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Morality, Altruism, and Occupation Choice: Theory and Evidence

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Morality, Altruism, and Occupation Choice: Theory and Evidence

Abstract

We consider a private sector job that offers high-powered incentives and two public sector jobs that produce an identical public good, but only one of them offers opportunities for corruption. Our theoretical predictions relate occupation and effort choices, in these three jobs, to preferences for altruism and morality that are structurally estimated. The predictions are tested in pre-registered experiments. We also estimate proxies for altruism/morality from the dictator/die-rolling games. We demonstrate the mutual portability of parameters between both sets of games. Those choosing the private sector job use a simple heuristic of maximizing legal monetary payoffs, but they are not less altruistic or less moral; they exhibit context dependent preferences. Conditional on choosing the public sector, less moral subjects are more likely to choose the corrupt public sector job. The effects of altruism on occupational choice are subtle, but altruism positively influences the effort choices in the public sector. The majority of subjects choose the corrupt public sector job, but effort is highest in the private sector. On average, corruption increases the size of the public sector, although the public output received by society is identical in both public sector jobs.

JEL-Codes: D010, D910.

Keywords: morality, altruism, institutional corruption, occupational choice, effort choice, portability of behavioural parameters.

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1 Introduction

Altruism and morality are typically found to be the leading determinants of occupational choice between private sector and public sector jobs. Experiments on Indian students show that greater dishonesty and lower altruism are associated with a greater desire to join government service (Hanna and Wang, 2017). Supporting evidence shows that civil service aspirants in India are more likely to engage in corruption in experimental games (Banerjee et al., 2015). A similar result is found for Ukrainian subjects (Gans-Morse et al., 2020). The opposite pattern (more altruistic and more honest students more likely to join public sector jobs) is found in Denmark (Barfort et al., 2019) and for students at elite Russian universities (Gans-Morse et al., 2020).¹

Despite commendable progress in this literature, there are several areas of concern. We offer a complementary, yet quite different, approach to the underlying questions in order to establish causality between variables. The following important observations motivate our analysis.

1. In most existing studies, terms such as ‘public sector jobs’ and ‘private sector jobs’ are undefined in the experiments.² In the real world, these jobs are typically associated with a rich vector of job characteristics (e.g., wage levels, incentives, corruption, productivity, career progression, non-pecuniary incentives). The typical approach is to ask subjects to make a choice between private and public sector jobs based on their ‘subjective perceptions’ of the different jobs. Without a formal, objective, specification of the job characteristics, different subjects could, subjectively, be comparing very different jobs, which makes it difficult to establish causality, and compare results across subjects.³

The literature does not also typically distinguish between public sector jobs that allow opportunities for corruption, and those that do not. Hence, the implications of corruption for the size of the public sector and welfare cannot be inferred relative to a counterfactual.

2. Related to occupational choice is the question of the choice of optimal costly effort in each of the occupations. Do we expect subjects to put in higher effort in the private sector, or in the public sector? Does a larger size of the public sector translate into higher output received by consumers, as opposed to more leakages into corruption? However, without a

¹Brassiolo et al. (2021) find that more dishonest subjects are more likely to self select themselves into public sector jobs that allow for corruption. Banuri and Keefer (2016) show that those joining the Indonesian Ministry of Finance have relatively higher prosocial motivation. Alatas et al. (2009) find that the extent of bribery in public sector jobs might itself be influenced by the experience of civil servants. Friebel et al. (2019) find that applicants to the German Police Force exhibit greater trust and trustworthiness. Schneider et al. (2022) show that ‘immoral types’ state a greater willingness to work in firms and industries perceived by others as immoral. Armantier and Boly (2013) find that lab experiments on corruption have external validity with respect to data from a laboratory in a developed country, a laboratory in a developing country, and the field in a developing country. There is a separate literature on motivated agents, starting with Besley and Ghatak (2005), who care for the team output while motivated agents do not. However, this literature is not directly related to our work.

²We are only aware of a single exception, Brassiolo et al. (2021), but our work differs significantly from theirs. First, they do not provide a theoretical model with rigorous predictions; their analysis is entirely empirical. Second, their public sector job does not have a real effort task. Third, they do not directly estimate preference parameters structurally from the games they are testing; they use proxy parameters from other experimental tasks. Fourth they do not check for the mutual portability of the behavioral parameters as we do.

³For instance, a student subject with low ability could be imagining a choice between a low-wage private sector job and a public sector job that provides job security and a decent pension. However, a student subject with high ability could be imagining a high-wage private sector job in the city with performance related pay and equity options vis-a-vis a public sector job that offers low-powered incentives.

precise, and formal, specification of the characteristics of alternative jobs, and the cost of effort function, it is not possible to analyze effort choices either.

3. The literature typically lacks formal theoretical models that make precise predictions about the choice between private and public sectors. However, it does propose ‘informal’ hypotheses about the effects of ‘altruism’ and ‘morality’ on occupation choice. Testing these hypotheses requires estimates of the parameters of altruism and morality. The most common approach is to use data from separate games, such as dictator games and versions of the Fischbacher and Föllmi-Heusi die rolling experiments to determine proxies for these parameters (Hanna and Wang, 2017; Barfort et al., 2019; Gans-Morse et al., 2020). Friebel et al. (2019) use a trust game and Banerjee et al. (2015) use a bribery game.

The dictator and the die-rolling games have an individual-individual interface. However, in a public sector job that offers possibilities for corruption, the interface is individual-government/society. This gives rise to questions about the portability of the estimated parameters. Ideally, one wishes to obtain structural estimates of the altruism and the morality parameters directly from the occupation/effort choice games. This can enable a test of the mutual portability and relevance of the parameters from the two separate classes of game (dictator and die rolling games vis-a-vis the occupational/effort choice games).

We provide a theoretical and empirical analysis of occupation/effort choice that comprehensively addresses all 3 concerns outlined above. This requires a carefully controlled lab design that allows variations in a range of factors, one at a time, while keeping everything else fixed; this is likely to be highly unfeasible in a field environment. Our theoretical model comes first, providing the relevant predictions that fully inform our pre-registered experiments, and are stringently tested. We give a precise characterization of the job features for the private sector job and the public sector job, based on the following observed features of such jobs (Lee et al., 2021).

First, the private sector typically offers high-powered incentives relative to public sector jobs. Second, the public sector, particularly in developing countries, offers greater opportunities for ‘institutionalized corruption’ relative to the private sector.⁴ Third, the public sector typically

⁴*Institutionalized corruption* is typical of several forms of corruption in the public sector in developing countries, particularly India. For instance, a ‘fixed price’ to be paid to obtain a driving license, industrial license, a government permit, a government contract, or to annul a police charge. These fixed prices are, in turn, determined by an underlying bargaining model of the demand and supply of corrupt activities (Aidt, 2003). Another important form, that is directly relevant to our paper, involves fixed shares of payments to government officials at various levels of the hierarchy, say, in public procurement, grant of government licenses, disbursement of public benefits such as social welfare schemes, and in sidestepping regulations (Alam, 1989). *Any public official involved in this form of corruption receives a fixed share of the bribe* that is determined by some underlying process of bargaining, that we do not model in this paper. In this form of corruption, the politicians and the police also typically take a share of the corruption money, hence, there is little danger of being caught taking the bribe, unless a whistleblower/press expose the underlying activities. This massively reduces the effectiveness of deterrence policies. For instance, in trucking operations, subjects to repeated checks on toll plazas and state border along Indian national highways, Transparency International India estimates in a February 2007 report that the extent of annual corruption is Rs, 22,200 crores per year. They estimate that the government officials and the police share, respectively, 43% and 45% of this bribe money. The remaining bribe was shared between government forest, sales/excise, and octroi officials. Hence, we do not formally model the deterrence side of corruption in this paper. There might well be non-institutionalized forms of corruption in developing countries that require endogenous modeling of deterrence parameters (Olken and Pande, 2012; Dhami and al-Nowaihi, 2007). Our model may not directly apply in these domains. See also the particularly informative wikipedia entry on the extent and type of corruption in India, where our data comes from: https://en.wikipedia.org/wiki/Corruption_in_India.

provides an opportunity to public servants to provide public goods and services that benefit the citizenry. We consider the relatively stark comparison where the private sector offers high-powered incentives and provides a private good, while the public sector provides low-powered incentives and provides a public good.⁵

In addition to the *private sector job*, we consider two kinds of public sector jobs— one that offers the possibility of institutionalized corruption (*taking public sector job*), and another that does not offer a corruption opportunity (*no-taking public sector job*). Individuals then make a choice of effort in each job if they were to have that job, and also make an occupational choice decision between the three jobs (private, taking public, no-taking public).⁶

In choosing a private sector job, some individuals might be particularly attracted by high-powered incentives, e.g., wages commensurate with the effort exerted. In opting for the public sector jobs, some individuals might be motivated by altruism/warm-glow in providing a public good to society. In addition, those who have lower morality might be more inclined to choose the ‘taking’ public sector job. The evidence suggests preference heterogeneity.⁷ Hence, it is critical to measure *individual-specific* altruism and morality parameters. We do so directly from the individual choices in the occupation/effort choice games using a structural model. But we also separately measure proxies for these variables from a dictator game and from a modified die-rolling task as in Kocher et al. (2017).

We have two main treatments, a *primed treatment* in which subjects read a factually correct description of the extent of corruption in the public sector, and a *neutral treatment* that contains neutral text where no corruption related information is provided.

Our results are as follows.

Occupational choice: There are a total of 500 subjects; of these 242 were in the neutral treatment and 258 in the primed treatment. Nearly two-thirds of the subjects chose the taking public sector job; about a third chose the private sector job; only 5.3% in the neutral treatment and 9.3% in the primed treatment chose the no-taking public sector job. Including state-owned companies and municipal government employees in India, 64.2% work in the public sector and 35.8% in the registered private sector. In our experiments, 65.4% chose the public sector job and 34.6% chose the private sector job, which is remarkably close.

Priming had no noticeable effect on occupation choice. Post experimental questionnaires revealed that subjects in the neutral treatment already had fairly accurate beliefs about the extent of corruption in public sector jobs. Our simple, parsimonious, theoretical model allows us

⁵We do not deny the possibility in the real world of corruption in the private sector; or the possibility that the private sector may supply private goods that might have impure public good features (e.g., club goods); or the existence of some component of the public sector remuneration to have an incentive component. However, to get cleaner and sharper results, we consider the polar cases. Our results go through, in principle, if we allowed for (i) the private sector to be also corrupt, so long as the public sector was ‘relatively’ more corrupt, or (ii) the public sector to give high-powered incentives, so long as the private sector gave ‘relatively’ higher-powered incentives.

⁶We abstract from a range of other job characteristics that might influence the selection of individuals into such jobs. These include characteristics such as an organization’s mission and career incentives (Dal Bo et al., 2013; Banuri and Keefer, 2016; Deserranno, 2019; Ashraf et al., 2020). We also abstract from other kinds of jobs, such as those in not-for-profit organizations and jobs in the voluntary sector.

⁷Individuals may differ in their propensity to engage in corruption (Andvig and Moene, 1990; Prendergast, 2007). There is also preference heterogeneity in measures of the degree of altruism and morality in experimental games (Dhami, 2019, Vol. II).

to derive conditions, based on deep underlying preference parameters for altruism and morality, that predict occupation choice. These conditions are satisfied by 71.8% of the subjects who choose the no-taking public sector job, and 64.2% of the subjects who choose the taking public sector job; and this is significantly different from a 50-50 choice based on pure chance.

A probit analysis shows that in the choice between the taking and no-taking public sector jobs, less moral subjects are significantly more likely to choose the taking public sector job. Our morality parameters, measured directly from the occupational/effort choice experiment, and separately from the die rolling experiments, are both highly significant in correctly predicting occupation choice and give similar results. Conversely, the morality parameter measured from the occupation/effort choice experiments is correlated with lying behavior in the die rolling experiments. Thus, the same underlying preference parameter of morality, measured from each experimental game, predicts well the subjects' choice in the other experimental game. This speaks to the issue of the external validity of the parameters and their portability to different contexts. To the best of our knowledge, this is the first experiment to establish the portability of this parameter in such a manner.

