figure 1 illustrates these findings:

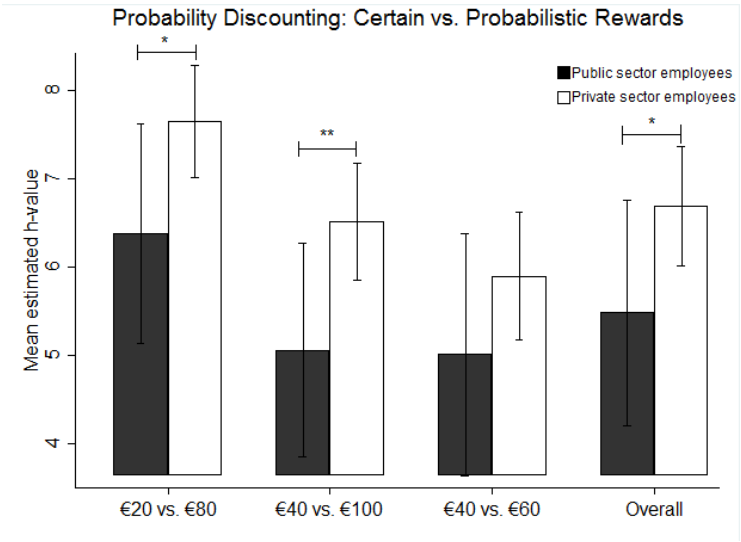

Figure 1: Probability discounting parameters (*h*-values) by magnitude of probabilistic reward. Mean estimates obtained by public sector employees (*shaded bars*) and private sector employees (*white bars*). "€20 vs. €80" = h_{medium}, €40 vs. €100" = h_{large}, "€40 vs. €60" = h_{small}, "Overall" = $h_{overall}$. Reward amounts in millions. Spikes depict confidence intervals. * p < .10 , ** p < .05.

We do not find significant differences for the discounting of small probabilistic rewards (z = -1.547, Prob > |z| = .122). Absolute mean estimates for h_{medium} indicate large difference as public sector employees' mean is only half the size of private sector employees' mean estimate. This means that – with the exception of small amounts of reward – not only do public servants hold dissimilar individual risk preference (*H1*) but they also react to the prospect of risk dissimilarly: We, hence, reject *H2a* because, surprisingly and contrary to previous findings, public sector employees react in a more *risk-affine* manner toward probabilistic rewards than expected – especially if the probabilistic choice option offers large prizes.

4.2.2. Internal consistency of behavior (H2b)

We also find that public sector employees show more internal consistency in their risk behavior: Unsurprisingly, probability discounting parameters (h_{large}, h_{medium}, h_{small}) are all significantly correlated

with each other as well as with the aggregated overall discounting parameter $h_{overall}$. This is a result of systematic structural variation within test item batteries. Canonic correlation analysis shows that correlations between these constructs are significantly larger (Jennrich chi² = 4.91, p = .178) for public sector employees (R^2_C = .436) compared with private employees (R^2_C = .137). This hints at differences in reward magnitude sensitivity between groups. We take advantage of the internal structure of Madden et al.'s (2009) probability discounting questionnaire to further investigate this finding: In the appendix, Table 8 illustrates how part one and two of the questionnaire vary in respect to absolute reward amounts but, at the same time, hold the absolute ranges of reward as well as the probabilities of winning the probabilistic rewards absolutely constant. Consequently, if individuals discounted risky choice options in a stable – i.e. economically "*rational*" – way, testing for variances between these two sub-scores (h_{medium} and h_{large}) should yield no significant differences. Comparing the estimated results for h_{medium} and h_{large} with Student's *t*-test (Welch approximated), we find that only private sector employees show significant differences between h_{medium} and h_{large} (t(597.22) = -2.423, p = .016), while public sector employees do not exhibit this deviance in discounting behavior (t(161.90) = -1.511, p = .133). As significant deviances indicate inconsistencies in discounting behavior across reward magnitudes, these results indicate that public sector employees discount probabilistic rewards across different magnitudes in a *more stable and internally consistent way* in comparison with private sector employees. Therefore, *H2b* holds true and cannot be falsified.

4.2.3. Predictors of discounting behavior (H2)

So far, results show that public sector employees behave in a more risk-affine way as they discount probabilistic rewards less steeply than private sector employees. Public sector employees also score lower on impulsivity (*BIS10/11*) but obtain similar results as private sector employees in respect to individual risk propensity (*RPS*).