The majority of our subjects (94.2% in the neutral treatment and 91.7% in the primed treatment) pick either the taking public sector job or the private sector job. Hence, this is the most important binary occupation choice decision among all three possibilities (taking vs no-taking; taking vs private; no-taking vs private). In the 'taking public sector vs private' job choice, the altruism parameters measured from the occupation/effort choice decision, and separately from the dictator game experiment, are both insignificant in explaining job choice. On the other hand, altruism positively affects the binary choice between the taking and no-taking public sector jobs in favor of the former, which is not consistent with the predictions of our simple parsimonious model.⁸

Our model predicts that, for the parameter values chosen in our experiments, subjects should choose the two public sector jobs over the private sector job. Yet, a third of the subjects choose the private sector job. Those who choose the private sector job chose either the monetary payoff maximizing level of effort, or close to it. Indeed, for half the subjects who chose the private sector job, it is true that their monetary payoffs were greater relative to what they would have received had they chosen any of the two public sector jobs. These subjects appear to use a simple heuristic of maximizing their legal monetary payoffs in occupation choice.⁹

It is quite conceivable that many subjects, despite being altruistic and moral in other domains, may use the heuristic of legal monetary maximization in occupation choice and then use their payoffs to exhibit altruism elsewhere, e.g., contribute to charity. They might also be

⁸A potential explanation, which is not a part of our model, and neither tested in our experimental results, is guilt-aversion. Those who choose the taking public sector job may experience guilt from the act of corruption, and they may try to compensate for their feelings of guilt by being more altruistic in the taking public sector jobs. Empirical evidence supports this channel (Regan, 1971; Haidt, 2003; Nunney et al., 2022; Scaffidi et al., 2022). We also find that subjects in the taking public sector job are more altruistic relative to the no-taking public sector job. Formal modeling will need to consider explicitly beliefs-based models using the machinery of psychological game theory (see Dhami et al., 2019; Dhami et al., 2022) and also consider the endogeneity of the preference parameters themselves.

⁹The evidence increasingly shows that in making choices, many people use simple context-dependent heuristics (Dhami and Sunstein, 2022).

particularly repelled by institutional corruption in the taking public sector job, because they are relatively more moral. These conclusions are well supported by our evidence. Subjects who chose private sector jobs are as altruistic as those who chose public sector jobs; and they are significantly more moral. These results are also related to the large literature on context dependence of preferences, widely observed in behavioral economics (Dhami, 2016). These findings are also consistent with the responses from our exit questionnaire, which also shows that subjects choosing the private sector job appear to have an inherent preference for jobs that are associated with performance related pay (as in our private sector job).

Despite the absence of risk considerations in our model, more risk taking subjects are more likely to choose the private sector job over the two public sector jobs. Risk taking behavior and overconfidence are highly correlated (Nosic and Weber, 2010; Broihanne et al., 2014). More overconfident subjects may view the private sector job as providing a more competitive performance-based pay environment, where they are likely to do better. Our data does not allow us to specifically check for this channel.

Effort choice decisions and public output: In the private sector job, most people chose the effort level that maximizes monetary payoffs. Subjects who are more altruistic, exert greater effort in both the public sector jobs, while the more moral subjects exert less effort in the taking public job. These results are consistent with the predictions of our model, although, of these, the only significant coefficient is for altruism in the no-taking public sector job.

The average effort level in the private sector job is the highest, followed by the taking public sector job, and the no-taking public sector job in that order. If employees exerted the same effort in the taking public sector job, as they did in the private sector, then they would produce, on average, an extra 28.54% of public output. The corresponding figure of 58.4% extra output in the no-taking job is even higher because there are no leakages into corruption.

The average output produced in the taking public sector job is significantly higher than the no-taking public sector job. However, the final output, net of corruption, received by society in both cases, is virtually indistinguishable. One implication of this finding is that the size of the government can be much higher in more corrupt nations, although, ceteris-paribus, society receives a level of public output that is no different from that in a corresponding honest nation. Thus, consumer welfare does not change on account of corruption, at least in the setting of our model, although the size of the government does.

The schematic outline is as follows. Section 2 outlines the model. Section 3 derives the optimal effort choices. Section 4 derives the theoretical predictions on occupation choice and effort choice for the specific effort cost function used in the experiments. Section 5 explains our structural estimation strategy for the altruism and morality parameters from the occupation choice game. Section 6 describes the dictator game and the die-rolling game, as well as our strategy for estimating the relevant indices of altruism and morality from these games. Section 7 describes our experimental design. Sections 8 to 11 explain our experimental findings. Section 12 concludes. All proofs are contained in the Appendix. A supplementary section provides additional data analysis.

2 A model of occupational and effort choice

An individual chooses between a private sector job and a public sector job. We assume that there is only one kind of private sector/corporate job that has high-powered incentives and does not allow for corruption. But there are two kinds of public sector jobs that offer identical low-powered incentives, but one in which there is no scope for corruption (the *no-taking public sector job*), and another, which allows for the possibility of institutionalized corruption (the *taking public sector job*).¹⁰ We deliberately avoided the loaded terms ‘corrupt’ and ‘non-corrupt’ in the experimental instructions in favor of ‘taking’ and ‘no-taking’ jobs, to minimize framing effects. We keep the theoretical model as simple as possible to enable us to map it very closely into our experimental design and enable stringent empirical tests that are pre-registered.

The individual makes two types of decisions.

(1) *Effort choice decision*: The level of costly effort to exert in each of the three jobs, if the individual were to be doing that job.

(2) *Occupation choice decision*: Choosing one among the three jobs, the private sector job, the taking public sector job, and the no-taking public sector job.

We subscript/superscript variables for the (i) private sector/corporate job by ‘ c ’, (ii) taking public sector job by ‘ t ’, and (iii) no-taking public sector job by ‘ n .’

In each job, private or public, the worker’s effort level $e \in [0, \bar{e}]$, $\bar{e} > 0$, and there is an identical cost function $c(e)$ for effort that is increasing and strictly convex ($c' > 0$, $c'' > 0$ for all $e \in [0, \bar{e}]$). Effort is observable and verifiable to a third party (no moral hazard). The outside option of the individual is normalized to zero. Denoting the individual’s generic utility by V , the participation constraint of the individual in any of the occupations must satisfy $V \geq 0$.

2.1 Private Sector

The private sector job offers a performance-based incentive scheme.¹¹ Employees are offered the wage schedule $w_c(e) = \beta e$, where the size of $\beta > 0$ captures the degree of high-poweredness of incentives. Employees derive utility from labor income, net of effort costs, $c(e)$. Hence, the optimization problem of an employee in the private sector job is

$$e^c \in \arg \max_{e \in [0, \bar{e}]} V^c = \beta e - c(e); \beta > 0. \quad (2.1)$$

2.2 Public Sector

The public sector pays a fixed wage $w_P > 0$, independent of effort, to its employees, thus incentives are low-powered. The public sector produces a public good that directly benefits society, using effort e of the employee as the only input.¹² The production function for the public good is

$$f(e) = \lambda e; \lambda > 0, e \in [0, \bar{e}], \quad (2.2)$$

¹⁰We have described institutionalized corruption in the introduction, which obviates the importance of the deterrence effects of corruption. For this reason, we do not model deterrence policies.

¹¹Since effort is observable, *effort-contingent pay* and *performance-based pay* are analogous terms in our model.

¹²We abstract away from issues of team production which can be accommodated in our model because there is no moral hazard. However, our setup provides, we believe, cleaner and clearer, results.

where λ is the marginal productivity of effort.

2.2.1 The ‘no-taking’ public sector job

In the no-taking public sector job, there are no opportunities for corruption. The utility of an employee from this job is

$$V^n = [w_p - c(e)] + \alpha f(e). \quad (2.3)$$

The first term on the RHS in (2.3) is the net monetary payoff; the fixed public sector wage, w_p , net of the cost of effort, $c(e)$. The second term arises from the employee’s ‘altruistic motivations’ in providing a public good, $f(e)$, to society, weighted by the individual-specific preference parameter, α . If $\alpha \geq 0$, then the individual is altruistic. However, if $\alpha < 0$, then the individual is spiteful because they dislike sharing the output produced by their effort with other members of society. The sign of α is an empirical matter, and we shall refer to α as the *altruism parameter*. Substituting (2.2) in (2.3), the optimization problem of the employee is

$$e^n \in \arg \max_{e \in [0, \bar{e}]} V^n = [w_p - c(e)] + \alpha \lambda e. \quad (2.4)$$

2.2.2 The ‘taking’ public sector job

In the ‘taking’ public sector job, there is ‘institutionalized corruption.’ If an individual chooses this job, they know that they ‘must’ accept a fraction $0 < \gamma < 1$ of the public good produced, $\gamma f(e)$, so that society only receives the remaining fraction $(1 - \gamma) f(e)$.¹³ The utility function of an employee in this job is

$$V^t = [w_p - c(e) + \gamma f(e)] + \alpha (1 - \gamma) f(e) - \theta \gamma f(e). \quad (2.5)$$

From the RHS in (2.5), there are three differences relative to the utility function in the no-taking job in (2.3). First, the monetary payoffs to the individual increase, on account of corruption, by $\gamma f(e)$ (first term). Second, on account of corruption, the amount available for public distribution to society is now lower, $(1 - \gamma) f(e)$ (second term). Hence, the altruistic benefits from public good provision, weighted by the altruism parameter α , are lower. The last term captures the *internal moral norms* of the individual. When the preference parameter $\theta \geq 0$, the individual faces moral costs from corruption because a lower level of the public good is distributed to society. When $\theta < 0$, the individual derives hedonic pleasure from being corrupt. The sign of θ is an empirical matter. We shall refer to θ as the *morality parameter*, or the *immorality-aversion parameter*, of the employee.

Substituting (2.2) in (2.5), the optimization problem of the employee is:

$$e^t \in \arg \max_{e \in [0, \bar{e}]} V^t = [w_p - c(e)] + \phi(\alpha, \gamma, \theta) \lambda e, \quad (2.6)$$

where

$$\phi = \phi(\alpha, \gamma, \theta) = \alpha + \gamma(1 - \alpha - \theta). \quad (2.7)$$

¹³As noted earlier, this form of institutionalized corruption is endemic in developing countries. In making the choice between the taking public sector job and the other two jobs, if an individual finds institutional corruption particularly amoral, then they can choose the no-taking public sector job, or the private sector job.

Remark 1. We allow for individual-specific heterogeneity in the altruism parameter α , and the morality parameter θ . However, in order to minimize notation, we do not introduce further subscripts on these parameters (e.g., α_i, θ_i where i denotes an index for individuals).

We do not directly observe the altruism parameter α and the morality parameter θ . Hence, we estimate these parameters in two different ways. (1) We directly use the optimal effort choices to estimate α, θ . (2) We estimate proxies for α, θ using the results from the dictator game experiment and the Fischbacher and Föllmi-Heusi die-rolling experiment; see Section 6.

3 Optimal effort choice in the occupations

We summarize the main results for effort choice in each of the three occupations through a series of propositions. The relatively simple proofs are given in the appendix.

3.1 Effort choice in the private sector job

Differentiating (2.1) with respect to e , we get

$$\frac{dV^c}{de} = \beta - c'(e). \quad (3.1)$$

The marginal benefit of an extra unit of effort is $\beta > 0$, which arises from the incentive structure in the private sector. This is traded-off against the marginal cost of an extra unit of effort.

Proposition 1. : Consider (2.1), the effort choice problem of an employee in the private sector. A unique optimal solution exists, given by e^c . At an interior solution, we have

$$e^c = c'^{-1}(\beta), \quad (3.2)$$

which is strictly increasing in β . The optimal solution is a corner solution (i) $e^c = 0$ if $\beta \leq c'(0)$, and (ii) $e^c = \bar{e}$ if $\beta \geq c'(\bar{e})$.¹⁴

From Proposition 1, optimal effort in the private sector responds positively to incentives, as captured in the size of β .

3.2 Effort choice in the ‘no-taking’ public sector job

Differentiating (2.4) with respect to e , we get

$$\frac{dV^n}{de} = \alpha\lambda - c'(e). \quad (3.3)$$

The marginal benefit of an extra unit of effort is the extra output, λ per unit of effort, that is produced for society, weighted by the employee’s altruism parameter, α . The marginal cost is the cost of an extra unit of effort.

¹⁴The comparative static results are easily extended to a corner solution. If $e^c = \bar{e}$, then effort is non-increasing in β .

Proposition 2. : Consider (2.4), the effort choice problem of an employee in the no-taking public sector job.

(i) (Existence) A unique optimal solution exists, given by e^n . At an interior solution, we have

$$e^n = c'^{-1}(\alpha\lambda). \quad (3.4)$$

The optimal solution is a corner solution (i) $e^n = 0$ if $\alpha\lambda \leq c'(0)$, and (ii) $e^n = \bar{e}$ if $\alpha\lambda \geq c'(\bar{e})$. (ii) (Comparative statics at an interior solution) At an interior solution, we have $0 < \alpha < \frac{c'(\bar{e})}{\lambda}$, and optimal effort e^n is strictly increasing in the altruism parameter, α , and in the marginal productivity of effort, λ .¹⁵

Discussion: From Proposition 2(i), an optimal solution exists and is unique. From Proposition 2(ii), at an interior solution, optimal effort is always strictly increasing in the extent of altruism α , and in the public sector productivity parameter, λ . Both factors increase the marginal benefit of exerting more effort.

3.3 Effort choice in the ‘taking’ public sector job

Differentiating (2.6) with respect to e , we get

$$\frac{dV^t}{de} = \phi\lambda - c'(e), \quad (3.5)$$

The interpretation of (3.5) is similar to (3.3) except that the weight $\phi = \alpha + \gamma(1 - \alpha - \theta)$, defined in (2.7), replaces the altruism parameter α ; ϕ is increasing in the altruism parameter α , and decreasing in the morality parameter θ , because $0 < \gamma < 1$.

Proposition 3. : (i) Consider an employee in the taking public sector job with the objective function in (2.6). A unique optimal solution exists, given by e^t . At an interior solution,

$$e^t = c'^{-1}(\phi\lambda). \quad (3.6)$$

The optimal solution is a corner solution $e^t = 0$ if $\phi\lambda \leq c'(0)$, and $e^t = \bar{e}$ if $\phi\lambda \geq c'(\bar{e})$.

(ii) (Comparative statics at an interior solution) At an interior solution, we have $0 < \phi < \frac{c'(\bar{e})}{\lambda}$, and optimal effort e^t is (a) strictly increasing in the altruism parameter, α , and in the marginal productivity of effort, λ , and (b) strictly decreasing in the morality parameter, θ . The comparative static effect of γ is ambiguous, but if $0 \leq \alpha + \theta < 1$, then the effect is positive.¹⁶

Discussion: Proposition 3(i) is a standard existence and uniqueness result. From Proposition 3(ii), more altruistic individuals and greater public sector productivity strictly increase optimal effort, as in the no-taking public sector job. However, less moral individuals are predicted to exert greater public sector effort. The counterintuitive effect of morality on effort highlights the importance of basing hypotheses in experiments on formal theoretical models. The intuition

¹⁵Extension of the comparative statics to the corner solutions is straightforward. If $e^n = \bar{e}$, then optimal effort is non-increasing in α and λ .

¹⁶It is straightforward to check that the comparative statics at the corner solutions are as follows. (a) If $\phi \leq 0$, then $e^t = 0$. Optimal effort is non-decreasing in the morality parameter, θ . (b) If $\phi \geq \frac{c'(\bar{e})}{\lambda}$, then $e^t = \bar{e}$. Optimal effort is non-increasing in the altruism parameter, α , and in public sector productivity, λ .

is as follows. A higher value of the morality parameter, θ , creates greater moral disutility from corruption. Higher corruption arises from producing extra public good, $\gamma f(e)$, which is increasing in the amount of effort expended. Hence, higher morality reduces optimal effort. An increase in the fraction, γ , of the public output siphoned off as corruption has, in general, an ambiguous effect on effort.¹⁷

3.4 Comparison of effort levels in the two public sector jobs

From Propositions 2, 3, the optimal effort levels in the two public sector jobs are

$$e^n = c'^{-1}(\alpha\lambda), \quad e^t = c'^{-1}(\phi\lambda). \quad (3.7)$$

From (2.7), we have $\phi = \alpha + \gamma(1 - \alpha - \theta)$, hence,

$$\phi \begin{matrix} \geq \\ \leq \end{matrix} \alpha \Leftrightarrow 1 \begin{matrix} \geq \\ \leq \end{matrix} \alpha + \theta. \quad (3.8)$$

Using (3.7), (3.8) and noting that $c'^{-1} > 0$, we get

$$e^t \begin{matrix} \geq \\ \leq \end{matrix} e^n \Leftrightarrow \phi \begin{matrix} \geq \\ \leq \end{matrix} \alpha \Leftrightarrow 1 \begin{matrix} \geq \\ \leq \end{matrix} \alpha + \theta. \quad (3.9)$$

As noted in Proposition 3, a higher value of the morality parameter, θ , reduces optimal effort choice, e^t . An increase in the altruism parameter α increases optimal effort levels in both public sector jobs, but it raises optimal effort in the no-taking job relatively more. To see this, from (3.3) and (3.5), the respective marginal benefits of a unit increase in effort in the no-taking and the taking public sector jobs are $\alpha\lambda > \alpha(1 - \gamma)\lambda$, because $0 < \gamma < 1$. Thus, an increase in α is more conducive to increasing e^n relatively more.

4 Testing the model with a particular cost function

The results above were derived for the general case of any convex cost of effort function. However, tests of the predictions in experiments require the specification of a particular cost function. We use the following quadratic cost function,

$$c(e) = \frac{c}{2}e^2; \quad c > 0, \quad (4.1)$$

where c is the constant marginal cost. In this section, we calculate the optimal effort levels, indirect utilities, and the choice of occupation for the cost function in (4.1).

4.1 Effort and indirect utilities in the private sector and the public sector

From (3.1), at an interior solution, $\beta - ce = 0$, so $e^c = \frac{\beta}{c}$. From (3.3), at an interior solution, we have $\alpha\lambda - ce = 0$, so $e^n = \frac{\alpha\lambda}{c}$. From (3.5), at an interior solution, we have $\phi\lambda - ce = 0$, so $e^t = \frac{\phi\lambda}{c}$. We can, therefore, summarize the optimal effort in the three cases by

$$\begin{cases} \text{Private job} & e^c = \frac{\beta}{c} \\ \text{No-taking public job} & e^n = \frac{\alpha\lambda}{c} \\ \text{Taking public job} & e^t = \frac{\phi\lambda}{c} \end{cases}, \quad (4.2)$$

¹⁷There is a direct monetary benefit from an increase in γ . But there are two costs. (i) Reduced public sector output available for disbursement, so there is a reduction in the altruism or warm glow benefits. (ii) Greater moral costs arising from the higher corruption.

where $\phi = \alpha + \gamma(1 - \alpha - \theta)$ is given in (2.7).

We now calculate the indirect utilities in the three jobs, V^i , $i = c, n, t$. Substituting (4.2) successively in (2.1), (2.4), and (2.6), we get,

$$V^c = \frac{\beta^2}{2c}. \quad (4.3)$$

$$V^n = w_p + \frac{1}{2c}(\alpha\lambda)^2. \quad (4.4)$$

$$V^t = w_p + \frac{1}{2c}(\phi\lambda)^2. \quad (4.5)$$

From (4.4), (4.5), since $w_p \geq 0$, so $V^n \geq 0$ and $V^t \geq 0$, thus the participation constraint holds. Similarly, all terms on the RHS of (4.3) are positive, so $V^c \geq 0$.

4.2 Choice between taking and no-taking public sector jobs

An individual prefers the taking public sector job over the no-taking public sector job if $V^t > V^n$; otherwise if $V^t \leq V^n$ the individual prefers the no-taking public sector job.¹⁸

Proposition 4. : *Consider a public sector employee facing a choice between the taking and the no-taking jobs. The taking public sector job is preferred if*

$$1 > \alpha + \theta, \quad (4.6)$$

*otherwise if $1 \leq \alpha + \theta$, the no-taking public sector job is preferred.*¹⁹

From Proposition 4, higher morality makes it too costly to be corrupt in the taking public sector job, so the individual prefers the no-taking public sector job, instead. Greater altruism also works in favor of the no-taking public sector job. The individual receives the full benefits of altruism in the no-taking job, but only partial benefits from altruism under the taking job, as only a fraction of the public sector output is redistributed to society.

4.3 Choice between private and public sector jobs

The individual chooses among the private job and the taking and no-taking public sector jobs by comparing the respective indirect utilities: (4.3) with (4.5); and (4.3) with (4.4).

Proposition 5. : *Let $\phi = \alpha + \gamma(1 - \alpha - \theta)$, as given in (2.7).*

(i) Consider an individual who prefers the taking public sector job to the no-taking public sector job, i.e., $1 > \alpha + \theta$ (see Proposition 4). The individual prefers the ‘taking’ public sector job over the private sector job if

$$V^t > V^c \Leftrightarrow w_p + \frac{1}{2c}(\phi\lambda)^2 > \frac{\beta^2}{2c}. \quad (4.7)$$

¹⁸We assume that the tie breaking rule works in favour of the no-taking job. Nothing substantive hinges on this tie breaking rule or the others that we use below. All the results could be restated by adding another case that deals with indifference.

¹⁹We can also state the relevant results in terms of cutoff values of the altruism and morality parameters. The following result can be easily proved. Consider a public sector employee. There exist cutoff values of α and θ , given by α_c and θ_c , such that if $\alpha < \alpha_c$ or $\theta < \theta_c$ then the individual prefers the taking public sector job. Otherwise, the individual prefers the no-taking public sector job.

(ii) Consider an individual who prefers the no-taking public sector job to the taking public sector job, i.e., $1 \leq \alpha + \theta$ (see Proposition 4). The individual prefers the ‘no-taking’ public sector job over the private sector job if

$$V^n > V^c \Leftrightarrow w_p + \frac{1}{2c} (\alpha\lambda)^2 > \frac{\beta^2}{2c}. \quad (4.8)$$

From (2.7), $\phi = \alpha + \gamma(1 - \alpha - \theta)$, which is increasing in α but decreasing in θ .²⁰ Thus, an individual is more likely to choose the no-taking public sector job over the private sector job, the higher is the public sector wage, w_p , the lower is the morality parameter, θ , the higher is the altruism parameter, α , the less high powered is the incentive scheme in the private sector (lower β), the higher is the productivity in the public sector, λ , and if $\alpha + \theta < 1$, the higher is the share, γ , of the public output that goes into corruption.

Remark 2. From Proposition 5 and (4.8), the individual prefers the no-taking public sector job over the private sector job (i) the higher is the public sector wage w_p , the higher is altruism, α , the higher is the productivity of the public sector, λ , (ii) and the less high powered is the incentive scheme in the private sector (lower β).

This provides testable restrictions on behavior that can be checked in experiments.

5 Structural estimation of the preference parameters, α, θ

We now briefly describe our strategy for estimating the altruism and the morality parameters based on the decisions made in the occupation choice and effort choice tasks.

Recall that optimal effort in the three jobs is given in (4.2), where $\phi = \alpha + \gamma(1 - \alpha - \theta)$. In (4.2), the parameters $\gamma, \beta, \lambda, c$ are set by the experimenter. In order to directly recover the values of α and θ , we use the following two steps.