Next, we explore how these differences in individual risk preferences are linked to actual discounting behavior. Multiple linear regressions were conducted for each margin of reward to investigate

whether risk propensity (*RPS*), impulsivity (*BIS10/11*), and participants' employment sector reliably predict their probability discounting behavior (h_{medium}, h_{large}, h_{small}, and h_{total}). We find that the assumption of collinearity is met and preliminary analysis indicates that multicollinearity was not an issue (*RPS*: Tolerance = .96, *VIF* = 1.04; *BIS10/11*: Tolerance = .96, *VIF* = 1.04; employment sector (default: public sector): Tolerance = .99, *VIF* = 1.01). Other variables, e.g. socio-demographic properties, were omitted from the regression model because they were not significantly correlated with any of the discounting estimators. Table 5 displays the combined results of the regression analyses:

Magnitude of probabilistic rewards	*Coef.*	Std. Err.	t	P>|t|	Std. Beta[b]	F(3, 378)	*p*	R^2	Adj. R^2	Sign.
h medium: €20m vs. €80m						200.32	.000	.613	.610	***
Risk propensity (RPS)	.950	.249	3.82	0.000	.150					***
Impulsivity (BIS10/11)	.300	.642	0.47	0.641	.021					n.s.
Employment Sector(d = Public)	2.293	.692	3.31	0.004	.167					**
h large: €40m vs. €100m						143.95	.000	.533	.529	***
Risk propensity (RPS)	.934	.250	3.74	0.000	.144					***
Impulsivity (BIS10/11)	-.125	.645	-0.19	0.847	-.009					n.s.
Employment Sector(d = Public)	2.018	.695	2.00	0.004	.143					**
h small: €40m vs. €60m						98.85	.000	.439	.435	***
Risk propensity (RPS)	.897	.275	3.26	0.001	.126					**
Impulsivity (BIS10/11)	-.133	.710	-0.19	0.852	-.008					n.s.
Employment Sector(d = Public)	1.600	.765	2.09	0.037	.104					*
h overall[a]						228.85	.000	.658	.655	***
Risk propensity (RPS)	.0875	.019	4.56	0.000	.180					***
Impulsivity (BIS10/11)	.015	.049	0.31	0.756	.015					n.s.
Employment Sector(d = Public)	.151	.054	2.80	0.005	.145					**

Table 5: Results of multiple regression analysis on Probability Discounting (*h*-values by magnitudes of reward) for the total sample (N = 382). Rewards in million €. Constant term was suppressed. [a] $h_{overall}$ represents the geometric mean of h_{large}, h_{medium}, and h_{small}. [b] Std. Beta = standardizes beta coefficient. * p < .05, ** p < .01, *** p < .000.

We find that our linear model of risk propensity, impulsivity, and employment sector explains a significant amount of variance across all magnitudes of rewards, especially for $h_{overall}$ ($F(3, 379) = 228.85$, $p < .000$, $R^2 = .658$, adjusted $R^2 = .655$). While the amount of variance accounted for is relatively high, total amounts of variance explained differ across reward magnitudes: We find a maximum of explained variance in medium-size rewards (h_{medium}: $F(3, 379) = 200.32$, $p < .000$, $R^2 = .613$, adjusted $R^2 = .610$). However, the amount of variance explained further decreases for small rewards (h_{small}: $F(3, 379) = 98.85$, $p < .000$, $R^2 = .439$, adjusted $R^2 = .435$). This is a unexpected finding because it indicates nonlinearity of the effects that personal character traits exert on probability discounting behavior which calls for further investigation:

Our analysis gives evidence that respondents' personal level of impulsivity does not significantly predict probability discounting behavior. In contrast, individuals' risk propensity did significantly predict participants' risk behavior in a professional work-related context – as did participants' employment sector: Both variables – risk propensity (Std. Beta = .126 - .180, t(382) = 3.26 - 4.56, p < .000) and employment sector (Std. Beta = .104 - .167, t(382) = 2.00 - 3.31, p < .05) – are similarly strong predictors for probability discounting behavior. This holds true across all magnitudes of reward.

While individual impulsivity is revealed to be insignificant as a predictor of probability discounting for both public and private sector employees, we find asymmetries in the way how individual *risk propensity* translates into actual risk behavior. Table 6 displays the results of multiple linear regression analyses when the sample is split by employment sector:

	Magnitude of probabilistic rewards	*Coef.*	Std. Err.	t	P>|t|	Std. Beta[b]	F(2, 80)	*p*	R^2	Adj. R^2	Sign.
Public Sector Employees	*h* medium: €20 vs. €80						43.15	.000	.519	.507	***
	Risk propensity (RPS)	.753	.587	1.28	.203	.125					n.s.
	Impulsivity (BIS10/11)	1.194	1.562	0.76	.447	.063					n.s.
	h large: €40 vs. €100						29.83	.000	.427	.413	***
	Risk propensity (RPS)	1.044	.562	1.86	.067	.177					*
	Impulsivity (BIS10/11)	-.253	1.50	-0.17	.866	-.014					n.s.
	h small: €40 vs. 60€						23.04	.000	.366	.3505	***
	Risk propensity (RPS)	1.102	.633	1.74	.086	.165					*
	Impulsivity (BIS10/11)	-.438	1.685	-0.26	.796	-.021					n.s.
	h overall[a]						47.56	.000	.566	.554	***
	Risk propensity (RPS)	.105	.046	2.26	.027	.221					**
	Impulsivity (BIS10/11)	-.010	.122	-0.08	.933	-.007					n.s.
	Magnitude of probabilistic rewards	*Coef.*	Std. Err.	t	P>|t|	Std. Beta[b]	F(2, 298)	*p*	R^2	Adj. R^2	Sign.
Private Sector Employees	*h* medium: €20 vs. €80						248.60	.000	.625	.623	***
	Risk propensity (RPS)	1.298	.260	5.00	.000	.203					***
	Impulsivity (BIS10/11)	.457	.710	0.64	.520	.034					n.s.
	h large: €40 vs. €100						180.84	.000	.548	.545	***
	Risk propensity (RPS)	1.177	.263	4.48	.000	.178					***
	Impulsivity (BIS10/11)	.232	.718	0.32	.747	.017					n.s.
	h small: €40 vs. 60€						122.41	.000	.451	.447	***
	Risk propensity (RPS)	1.069	.287	3.73	.000	.148					***
	Impulsivity (BIS10/11)	.177	.784	0.23	.822	.012					n.s.
	h overall[a]						290.41	.000	.672	.670	***
	Risk propensity (RPS)	.105	.0196	5.38	.000	.216					***
	Impulsivity (BIS10/11)	.042	.054	0.78	.438	.043					**

Table 6: Results of multiple regression analysis on Probability Discounting (*h*-values by magnitudes of reward) by subsample (N = 82 and N = 300). Rewards in million €. Constant term was suppressed. [a] $h_{overall}$ represents the geometric mean of h_{large}, h_{medium}, and h_{small}. [b] Std. Beta = standardizes beta coefficient. * p < .1, ** p < .05, *** p < .000.

Analysis shows that individual risk propensity is a very strong and reliable predictor of probability discounting behavior for private sector employees across all magnitudes of reward (Std. Beta = .148 - .216, $t(298) = 3.73 – 5.38$, $p < .000$) but that it is only marginally predictive for public sector employees' behavior (Std. Beta = .165 - .221, $t(78) = 1.86 – 2.26$, $p < .10$). For medium-sized probabilistic rewards, neither risk propensity nor impulsivity predict the discounting behavior of public sector employees (Std. Beta = .125, $t(78) = 1.28$, $p = .203$). *H2*, therefore, cannot be falsified but holds true: There *are* significant differences in individual risk behavior between public and private sector employees.

5. Discussion

In this study, we find reliable evidence for both differences and similarities between public and private sector employees with respect to both their individual traits of risk preferences and their risk behavior in a professional, work-related context – irrespective of being given factually equal information: We find no significant evidence for between-group differences in risk preference (*RPS*) which means that – in contrast to widely held public opinion – *cet. par.* public sector employees are *neither more nor less risk-affine* than private sector employees. Our results, hence, contradict all findings from previous research (Bonin et al. 2007; Dong 2014; Pfeifer 2010; Roszkowski & Grable 2009), which used semi-derived measures for modelling preference toward risk such as conservatism of public employees' personal financial planning process (Roszkowski & Grable 2009) or preferences with respect to job security (Pfeifer 2010) or to volatility in earnings (Bonin et al. 2007). This discrepancy might be caused by the general subjectivity issue when interpreting indirect but explicit self-reported measures as used by all the studies mentioned above. However, our findings are supported by all comparative empirical studies that use controlled-for direct scale-based measures of risk preference: All of these studies also conclude that there was *no evidence for differences in risk propensity* between public and private sector employees (Barton & Waldron 1978; Bonin et al. 2007; Bozeman & Kingsley 1998; Pfeifer 2010; Tzioumis 2012).