Step 1: In the first instance, all subjects are asked to choose their optimal effort level if they were to be working in the ‘no-taking’ public sector job. Given the values of $\gamma, \beta, \lambda, c, w_p$, chosen by the experimenter, subjects are now asked to choose their optimal level of effort, e^n , as the value of λ is varied, but everything else is kept fixed. Using the strategy method, all subjects choose optimal effort, e , from the set of possible effort levels $e \in [0, 10]$ as λ is varied over 21 levels of the productivity parameter, $\lambda \in \{0, 1, \dots, 20\}$.

We now run individual-specific, regressions, where we regress e^n on λ/c , i.e.,

$$e^n = \eta_0 + \eta_1 \left(\frac{\lambda}{c} \right) + u, \quad (5.1)$$

where u is an error term. We cannot use the vector \mathbf{X} of controls (gender, education,...) in these regressions because each of these regressions uses data for ‘each’ individual separately, and the controls do not vary for the same individual. Using the middle row of (4.2), $e^n = \frac{\alpha\lambda}{c}$, hence the BLUE estimate of α from the data on occupational/effort choice is given by the regression estimate $\hat{\eta}_1$.

²⁰The effect of the corruption share, γ , depends on the sign of $1 - \alpha - \theta$. If $\alpha + \theta < 1$, then ϕ is increasing in γ , otherwise if $\alpha + \theta > 1$, then ϕ is decreasing in γ .

Step 2: Redo the exercise in Step 1, when subjects choose their optimal effort, e^t , in the ‘taking’ public sector job. We run subject-specific, regressions, where we regress e^t on λ/c , i.e.,

$$e^t = \pi_0 + \pi_1 \left(\frac{\lambda}{c} \right) + u. \quad (5.2)$$

Denote the regression estimate of π_1 by $\hat{\pi}_1$. From the last row of (4.2), $e^t = \frac{\phi\lambda}{c}$, hence, a BLUE estimate of ϕ is given by $\hat{\pi}_1$.

From (2.7), $\phi = \alpha + \gamma(1 - \alpha - \theta)$, hence, we get $\theta = 1 - \alpha - \left(\frac{\phi - \alpha}{\gamma} \right)$. Thus, an estimate of θ from the occupational/effort choice data, denoted by $\hat{\theta}$, is given by

$$\hat{\theta} = 1 - \hat{\eta}_1 - \left(\frac{\hat{\pi}_1 - \hat{\eta}_1}{\gamma} \right).$$

Thus, our structural estimation gives the following unbiased estimates of the altruism and the morality parameters.

$$\alpha = \hat{\eta}_1; \quad \theta = \hat{\theta}. \quad (5.3)$$

6 Eliciting altruism and morality parameters from experimental games

Section 5 outlined our estimation strategy for the altruism and morality parameters, α, θ , from the occupation/effort choice experiments. We now elicit separate proxies for these parameters from, respectively, a dictator game and a die-rolling experiment. These are the typical proxies used in the literature, but it remains to check if they have explanatory power in occupational/effort choice game. Conversely, we also check whether the parameters estimated from the occupational/effort choice game have explanatory power in the dictator game and the die-rolling experiments. As far as we are aware, such an exercise has not been carried out before.

6.1 Die-rolling game and a lying index

Suppose that an individual observes a randomly generated signal $s \in [0, \bar{s}]$, and then gives a ‘report’ $r \in [0, \bar{s}]$ to the experimenter of the signal. The individual is paid a monetary amount that is increasing in r . There are no penalties for lying and reporting a number $r > s$.

For the purposes of our theoretical model, we rule out the case $r < s$ on empirical grounds; this is well supported by our data and by the literature (Dhami, 2019, Vol. II). However, lying potentially imposes morality costs, on account of internal moral norms. The utility, U_M , of the individual incorporates morality costs (hence, the subscript ‘M’ on the utility function). Thus, the individual’s optimization problem, for a given value of s , is

$$r \in \arg \max_{r \in [s, \bar{s}]} U_M = u(r) - \tilde{\theta}(r - s); \quad 0 \leq s \leq r \leq \bar{s}, \quad (6.1)$$

where u is a twice continuously differentiable, increasing, and strictly concave function that captures the utility from monetary payoffs. The second term on the RHS of (6.1) captures the morality cost of lying, which is directly proportional to the extent of lying. When $\tilde{\theta} \geq 0$, the individual experiences moral costs from lying and when $\tilde{\theta} < 0$, the individual experiences

hedonic benefits from lying. We refer to $\tilde{\theta}$ as the individual's morality parameter from the die-rolling game; the tilde on this parameter separates it from the analogous parameter θ from the occupation/effort choice game in (2.5). The literature universally assumes that $\tilde{\theta}$ is a suitable proxy for θ .

From (6.1), if $\tilde{\theta} = 0$, then $r = \bar{s}$, i.e., the subject makes the maximum possible report because it maximizes monetary payoffs. Hence, we are interested in whether morality costs will lead to a decrease in the actual report, $r \in [s, \bar{s}]$. We summarize the main results in the proposition below, omitting the results for the corner solutions that can be easily stated.

Proposition 6. : *Consider an individual who has received an actual signal $s \in [0, \bar{s}]$. A unique solution exists to the optimization problem of the individual, denoted by $r^*(\tilde{\theta}) \in [s, \bar{s}]$. In an interior solution, $r^* = u'^{-1}(\tilde{\theta})$, and the optimal report, $r^*(\tilde{\theta})$, is decreasing in the size of the morality parameter $\tilde{\theta}$.*

In our experiments, we use a discrete version, as in Fischbacher and Föllmi-Heusi (2013). Subjects receive the true signal $s = \{1, \dots, 6\}$; this is the number observed on the die roll. They then report a number $r = \{1, \dots, 6\}$ to the experimenter.²¹ Subjects receive monotonically increasing payoffs of 2, 4, 6, 8, 10, for reporting the numbers $r = 1, 2, 3, 4, 5$, respectively. If the number 6 is reported ($r = 6$), then the payoff is zero. We now construct the lying index as follows. Define

$$\sigma_l(\tilde{\theta}) = \begin{cases} \left(\frac{r-s}{5-s}\right) & \text{if } r > s, s = 1, 2, 3, 4 \\ 0 & \text{if } r \leq s, s = 1, 2, 3, 4, 5 \\ 0 & \text{if } r \neq s, s = 5. \\ 0 & \text{if } r = s = 6 \\ \frac{r}{5} & \text{if } r < s, s = 6 \end{cases} \quad (6.2)$$

We now explain (6.2). (1) Consider first the signals $s = 1, 2, 3, 4$. From the first row of (6.2), if $r > s$ the individual is dishonest, and the extent of dishonesty depends on the extent of overreporting, $r - s$, normalized by the maximum potential overreport, $5 - s$. From the second row of (6.2), if $r \leq s$ the individual is classed as honest. We are not interested in the case of over-honesty in subjects, so we classify the case $r < s$ as honest. (2) Now consider the case $s = 5$. Honest reporting ($r = s = 5$) maximizes the individual's income (this is covered in the second row of (6.2)). Any other report, when $s = 5$, reduces the payoffs, i.e., denotes over-honesty, hence, given our convention, is classed as honest reporting (third row of (6.2)). (3) Now suppose $s = 6$. The subject is either honest (fourth row), or dishonest (fifth row). If dishonest, using the same formula as in the first row, a report of $r = 6$ earns the subject a zero payoff, so the extent of lying is $\frac{r-0}{5-0} = \frac{r}{5}$.

Our construction ensures that $\sigma_l \in [0, 1]$, with a value of 0 for full honesty (e.g., $s = r = 3$) and 1 for complete dishonesty (e.g., $s = 6, r = 5$). Since dishonesty is the flip side of honesty, we take the value of $1 - \sigma_l$ to be a proxy for the morality parameter of the individual.

²¹In constructing the lying index, we consider a more general case, relative to the theoretical model above, by not restricting $r = \{s, \dots, 6\}$. This is to allow for the possibility (which is not important in our data) that $r < s$ so subjects can be over-honest.

6.2 Dictator game and an altruism index

In the dictator game, subjects in their role as dictators are given an endowment of $\bar{y} > 0$ and asked to share it with a passive receiver. The dictator keeps an amount y , $0 \leq y \leq \bar{y}$, and gives the rest, $\bar{y} - y$, to the receiver. The optimization problem of the dictator, U_A , that incorporates altruism (hence, the subscript ‘A’ on the utility function) is given by

$$y \in \arg \max_{y \in [0, \bar{y}]} U_A = u(y) + \tilde{\alpha} (\bar{y} - y); 0 \leq y \leq \bar{y}, \quad (6.3)$$

where u is a twice continuously differentiable, increasing, and strictly concave function. If $\tilde{\alpha} \geq 0$ the individual is altruistic, and if $\tilde{\alpha} < 0$, the individual is spiteful; $\tilde{\alpha}$ is the altruism parameter for the dictator game. The literature universally uses $\tilde{\alpha}$ as a proxy for the altruism parameter α in (2.3) and (2.5) for the occupation/effort choice game.

Proposition 7. : *A unique solution exists to the optimization problem in (6.3), denoted by $y^* \in [0, \bar{y}]$. When the solution is an interior solution, it is given by $y^* = u'^{-1}(\tilde{\alpha})$. At an interior solution, the optimal share kept by the dictator, $y^*(\tilde{\alpha})$, is decreasing in the altruism parameter $\tilde{\alpha}$. If $u'(0) \leq \tilde{\alpha}$, then the dictator chooses to keep nothing, or $y^* = 0$. If $u'(\bar{y}) \geq \tilde{\alpha}$, then the dictator chooses to give nothing, or $y^* = \bar{y}$.*

We define the *altruism index* as the fraction of the amount shared by the dictator with the passive receiver, i.e.,

$$\sigma_a(\tilde{\alpha}) = \frac{\bar{y} - y^*(\tilde{\alpha})}{\bar{y}} \in [0, 1]. \quad (6.4)$$

7 Experimental design

There are three games in the experiment. (1) The occupational/effort choice game that has three occupations (private, taking public, no-taking public). Subjects first choose their costly effort level in each job, as if they were doing that job, and then they choose one among the three occupations. (2) Dictator game. (3) The Fischbacher and Föllmi-Heusi die-rolling game. The order of the three games follows a Latin square design, thus, there is no need to analyze order effects (Chen et al., 2019). Using the precedence relation \succ , the three orders used were: (1) Occupation choice \succ dictator game \succ die-rolling game. (2) Die-rolling game \succ occupational choice \succ dictator game. (3) Dictator game \succ die-rolling game \succ occupational choice. For each subject, one of the orders was picked at random.

The experiments were conducted in India with 500 university students from various disciplines over a period of time in 2021/22. No subject participated in the experiment more than once. The average time taken to complete the experiment was 53 minutes, and the subjects earned, on average, 468 Indian Rupees (INR), roughly 6.25 US dollars, including the participation fee.²² All subjects were paid in private after the experiment through an automated process which excluded the experimenter from the payment process. The study is pre-registered; see

²²INR 500 is the amount that Center for Social and Behavioral Change (CSBC) pays per hour of subject time, which is higher than most other research organizations in India and higher than the minimum wage.

<https://doi.org/10.1257/rct.8008>. The currency used in the experiments is tokens that are converted into Indian Rupees at the end of the experiment at an exchange rate of 1 token = INR 10. Additionally, subjects receive INR 100 as a show-up fee for participating in this study. We maintained a high degree of subject anonymity.²³

7.1 Occupation/effort choice game

The parameter values used in the experiments were as follows. The private sector job offers a wage equal to 4 times the exerted effort, so $\beta = 4$ (see (2.1)). In the public sector job, the fixed wage is $w_p = 25$ tokens, independent of the effort chosen. In the taking public sector job, which has institutionalized corruption, employees *must* take $\gamma = 1/5$ of the public sector output produced by their effort and keep it for themselves (see (2.6)).