However, our findings show that public sector employees systematically display lower scores for impulsivity, which means that public sector employees are *less impulsive* compared with private sector employees. Our results strongly support Roszkowski and Grable's (2009) as well as Bonin et al.'s (2007) results who previously concluded that public sector employees respond comparatively less impulsively, analyzing employees' long-term orientation and preferences for volatility in earnings and career opportunities. By adding our new and controlled-for data derived from a reliable and commonly used scale (*BIS10/11*), we add strong evidence that can be compared with findings from other fields of management research, economics, and psychology.

To add practical value to this research, we assessed participants' choice behavior in the prospect of secure vs. probabilistic rewards in an economic experimental setup framed with a working environmental context. Public sector employees *discount large probabilistic rewards less* steeply than private sector employees, which means that *public sector employees behave in a more risk-affine manner* than private sector employees. This behavioral dissimilarity is largest in the prospect of large and medium-sized rewards and disappears with the decrease of reward size, as we find no difference in discounting behavior between groups for small probabilistic rewards.

Thus, our results contradict previous research findings that either find no difference of discounting behavior between public and private sector employees at all (Baarspul & Wilderom 2011) or that interpreted public sector employees' private-life risk behavior as indicative for professional work-life related behavior and concluded that public sector employees behaved more risk-aversely (Bellante & Link 1981; Buurman et al. 2012). Reward magnitude seems to be a crucial factor that stimulates behavioral asymmetries and affects public and private employees in dissimilar ways – irrespective of being given equivalent factual information – and that could originate from dissimilar organizational risk cultures.

However, public sector employees' professional discounting behavior is more internally consistent across different magnitudes of reward. Unexpectedly, we find that individual character traits

translate dissimilarly for public and for private sector employees: While our results show that public and private sector employees differ significantly in their degree of individual impulsivity, individual *impulsivity* does not reliably predict professional risk behavior, neither for public nor for private sector employees. This means that the most striking differences between public and private sector employees are in-fact *irrelevant to their risk behavior on the job.*

We do find that individuals' *risk propensity* can be used as a predictor for both groups' discounting behavior of probabilistic rewards: This character trait translates reliably into private sector employees' behavior but only marginally reliably into public sector employees' behavior – and only for large and small rewards. As we also find that there is no reliable evidence for differences in respect to risk propensity between the two sectors, we suggest that, in future studies, public management research be careful not to rely too heavily on the implicit assumptions that risk behavior in private life directly indicates risk behavior *on the job*, neither for public nor for private sector employees: Public and private sector employees actually do behave dissimilarly in the prospect of risk. However, this is not necessarily due to "what kind of person" they are: the *typical heuristic stereotypes on public sector employees prove to be both factually wrong and misdirected*.

5.1. Practical Implications

We find that public sector employees are more impulsive and behave more risk-affinely (at least for larger probabilistic rewards) than private sector employees, but what should we make of it?

Co-creation of public goods and services is one of the key ideas that drive public sector reform since the emergence of New Public Governance and its calls for efficiency gains in the public sector (Osborne 2010). All over the world - but especially in Europe - public-private partnerships (PPPs) have been installed to a large extent in various legal, inter-organizational, and inter-personal constellations of collaboration to increase public welfare creation, provision, and maintenance on all levels of the state (Roehrich et al. 2014). The result is an ever increasing demand for the management of cross-sectoral teams - comprising members from both the public and the private