As described in the structural estimation method for α, θ in Section 5, in the two public sector jobs, subjects need to decide their effort levels for each of the 21 levels of the productivity parameter, $\lambda \in \{0, 1, \dots, 20\}$, using the strategy method. At the time of making their choices they do not know that the actual productivity parameter is $\lambda = 10$ (see (2.2)). Once they have made their effort choices for all values of λ , their actual effort choice corresponding of $\lambda = 10$ is implemented. In the private sector job, subjects only need to decide on a single effort level.²⁴ In any of the public sector jobs, the corresponding public sector output available for the public is distributed directly to a low-income individual in need. The cost of effort, $c(e) = \frac{c}{2}e^2$, is identical in the three jobs, and $c = 0.5$. Subjects can readily calculate the cost of effort for each effort level by using a slider on a computer screen.

The experimental instructions were clearly explained to the subjects in detail. Subjects also had to pass a test of understanding of the instructions in the experiments to proceed further. Details can be found in the experimental instructions.

Subjects then choose only one among the three potential jobs. The payoff of the subjects in the occupational choice game is based on the final job they have selected and the actual effort that they have chosen in the effort choice task for that job is implemented for $\lambda = 10$. Subjects also receive 20% of the income from one of the other two unchosen jobs; each of these jobs has a 50% chance of being chosen for the 20% payment. This ensures that the effort choices of the subjects in all the jobs are chosen in an incentive compatible manner.

We distinguish between a primed treatment and a neutral treatment. In the former, subjects are primed for the presence of corruption. In addition to neutral, publicly available, information, subjects in the primed treatment (but not the neutral treatment) read the following paragraph.²⁵

²³In order to enhance subject anonymity with respect to their decisions, the experimenter does not directly pay the subjects. A link is sent by SMS after the experiment ends, and subjects are asked to enter their preferred mode of payment and financial details. The subjects are then paid by an automated method. The experimental instructions repeatedly emphasize the anonymity of the subjects' choices to others (including the experimenters).

²⁴The strategy method is only needed for the public sector job in order to structurally estimate the altruism and the morality parameters; see Section 5. It is not needed for the private sector job.

²⁵We used two bits of neutral public information in our experiments. (1) "If state-owned companies and municipal government employees are included, India has a 1.8:1 ratio between public sector employees and private sector employees. Thus, out of every 2.8 employees, 1.8 are in the public sector and 1 is in the private sector." (2) "India is the second-most populous country in the world, and the seventh largest country by land area. It has been a republic since 1950 and has a parliamentary system of government."

Data indicates that on average 45% of government officials in India use the “take” option in public sector jobs. In other words, they “take” from the public output, a part for their own private use. This figure is likely to be an underestimate as this includes only monetary taking. In actual practice there are many forms in which public sector employees can engage in non-monetary taking also.

In all other respects, the primed and the neutral treatments are identical (details in the experimental instructions).

7.2 Dictator game

In the dictator game (referred to as a ‘sharing game’ in the experiments), subjects in the role of dictators are endowed with $\bar{y} = 20$ tokens. They make a decision to share any amount between 0 and 20 tokens with a receiver. The shared amount goes to low income individuals in need.

7.3 Die-rolling game

We use the experimental design in Kocher et al. (2017) so that the experimenter can actually observe the signal s and the report r in the following manner. We had 6 videos of a 6-sided die being randomly rolled, and each of the videos was equally likely to be chosen to be shown to each subject. In effect, for each subject, the outcome of the die roll can be either 1, 2, ..., 6 and each outcome is equally likely; this is the signal s observed by the subject. The subjects are asked to give a report, r , of the signal. Subjects know that there are no penalties for over-reporting and being dishonest.

Each subject knows that no other participant in the experiment can observe their signal, s . No information is given to the subject about whether the experimenter can, or cannot, observe s , hence, there is no classical subject deception. However, the experimenter can match the actual number observed by the subject on the computer screen (this is the signal s) with the subject’s actual report, r , of the number. The experimenter does this by using the subject’s id numbers, while never being able to find out the identity of the subject. Thus, the identity of the subject is always protected and subjects know this. The main attractiveness of the Kocher et al. (2017) design is that we can determine individual-specific lying, albeit only through the student id numbers, and not their actual identity, in the experiment.

The participants are assured of anonymity through the following text in the experiments: “No other participant in the study can observe the number on your screen, nor your decision in this task.” As already explained, we use a similar payoff structure to Fischbacher and Föllmi-Heusi (2013), so the reports 1, 2, ..., 5 yield payoffs of, respectively, 2, 4, ..., 10 tokens, and a report of 6 gives a payoff of zero tokens. In the experimental instructions, subjects are explicitly told that: “There are NO monetary penalties or questions ever asked of you if the reported number and the actual number are different.”

At the end of the experiment, one of the two games (dictator game and the die-rolling game) is randomly chosen to pay the subject for real.

7.4 List of independent variables

We use the following list of independent variables in our empirical results.

α : The altruism parameter from the occupational/effort choice game.

θ : The morality parameter from the occupational/effort choice game.

σ_a : The altruism parameter from the dictator game.

$1 - \sigma_l$: The morality parameter from the die-rolling game.

Prime: Dummy variable that equals 1 for primed subjects, and 0 otherwise.

Religion: Dummy variable that equals 1 for Hindu subjects, and 0 otherwise.

Business: Dummy variable that equals 1 for business/economics subjects, and 0 otherwise.

Income: Subject's annual household income.

Experience: Dummy variable that equals 1 if the subjects have attended similar experiments before, and 0 otherwise.

CE: Subject's stated certainty equivalent in a post-experimental survey question on a risky lottery.

Male: Dummy variable that equals 1 for male subjects and 0 otherwise.

Age: Subject's age.

Private: Dummy variable that equals 1 if subjects choose the private sector job, and 0 otherwise.

Some basic participation data are as follows. 51.6% (= 258/500) of the subjects participated in the primed treatment, and the rest in the neutral treatment. 75.4% (= 377/500) of the subjects are Hindu. 29.2% (= 146/500) of the subjects reported having participated in experiments before. 56.8% (= 284/500) of the subjects are male.

8 The results from experimental games

In this section, we report the results from the dictator game, the die-rolling game, and on risk attitudes. Occupation and effort choices are described in Sections 10, 11.

8.1 Dictator game and die-rolling game

The average transfer in the dictator game is 22% (= 4.4/20) of the dictator's endowment, which is comparable to the literature on dictator game experiments (Dharami, 2019, Vol. II).

In Figure 1, we show the results from the die-rolling experiments in the form of a jitter graph. The actual number observed by subjects, i.e., the signal $s = 1, 2, \dots, 6$, is shown on the vertical axis. Along the horizontal axis, we measure the monetary payoffs 0, 2, 4, 6, 8, 10, respectively, that arise from the reported number $r = 6, 1, 2, 3, 4, 5$.

Dots in Figure 1, along the 45 degree line reflect honest reporting ($r = s$). Subjects report dishonestly when they over-report relative to their signal. The payoff maximizing dishonest report arises when $s < 5$ but $r = 5$ (see the cluster of dots at various heights over the number 10 in Figure 1). Since we use the Kocher et al. (2017) design, we can determine that the actual proportion of subjects who lie is 51.6% (= 258/500). This is slightly higher than the 31% – 41% in Kocher et al. (2017) who use a German subject pool, while we report the results with Indian

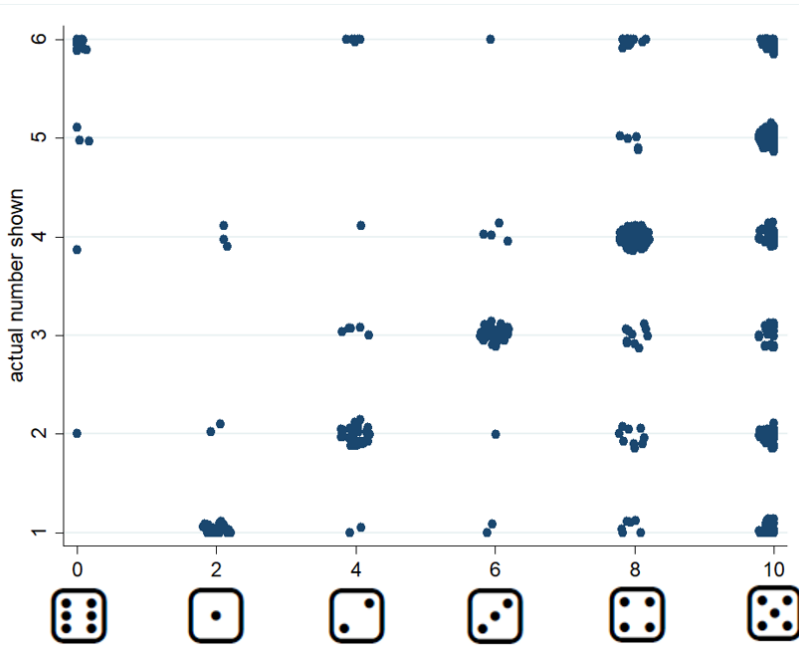


Figure 1: The vertical axis measures the observed signal s and the horizontal axis measures the payoff from the reported number r in the die-rolling task.

subjects.²⁶ There is also widespread partial lying, a well established finding in the literature (Dhimi, 2019, Vol. II).

8.2 Risk attitudes

As part of our post-experimental survey, which was non-incentivized, we asked subjects the following question.

“Suppose that you are offered a bet in which you have a 50-50 chance of either gaining 100 tokens or losing 100 tokens. What “sure amount in tokens” would you like to be offered that will make you just indifferent to taking on this bet?”

The expected value of this lottery is 0 and the sure amount stated by subjects is the certainty equivalent, CE , of the lottery. The proportion of (i) risk-averse subjects ($CE < 0$) is 0% (= 97/500), (ii) risk-loving subjects ($CE > 0$) is 97.4% (= 487/500), and (iii) risk-neutral subjects ($CE = 0$) is 2.6% (= 13/500).²⁷ We can interpret an increase in CE as a reduction in risk aversion of the subject, or a greater preference for risk-taking.

9 Parameters of altruism and morality

In Section 5, we described the direct structural estimation method for the altruism parameter α and the morality parameter θ from the occupation/effort choice game. Based on the data from the die-rolling and dictator experiments, respectively, we also measure the proxy $1 - \sigma_l$

²⁶There is a very small fraction of the subjects misreporting to earn lower income, possibly by error. This arises in two possible cases. (i) For $s = 1, \dots, 5$ if $r < s$, or (ii) reporting $r = 6$ but $s \neq 6$. The proportion of subjects in these two cases is small: 4% (= 20/500) and 1% (= 5/500) respectively.

²⁷We are only interested in the variation of CE across subjects, and not the precise classification of subjects into risk averse/loving/netural.

for the morality parameter (see (6.2)), and the proxy σ_a for the altruism parameter (see (6.4)). We report these direct and proxy estimates in this section.

9.1 Descriptive statistics

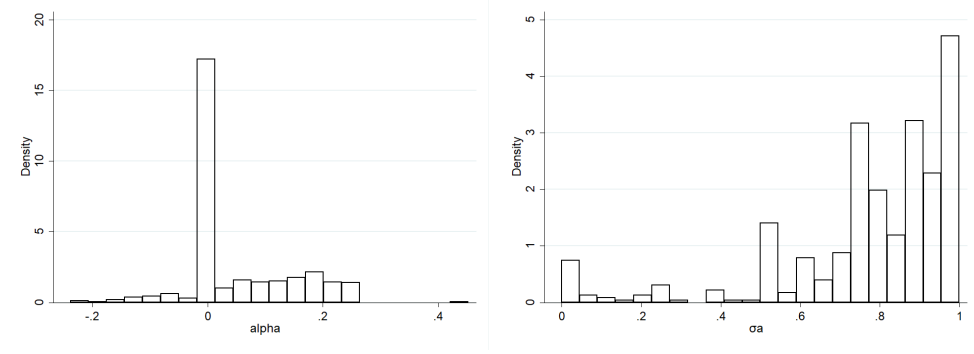


Figure 2: Histograms of α and σ_a .

The distributions of the two altruism parameters, α (from the occupational choice game) and σ_a (from the dictator game), are shown in Figure 8. Recall that in our theoretical model we allow for $\alpha \geq 0$, but by construction $\sigma_a \in [0, 1]$ because it is the share of the endowment given by the dictator to the receiver. From Section 5 and (5.1), the sign of the estimate of α depends on whether the optimal effort response to an increase in productivity, λ , in the public sector is positive ($\alpha > 0$), zero ($\alpha = 0$), or negative ($\alpha < 0$). The results on the effort response are examined separately in Section 11.

Our estimates are as follows. There are 39.6% (=198/500) subjects with $\alpha > 0$ (altruistic); 53.4% (=267/500) subjects with $\alpha = 0$ (altruism-neutral); and 7% (=35/500) subjects with $\alpha < 0$ (spiteful). For the altruism proxy measured from the dictator game, σ_a , there are 96.6% (=483/500) subjects with $\sigma_a > 0$; and 3.4% (=17/500) subjects with $\sigma_a = 0$.

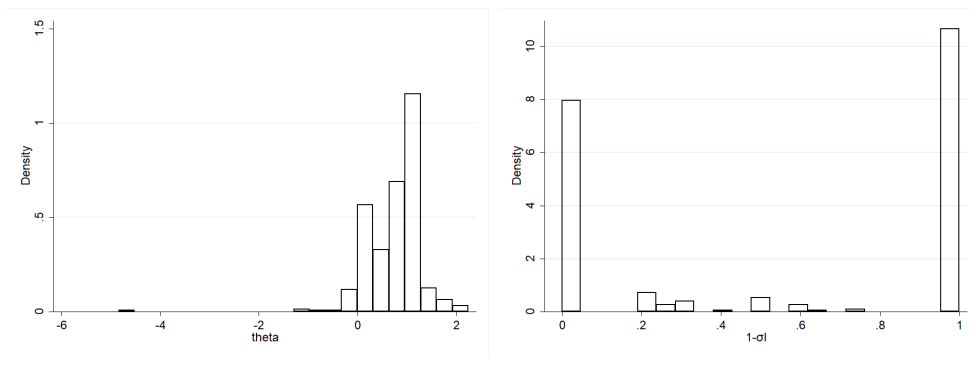


Figure 3: Histograms of estimates of θ and $1 - \sigma_l$.

The distributions of the estimates of the two morality parameters, θ (from the occupational/effort choice game) and $1 - \sigma_l$ (from the die-rolling game), are shown in Figure 9. Our theoretical model allows for $\theta \geq 0$, however, by construction, $1 - \sigma_l \in [0, 1]$ (see (6.2)). The estimates are as follows. There are 94% (=470/500) subjects with $\theta > 0$ (moral); 1.2% (=6/500)

subjects with $\theta = 0$ (morally-neutral); and 4.8% (=24/500) subjects with $\theta < 0$ (immorality-seeking). For the morality measure, $1 - \sigma_l$, from the die-rolling experiment, there are 64% (=320/500) subjects with $1 - \sigma_l > 0$ (moral); and 36% (=180/500) subjects with $1 - \sigma_l = 0$ (morally-neutral).

In our data, 89.8% (449 out of 500) of the subjects jointly satisfy the conditions $\alpha \geq 0$ and $\theta \geq 0$. If we restricted our sample to satisfy $\alpha \geq 0$ and $\theta \geq 0$, our results are roughly similar, but there are no compelling grounds to truncate our sample in this manner.

9.2 External validity of the estimated parameters from occupation choice

We now investigate if the estimates of the parameters α and θ measured from the occupation/effort choice game can be used to explain, respectively, subjects' behavior in the dictator game and the die rolling game. This would establish external validity of the estimated parameters from the occupation choice game by predicting behavior in a separate class of games. It also speaks to the issue of portability of the estimated parameters. The converse task of judging the predictive ability of the proxy parameters σ_a and $1 - \sigma_l$, from the dictator and the die-rolling games, to explain the occupation/effort choice data, is undertaken in Sections 10 and 11.

1. The correlation between the altruism parameter α estimated from the occupational/effort choice game and the transfer by the dictator in the dictator game is significantly positive (Spearman coefficient = 0.10, p -value = 0.030). This is consistent with the predictions of our model in Proposition 7.
2. The correlation between the morality parameter θ estimated from the occupational/effort choice game and the reported number, r , in the die-rolling game is significantly negative when the signal $r \neq 6$ (Spearman coefficient = -0.58 , p -value = 0.000).²⁸ Thus, more moral subjects (as measured in the occupation/effort choice game) also report lower numbers, that are closer to the observed signal, s , in the die-rolling task. This is consistent with the predictions of our model in Proposition 6.

10 Findings from the occupational choice game

Proposition 4 gives the required condition for the taking public sector job to be preferred over the no-taking public sector job; see (4.6). In Proposition 5, inequalities (4.7) and (4.8) give the respective conditions for choosing a public sector job over the private sector job. We now test these conditions. We run Tobit models (censored on both sides) using the data from our sample of 500 subjects, and report the calculated marginal effects for the censored data; we report the “scaled betas” rather than the original betas because the original betas cannot be directly interpreted like the slope parameters.²⁹

²⁸Recall that the payoff from reporting the number 6 is zero. Thus, payoffs are monotonic in reports only when $r \neq 6$.

²⁹In cases that the Tobit model could not produce any result, e.g. “convergence not achieved”, we used OLS models with robust errors instead. For the subjects who chose constant effort level at different productivity (λ) levels, we use (5.1) and (5.2), to assign the value zero to their α or θ coefficients.

10.1 Descriptive statistics

The percentage of subjects and the number of subjects (in brackets) choosing each of the 3 occupations in the neutral and the primed treatments is shown in Table 1. Of the 500 subjects, 242 were in the neutral treatment and 258 in the primed treatment. Close to 60% of the subjects chose the taking public sector job. Only 5.8% subjects in the neutral and 9.3% subjects in the primed treatment chose the no-taking public sector job. Roughly one third of the subjects chose the private sector job.

Overall, in our sample, 65.4% chose the public sector job and 34.6% chose the private sector job. This is remarkably close to the actual percentages of (i) public sector employees in India (64.2%), which includes state-owned companies and municipal government employees, and (ii) registered private sector employees (35.8%).

Table 1: Choice percentages for each job.

Treatment	Private Sector	Public Sector	
		Taking	No-Taking
Neutral (242)	36.8 (89)	57.4 (139)	5.8 (14)
Primed (258)	31.4 (81)	59.3 (153)	9.3 (24)

Notes: The number of subjects in each category is shown in brackets.

Fixing a job (private, taking, no-taking), the percentage of subjects in each treatment (neutral or primed) is not significantly different. For any of the three jobs, the job choice distributions in the two treatments are not significantly different either (Kolmogorov-Smirnov test, p -value= 0.862). Thus, priming does not play a significant role. A plausible explanation for the weak priming effect is that subjects in the neutral treatment already had ‘accurate’ and ‘salient’ beliefs about the extent of corruption in public sector jobs.³⁰

Since the main interest in the literature has been on the parameters of altruism and morality in determining occupational choice, we first give some descriptive statistics. In the top row of Figure 4, along the horizontal axis, we vary the extent of estimated morality, θ , of the subjects from the occupational/effort choice game (panel (a)) and from the die-rolling experiments, $1 - \sigma_l$ (panel (b)). In the bottom row, we similarly vary the estimated parameter of altruism, α , from the occupational choice game (panel (c)) and from the dictator game, σ_a (panel (d)). Going from left to right along the horizontal axis in any panel, we first have the subjects with the highest value of the parameter, followed by the next highest value, and so on, in the following sequence in successive increments of 5%– top 5%, top 10%, top 15%,..., top 100%. Thus, as we go from left to right along the top row, we are picking up successively less moral subjects; and in the bottom row, successively less altruistic subjects.

Along the vertical axis in Figure 4 we have, for each unit change on the horizontal axis, the

³⁰This is particularly the case since our subjects are students who are about to enter into the job market and appear well informed. Corruption itself is fairly salient in the social media and on the news in India. In the post-experimental survey, in the neutral treatment, subjects answered the question “What do you think is the actual percentage of the government officials in India that use the take option in public sector jobs?”. The average answer is 49.5%, which is close to the number announced in the primed treatment (45%).

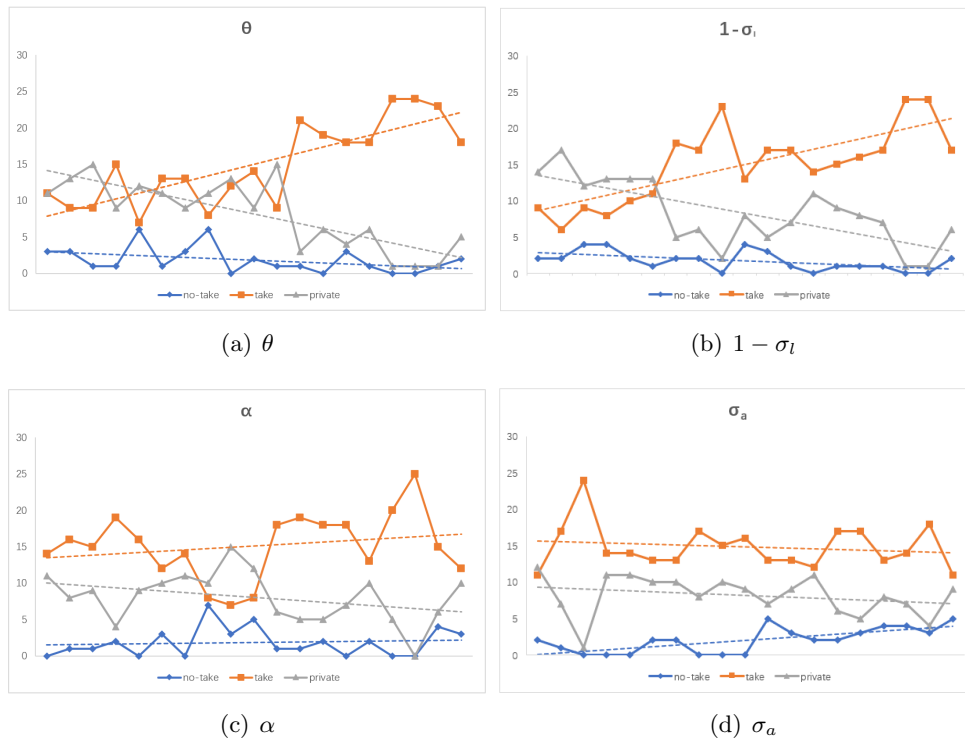


Figure 4: Percentages of job choices as the intensity of altruism and morality varies.

additional percentage of subjects choosing each of the three jobs– the no-taking public sector job, the taking public sector job, and the private sector job. In Table 2, we report the slope coefficients of the best fitting trend lines through each of the occupation choice curves in the 4 panels of Figure 4.

In panel (a) in Figure 4, for instance, among all three jobs, the trend line (see column 3 in Table 2 with the heading θ) is the steepest and the slope most significant for the taking public sector job. As the morality of the subjects reduces (from left to right on the horizontal axis), they are more likely to choose the taking public sector job. This increase in the taking public sector job comes at the expense of reduction in choices for the other two jobs, which both display negative and significant trends. A similar picture arises in panel (b), in Figure 4, in the top row where we use the proxy morality variable, $1 - \sigma_l$, from the die-rolling experiment. The results in panels (a) and (b) look similar, suggesting the portability of the proxy morality parameter to an entirely different game.

From panel (c) in Figure 4, none of the slope parameters is significant (see corresponding column 2 in Table 2 with the heading α). Thus, without controlling for other variables, altruism does not appear to provide an explanatory basis for occupational choice. The estimated slope coefficients in column 4 in Table 2 (corresponding to panel (d) in Figure 4) use the altruism proxy, σ_a , from the dictator game. Two of the three coefficients in column 4 are insignificant. The only significant coefficient is for the no-taking public sector job. However, this analysis needs to be refined by controlling for other factors. We do so below.

Table 2: Slope coefficients when a trend line is fitted through the graphs in each of the panels in Figure 4.