sector. One of the central arguments for PPPs in this context is the potential of synergy, of collaborative advantage through the combination of core competencies from both public and private partners to foster complementary learnings (Oppen & Sack 2008). Unfortunately, these synergies are hard to create, both on the individual and on the organizational level. If media and public opinion insistently transport the factually wrong image that public sector employees were more risk-averse or simply behaved *weirdly* – knowing that deviance is mostly regarded as something negative – building *trust* between public and private sector partners even on the individual team level is extremely hard. Since inter-organizational trust is essential for both the creation and the long-term success of PPPs – especially trust in respect to decision-making under risk (Zitron 2006) – it is necessary for public managers to be aware of just how widely and how severely the negative stereotyping against public sector employees can bias private partners' perception of the performance of public sector employees and organizations (Hvidman & Andersen 2015). Reputation management both bound inward and outward could be a first step of damage control. In this context, public managers should not underestimate the social-cultural and contextual dimensions that determine whether risk-affinity is publicly regarded as virtue or vice in the eye of the public, the media, and their own employees: General public opinion demand public institutions and public sector employees be careful not to squander hard earned tax money (Bozeman & Kingsley 1998), and rightfully so, as Khadjavi and Lange (2015) find that individuals tend to behave more selfishly when taking from public accounts than when giving to public accounts. In this case, fostering risk aversion on the job might help to prevent abuse of public savings. However, excessive risk aversion can lead to stagnation of organizational development and ideation, waste of opportunities and innovation lag, which will actually damage public welfare not just in a long-term perspective but even in a more immediate financial sense: Public sector employees are often in charge of actively managing public funds (e.g. pension funds or assets on public-private co-investments in formerly state-owned enterprises) where revenues have to be generated through active (stock) management. In this case, irrational risk-aversion can cause great harm to public welfare, especially for smaller public entities

such as cities or communal districts. It is important to communicate a central proposition to confront the ever present anti-public sector stereotype: "[Risk affinity and risk aversion] can constitute either competence or incompetence in public sector employees, depending on the demands of the position" (Roszkowski & Grable 2009, p. 460).

5.2. Limitations & Future Directions of Research

Our study contributes to the current scientific discourse by adding new empirical evidence on risk preferences and risk behavior of public and private sector employees. To our knowledge, our data and findings represent the first large-scale experimental contribution contrasting public and private sector employees' actual discounting behavior. Previous studies derived insights solely from reported data and stated attitudes. Our research was conducted as an online survey experiment with economic choice task in a hypothetical context. Using explicit scale instead of objective measures always has the drawback of self-assessment and self-reporting biases. However, with our experimental measure for probability discounting, we provide hard evidence that withstands conscious or subconscious biasing by the participants.

Future studies might want to venture further into the differences of actual employee behaviors in public and private organizations by conducting real-life observatory studies as well as economic network analyses. More extensive comparative research into other dimensions of behavior related to work-life still holds great opportunity to explore the apparent differences between both sectors' realities. Empirical research on sector-specific delay discounting behavior, implicit attitudes toward risk and uncertainty as well as group dynamics in cross-sectoral collaborations will only be the first steps to deepen our understanding. In some aspects, our findings stand in clear contrast to previous research. This should be regarded as both a *caveat* and a clear appeal for more behavioral experimental research in the scientific domain of public administration and public management if we really want to venture into the central issues that drive public management failure and success.

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Appendix:

	Min	Max	Public Sector	Private Sector	Statistic	*p*
Total, % (n)			20.5 (82)	79.5 (318)		
Male, % (n)			57.3 (47)	48.1 (153)	z=-1.484	0.138
Age in years; m ± SD			44.16±13.30	43.78±13.93	z=0.182	0.856
Country of birth, d=Germany, % (n)			96.3 (79)	96.5 (307)	z=-0.088	0.930
Nationality, d=German % (n)			98.8 (81)	98.1 (312)	z=0.410	0.682
Education, % (n)[3]					z=4.297	0.000
High School diploma			17.1 (14)	35.9 (114)		
General Certificate of Secondary Education			29.3 (24)	35.2 (112)		
Higher education entrance qualification			52.4 (43)	29.0 (89)		
no formal education (yet)			1.2 (1)	0.9 (3)		
Professional degree, % (n)					z=4.721	0.000
No post-secondary education			4.9 (4)	14.8 (47)		
Vocational Training			56.1 (46)	69.2 (220)		
First stage of tertiary education (e.g. Bachelor)			13.4 (11)	4.4 (14)		
Second stage of tertiary education (e.g. Master)			14.6 (12)	9.8 (31)		
Third stage of tertiary education (e.g. Ph.D.)			11.0 (9)	1.9 (6)		
Barrat Impulsiveness Scale, m ± SD	1	4	2.276±0.256	2.229±0.283	z=1.946	0.052
Risk Propensity Scale, m ± SD	1	9	5.498±0.861	5.478±0.853	z=0.288	0.773
General attitudes, m ± SD						
toward public organizations	1	7	3.366±1.083	3.780±1.096	z=-3.268	0.001
toward private organizations	1	7	3.500±1.069	3.617±1.041	z=-0.844	0.399
Recent interaction with public organization, % (n)			32.9 (23)	67.1 (47)		
Time elapsed since (Δt in days), m ± SD			48.783±69.712	28.234±31.829	z=0.746	0.456
Perceived Quality, m ± SD	1	7	2.174±0.778	3.277±1.470	z=-3.290	0.001
Recent interaction with private organization, % (n)			32.5 (13)	67.5 (27)		
Time elapsed since (Δt in days), m ± SD			14.462±26.906	18.259±19.853	z=-1.261	0.208
Perceived Quality, m ± SD	1	7	2.539±1.198	2.778±1.528	z=-0.345	0.730