	α	θ	σ_a	$1 - \sigma_l$
no-taking	0.09	-0.01**	0.01**	-0.01**
taking	-0.02	0.04***	-0.003	0.04***
private	-0.07	-0.03***	-0.01	-0.04***

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

10.2 Choice between taking and no-taking public sector jobs

From Proposition 4, conditional on being a public sector employee, an individual chooses the taking job if $\alpha + \theta < 1$ and the no-taking job if $\alpha + \theta \geq 1$.

Table 3: Occupational choice in the public sector.

No-taking public sector job		Taking public sector job	
$\alpha + \theta \geq 1$	$\alpha + \theta < 1$	$\alpha + \theta \geq 1$	$\alpha + \theta < 1$
28/39 (71.8%)	11/39 (28.2%)	105/293 (35.8%)	188/293 (64.2%)

Table 3 shows the percentage and the number of subjects choosing each of the two public sector jobs; and whose individual-specific estimates of α, θ satisfy the predicted condition in Proposition 4. The behavior of 71.8% of subjects who chose the no-taking job and 64.2% of the subjects who chose the taking job (both shown in bold), is consistent with the predictions of Proposition 4. Both these proportions are significantly greater than 50% (z test, p -value < 0.01), which may be taken as the prediction of a model based on random allocation of subjects to the two jobs.

10.3 Choice between private and public sector jobs

The predictions for the choice between private and public sector jobs are given in Proposition 5. We consider the two cases in the proposition, separately below.

Case I: $\alpha + \theta < 1$ (Taking public sector job is preferred to the private sector job)

Our theoretical prediction is given in (4.7), $V^t > V^c \Leftrightarrow w_p + \frac{1}{2c}(\phi\lambda)^2 > \frac{\beta^2}{2c}$. Substituting the values of $w_p = 25$, $c = \frac{1}{2}$, $\lambda = 10$, $\gamma = 1/5$, $\beta = 4$ used in our experiments, this condition always holds.³¹ This is also true of Case II below, thus, the subjects are predicted to always choose the public sector job rather than the private sector job. In the experiments, 63.6% subjects chose the taking public sector job, consistent with our theoretical prediction, but 36.4% subjects chose the private sector job; we offer potential explanations below in Section 10.4.

Case II: $\alpha + \theta \geq 1$ (No-taking public sector job is preferred to the private sector job)

Our theoretical prediction is given in (4.8), $V^n > V^c \Leftrightarrow w_p + \frac{1}{2c}(\alpha\lambda)^2 > \frac{\beta^2}{2c}$. Analogous to the calculations in Case-I, this condition always holds. Thus, no subjects should choose the

³¹Rewriting this condition, we have $(\phi\lambda)^2 > \beta^2 - 2cw_p$. But $\beta^2 - 2cw_p = -9 < 0$ while $(\phi\lambda)^2 \geq 0$. A similar calculation also holds for Case II below. A necessary condition for this inequality to hold is that the incentive payment in the private sector, $\beta > 5$, while we have $\beta = 4$.

private sector job. In the experiments, for the subjects who satisfy $\alpha + \theta \geq 1$, 18.8% (= 39/207) subjects chose the no-taking public sector job and 81.2% (= 168/207) subjects chose the private sector job. This does not support the predictions of our model. However, overall, the subjects choosing the no-taking public sector job is only 5.8% in the neutral treatment, and 9.3% in the primed treatment (see Table 1). Thus, in terms of absolute numbers, this prediction fails for a relatively small number of subjects.

Discussion: Overall, the predictions of the theoretical model are well supported by the data, particularly in the choice between the two public sector jobs and also in terms of the required conditions $\alpha + \theta \geq 1$ for the choice between the two public sector jobs. However, the preference for a private sector job for a third of the subjects (see Table 1) when no subjects are predicted to choose a private sector job is puzzling. But we can explain this finding by considerations that are not a part of our theoretical model, as we show below.

The respective legal monetary payoffs from the private and the public sector jobs are $4e - c(e)$ and $25 - c(e)$.³² Subjects had available a slider to compute the exact cost corresponding to each possible effort level. Hence, the calculation of the legal ‘monetary payoff-maximizing effort choice’ was straightforward in our experiment. For 80 out of the 168 subjects who chose the private sector job, we have that

$$4e^c - c(e^c) > 25 - c(e^j), j = t, n$$

i.e., the monetary payoff in the private sector job is relatively higher as compared to the corresponding public sector job in the taking and the no-taking conditions.

Thus, the behavior of nearly half of the 34% subjects who choose the private sector job appears to be explained by the use of the following simple *heuristic*: Choose the job that offers the higher legal monetary payoff. Mounting evidence shows that people use a variety of simple context-dependent heuristics in making choices (Dhmi and Sunstein, 2022). Thus, it is quite possible that some subjects make occupational choice on the basis of simple payoff maximization, yet they might be altruistic and moral in other domains. They might well argue that with such payoff maximization, they will be able to use the money for altruistic purposes elsewhere (e.g., contribute to charity). Indeed this is supported by free-form responses of several subjects in the exit questionnaire, who chose the private sector job.³³ This suggests context dependent preferences that are well documented in behavioral economics (Dhmi, 2016).

These conclusions are supported by the results in Table 4. Recall that in our experimental design, all subjects choose effort levels in all the 3 jobs and play both experimental games (dictator and die-rolling game). Hence, we have structural estimates of altruism and morality, and the corresponding estimates for the proxy variables from the experimental games, for all subjects. From Table 4, when making choices in the dictator game, subjects who chose private

³²Those who have chosen the private sector prefer it to the taking public sector job, partly because they did not wish to partake in ‘mandatory’ institutional corruption. Indeed, as we show below, their average morality level is significantly higher than those who choose the taking public sector jobs. So, in comparing their respective material payoffs from the two jobs, they compare the legal material payoffs.

³³Here is a sample from one of the subjects: “If I want to do something good for the society I can do it even by being a private sector job holder. So I can get income according to the effort I put in and I can help someone simultaneously.”

Table 4: Average altruism and immorality-aversion in the private and public jobs.

	α	θ	σ_a	$1 - \sigma_l$
private	0.06	0.89	0.79	0.70
public	0.05	0.62	0.77	0.51
<i>t</i> test <i>p</i>	0.063	0.000	0.156	0.000

sector jobs are as altruistic as those who chose public sector jobs (as measured by both sets of altruism parameters). However, they are significantly more moral in the die-rolling lying game, as measured by both sets of the morality parameters; for each of the two morality parameters, the t-test for differences of morality between those who choose the private sector job and those who choose the public sector is highly significant.

There are likely to be other factors, supported by our post-experimental survey, that favor private sector jobs, although these were not a part of our parsimonious theoretical model. For instance, subjects might have an ‘intrinsic preference’ for jobs that offer performance-based pay, such as private sector jobs, over the public sector that offers a fixed wage (as in our experiments).³⁴ It is also possible that some subjects invoke outside-the-lab job features while making lab choices. For instance, the perception that private sector jobs are associated with greater autonomy and a steeper career profile; both are desirable features identified by the literature (Dhami, 2016). A few subjects who chose the private sector job mentioned factors such as “Great encouragement to skills and protection & respect” as explanations for their choice.

10.4 Probit analysis of job choice

We now use probit models to examine the pairwise job choices in Table 5 (taking public versus private), Table 6 (taking public versus no-taking public), and Table 7 (no-taking public versus private). We report the marginal effects with particular emphasis on the estimates of the altruism and the morality parameters, which are reported in all tables. The variables controlled in these 3 tables are *age*, *male*, *business* (this includes economics and business students), *experience*, *income*, *religion*, *CE*, and *prime*; these variables are defined in Section 7.4. To conserve space, in the tables we only report the marginal effects for the significant control variables, in addition to the estimated parameters of altruism and morality.

The findings from Tables 5, 6 and 7 are as follows.

1. Morality: From Tables 5 and 6, more moral subjects are significantly less likely to choose the taking public sector job. Both estimated morality parameters, θ and $1 - \sigma_l$, from the occupation/effort choice and the die rolling experiments, respectively, are highly significant. This not only supports our theoretical predictions (Proposition 4, 5), but also demonstrates the portability of the parameter $1 - \sigma_l$ to the occupation choice problem.

³⁴85.9% (= 146/170) of the subjects who preferred the private sector job in the experiment over the public sector jobs, selected the following option as their preferred explanation: “The incentive payment in the private sector because the private sector wage increases the higher the effort you choose. By contrast the public sector pays only a fixed wage that is independent of effort”.

Table 5: Choice between taking public sector job and private sector job (average marginal effects).

Probit	Model 1	Model 2
θ	-0.22** [0.098]	
α	0.04 [0.252]	
$1 - \sigma_l$		-0.15*** [0.042]
σ_a		-0.07 [0.102]
CE	-0.002** [0.001]	-0.002** [0.001]
business	0.11** [0.054]	0.12** [0.055]
demographic variables	controlled	controlled
No. of Obs.	462	462

Notes: For the dependent variable, private sector job =0, and taking public sector job =1. Robust standard errors, adjusted for clustering on individual subjects, are in the brackets. The demographic variables are controlled, and the insignificant ones are not shown in the table. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 6: Choice between taking and no-taking public sector jobs (average marginal effects).

Probit	Model 1	Model 2
θ	-0.15*** [0.039]	
α	0.43** [0.210]	
$1 - \sigma_l$		-0.06*** [0.023]
σ_a		0.20*** [0.062]
demographic variables	controlled	controlled
No. of Obs.	330	330

Notes: For the dependent variable, taking public sector job =1, and no-taking public sector job =0. Robust standard errors, adjusted for clustering on individual subjects, are in the brackets. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 7: Choice between no-taking public sector job and private sector job (average marginal effects).

Probit	Model 1	Model 2
θ	-0.04 [0.045]	
α	0.41 [0.267]	
$1 - \sigma_l$		-0.01 [0.038]
σ_a		0.35*** [0.088]
CE	0.002** [0.001]	0.002** [0.001]
prime	-0.10* [0.052]	-0.11** [0.051]
demographic variables	controlled	controlled
No. of Obs.	204	204

Notes: For the dependent variable, private sector job =1, and no-taking public sector job =0. Robust standard errors, adjusted for clustering on individual subjects, are in the brackets. The demographic variables are controlled, and the insignificant ones are not shown in the table. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Conversely, in Section 9.2, we have presented results consistent with the portability of the morality parameter θ , measured from the occupation/effort choice game, to explaining behavior in the die-rolling experiment.

2. Altruism: The estimated altruism parameter, α , measured from the occupation choice data is insignificant in explaining 2 out of the three pairwise job comparisons (taking public sector job vs private, and no-taking public sector job vs private). The proxy altruism parameter from the dictator game, σ_a , is insignificant in the choice between the taking public sector job and the private sector job. From Table 1, only 9.3% of our subjects in the primed treatment, and 5.8% in the neutral treatment choose the no-taking public sector job. The no-taking public sector job is involved in 2 out of 3 binary job comparisons. Thus, for the very vast majority of our subjects (94.2% in the neutral treatment and 91.7% in the primed treatment) the only relevant job choice is between the taking public sector job and the private sector job. In this comparison, the altruism parameters measured from both class of games, α and σ_a are insignificant in explaining the occupation choice decision. This is consistent with the graphs in panels (c) and (d) in Figure 4 and our discussion of those results.

Consider now the following result in Table 6 that is inconsistent with the predictions of our model (see Proposition 4). (1) A higher value of the parameter α makes it more likely that subjects prefer the taking public sector job over the no-taking public sector job. (2) The result in (1) also holds when we use the proxy parameter σ_a . We have considered a

plausible explanation in the introduction, based on the effect of guilt-aversion on altruism (corruption leads to guilt, which subjects deal with by being more altruistic). However, this channel is absent from our theoretical model, and modeling it would require an ambitious model of endogenous preferences.