Table 7: Baseline characteristics of full sample by employment sector. Tested with two-sample Wilcoxon rank-sum test (Mann-Whitney); p = P>|z| with a 95% level of confidence. Items are either reported with means and standard deviations (m ± SD) or proportions and frequencies (% (n)).

[3] Original items: High School diploma: „Volks-/Hauptschule"; General Certificate of Secondary Education: „Weiterführender Schulabschluss (Mittel-, Real-, Handelsschule)"; Higher education entrance qualification: „Abitur, (Fach-)Hochschulreife".

Item No.		Certain reward	Probability of Winning	Probabilistic reward	*h*
01	Part 1: h_{medium}	€20 million	0.1	€80 million	0.33
02	(medium amount of probabilistic reward,	€20 million	0.13	€80 million	0.45
03	large margin of reward)	€20 million	0.17	€80 million	0.61
04		€20 million	0.2	€80 million	0.75
05		€20 million	0.25	€80 million	1
06		€20 million	0.33	€80 million	1.48
07		€20 million	0.5	€80 million	3
08		€20 million	0.67	€80 million	6.09
09		€20 million	0.75	€80 million	9
10		€20 million	0.83	€80 million	14.65
11	Part 2: h_{large}	€40 million	0.18	€100 million	0.33
12	(large amount of probabilistic reward,	€40 million	0.22	€100 million	0.42
13	large margin of reward)	€40 million	0.29	€100 million	0.62
14		€40 million	0.33	€100 million	0.74
15		€40 million	0.4	€100 million	1
16		€40 million	0.5	€100 million	1.5
17		€40 million	0.67	€100 million	3.04
18		€40 million	0.8	€100 million	6
19		€40 million	0.86	€100 million	9.21
20		€40 million	0.91	€100 million	15.17
21	Part 3: h_{small}	€40 million	0.4	€60 million	0.33
22	(small amount of probabilistic reward,	€40 million	0.46	€60 million	0.43
23	small margin of reward)	€40 million	0.55	€60 million	0.61
24		€40 million	0.6	€60 million	0.75
25		€40 million	0.67	€60 million	1.01
26		€40 million	0.75	€60 million	1.5
27		€40 million	0.86	€60 million	3.07
28		€40 million	0.92	€60 million	5.75
29		€40 million	0.95	€60 million	9.5
30		€40 million	0.97	€60 million	16.17

Table 8: Probability discounting questionnaire (Madden et al. 2009); estimated discounting parameters (*h*-values) at points of indifference.

	Public sector employees		Private sector employees		Total sample [a]		
	$chi^2(2)$	Prob > chi^2	$chi^2(2)$	Prob > chi^2	$chi^2(2)$	Prob > chi^2	Sign.
BIS10/11	14.475	0.000	57.186	0.000	75.848	0.000	***
RPS	2.217	0.330	16.023	0.000	14.448	0.000	***
h large rewards	111.063	0.000	191.765	0.000	284.721	0.000	***
h medium rewards	52.721	0.000	100.078	0.000	140.955	0.000	***
h small rewards	129.503	0.000	307.243	0.000	427.266	0.000	***
h total	8.824	0.012	28.092	0.000	35.192	0.000	***

Table 9: Normality check with Doornik-Hansen test for normality for each construct by employment sector. [a] *p < .10, ** p < .05, *** p < .01.