3. Risk: Recall that a higher value of the certainty equivalent, CE, corresponds to more ‘risk taking’ behavior.³⁵ The effects of CE are either insignificant (in the choice between the two public sector jobs; see Table 6), or when significant, the effects are quantitatively small (2 in 1000 chance) as in Tables 5, 7. The more risk-taking subjects are (i) less likely to choose the taking public sector job over the private sector job (Table 5), and (ii) more likely to choose the private sector job over the no-taking public sector job (Table 7). Thus, more risk-taking subjects prefer the private sector job over the two public sector jobs. In our experimental design, we eliminated the confounding factor of risk in occupational choice. Yet more risk-taking subjects are more likely to take the private sector job that some people might perceive to be more risky in the real world. In the introduction, we have considered a plausible channel (risk taking and overconfidence are highly correlated) that is a potential explanation. Our experiments do not allow us to explore this channel.
4. Other factors: As noted before, the priming treatment produces results similar to the neutral treatment, hence, the variable ‘prime’ is not significant in any regressions. The only exception is in Table 7 where priming decreases the probability of choosing a private sector job. However the priming effect is significant only at 5% for the case when we use the proxy morality parameter, $1 - \sigma_l$, from the die rolling task. When the morality parameter, θ , from the occupation choice data is used, priming is significant only at 10%. Business students are more likely to choose the taking public sector job over the private sector job (Table 5). However, their choices are not significantly different in any other pairwise comparison.

11 Choice of effort and output

In this section, we report the results of the Tobit models, censored on both sides, to explain effort choices of our subjects. For ease of interpretation, we report the *marginal effects* of the independent variables.

Table 8: Average effort levels in the 3 jobs in each treatment.

Treatment	taking public sector	no-taking public sector	private sector
primed	5.95	4.84	7.68
neutral	6.17	4.87	7.77

³⁵Note that if a subject is risk averse then a higher value of CE implies lower risk aversion. If a subject is risk loving, then a higher value of CE implies more risk loving. We follow the convention of classing both subjects as more risk-taking.

Table 8 shows the average effort level in each treatment (primed and neutral) for all three jobs; for the two public sector jobs we have used the effort level chosen by subjects corresponding to the actual productivity level, $\lambda = 10$. A t -test of the differences in the averages between the primed and neutral treatments, for each of the 3 jobs, reveals no statistical difference. Hence, priming does not influence average effort level in a between-subjects design. Table 8 reveals the following findings. (1) The average effort level is highest in the private sector, followed by the taking public sector job, and it is lowest in the no-taking public sector job. (2) The average effort levels in the three pairwise job comparisons (no-taking versus private; taking versus private; no-taking versus taking) are significantly different (p -values < 0.01 each case). A Kolmogorov-Smirnov test also shows that the distributions of effort levels, in each pairwise comparison of the jobs, are significantly different (p -values < 0.01 in all cases).

Consider the primed treatment. Private sector effort is 1.73 units higher than in the taking public sector job. If the same effort was to be exerted in the taking public sector job, it would produce $10 \times 1.73 = 17.3$ extra units of public sector output. The taking public sector job produces 60.6 units of output (see Section 11.3), so this would be an increase of $\frac{17.3}{60.6} \times 100 = 28.54\%$ in output. A similar comparison for the no-taking versus private sector job, based on the primed treatment in Table 8 and an output level of 48.6 for the no-taking job, gives an increase of $\frac{28.4}{48.6} \times 100 = 58.4\%$ in public output in the no-taking job.

11.1 Effort choices in the public sector jobs

11.1.1 Descriptive results

Figure 10 depicts the distribution of effort levels in the taking and the no-taking public jobs. In our strategy method, the subjects made 21 effort choices at different levels of the productivity parameter $\lambda \in \{0, 1, 2, \dots, 20\}$ in each of the two public sector jobs. We used the Kolmogorov-Smirnov test (KS test) to compare the effort distributions in the two jobs; the data is pooled across all subjects and for all values of λ . 48.8% of the subjects choose significantly different effort distributions in the taking and no-taking public jobs³⁶. The two-sided t test shows that, in a comparison of the two public sector jobs, 37% of the subjects exerted significantly higher effort in the taking public job; 7.2% of the subjects exerted significantly higher effort in the no-taking public job; and the effort choices of the remaining 55.8% of the subjects' in the two public sector jobs are not significantly different.

The distributions of the effort levels in the two treatments (primed versus neutral) are significantly different for the taking public sector job (KS test, p -value = 0.012), and for the no-taking public sector job (KS test, p -value = 0.018).

As noted before, the estimated sign of the altruism parameter, α , from the occupational/effort choice game, depends on how effort changes in response to an increase in productivity in the public sector, λ : If effort increases, then $\alpha > 0$ (altruism), if effort stays the same, then $\alpha = 0$ (altruism-neutral), and if effort decreases, then $\alpha < 0$ (spite). Using the sign of the non-parametric Spearman correlation coefficient between effort and productivity, we get the

³⁶The Mann-whitney test revealed a similar proportion of the subjects (48.6%) whose effort choices were different.

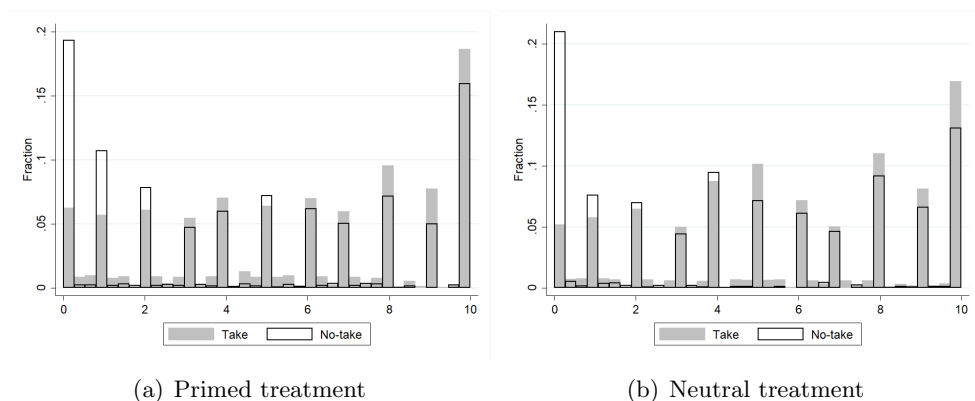


Figure 5: Histograms of efforts in the taking and no-taking public jobs.

following results. (1) In the taking public sector job, 59% of the subjects were altruistic; 6.4% of the subjects were spiteful; and the remaining 34.6% of the subjects were altruism-neutral. (2) The corresponding percentages in the no-taking public sector job are 39.8% (altruistic), 8.8% (spiteful), and 51.4% (insignificant Spearman correlation coefficient).

A potential explanation for the relatively higher altruism in the taking public sector job, as discussed in the introduction, is that engagement in corruption may cause feelings of guilt.³⁷ In order to mitigate the guilt, subjects then respond by increasing their effort levels in the taking public sector job to ensure that a greater amount of the public output is distributed to society, net of the leakage due to corruption. This is supported by our results in Section 11.3. However, the precise testing of this specific channels relies on the measurement of the underlying beliefs of the subjects (see, e.g., Dhami et al., 2022), and modeling endogenous preferences, which we leave for future research.

11.1.2 Determinants of the public sector effort levels

The determinants of the effort choices in the two public sector jobs are shown in Table 9. In Table 9, the positive coefficients on α in Model 1 and Model 3 respectively show that more altruistic subjects exerted more effort in both the taking public job and the no-taking public job. This is consistent with our predictions (Propositions 2, 3). The negative sign on θ in Model 1 indicates that the more moral subjects exerted less effort in the taking public job, which is also consistent with our predictions (Proposition 3), although the effect is not significant. However, the parameters of altruism, σ_a , and morality, $1 - \sigma_l$, measured from the two experimental games (respectively, dictator and die-rolling task) are not significant.

In the *no-taking* public sector job, older people, and more risk-taking subjects exerted higher effort; males exerted lower effort; and Hindu subjects exerted higher effort as compared to the other religions, although this is only significant in Model 3. In both public sector jobs, subjects with higher annual household incomes exerted lower effort, but this effect is not significant in Model 4.

³⁷In other contexts, for instance, in public goods games, the guilt motive plays a powerful role in ensuring contributions to public goods; see Dhami et al. 2019.

Table 9: Determinants of public sector efforts (marginal effects).

Dependent variable	Taking effort		No-taking effort		
	Tobit	Model 1	Model 2	Model 3	Model 4
α		7.24 [5.782]		6.92*** [1.095]	
θ		-0.84 [0.983]			
σ_a			-0.10 [0.597]		0.86 [0.570]
$1 - \sigma_l$			0.11 [0.241]		
prime		0.78 [0.989]	0.82 [1.080]	0.19 [0.264]	-0.58 [1.682]
male		-0.93 [1.228]	-1.54 [1.017]	-0.56** [0.267]	-2.68** [1.094]
age		-0.04 [0.186]	0.09 [0.199]	0.26*** [0.048]	0.60*** [0.231]
income		-1.01*** [0.302]	-1.00*** [0.292]	-0.21** [0.094]	-0.84 [0.589]
religion		1.01 [0.924]	0.96 [0.933]	0.91*** [0.295]	-0.18 [1.299]
experience		-0.74 [1.170]	-1.03 [1.105]	0.14 [0.299]	1.56 [1.476]
business		1.29 [0.846]	1.34 [0.919]	-0.49 [0.334]	-0.28 [1.626]
CE		0.03 [0.018]	0.02 [0.019]	0.01* [0.005]	0.05* [0.029]
No. of Obs.		500	500	500	500

Notes: Robust standard errors, adjusted for clustering on individual subjects, are in the brackets. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

11.2 Effort choices in the private sector job

11.2.1 Descriptive results

Figure 11 shows the distribution of effort in the private sector job. There is no significant difference in the effort distributions in the primed and neutral treatments. (KS test, p -value=0.958). Hence, in Figure 11, we have pooled the data from both treatments.

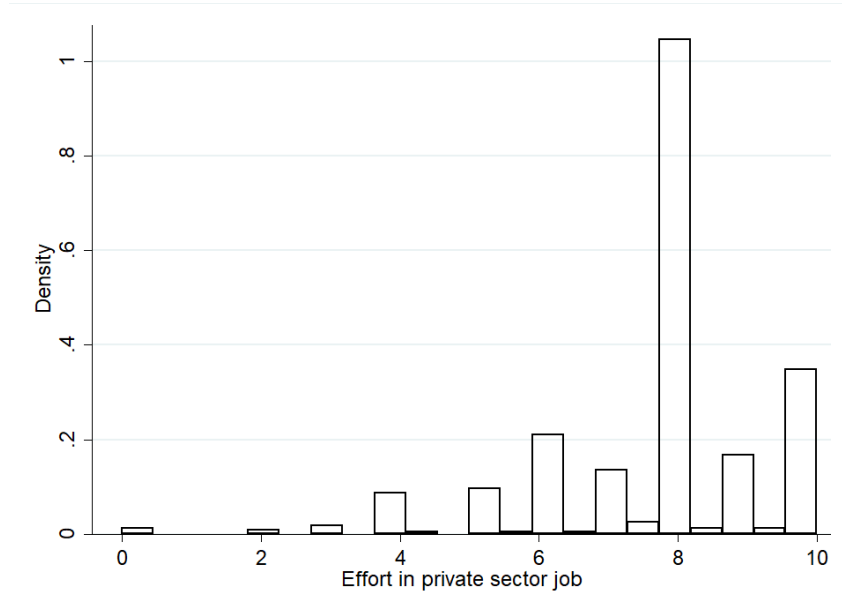


Figure 6: Histograms of effort choice in the private sector job.

The optimal effort which maximizes the monetary payoff in the private sector job, $4e - \frac{1}{4}e^2$, equals $e = 8$. In Figure 11, the modal effort level is 8 and it is chosen by 47% of the subjects. The average effort level chosen in the private sector job is 7.7, which is also close to 8. This lends further credence to the hypothesis that many of those who chose the private sector job were attempting to maximize their monetary payoffs.

11.2.2 Determinants of the private sector effort

As noted earlier, most subjects in the private sector job simply chose the effort, $e = 8$, that maximizes monetary payoffs. So it is not surprising that in a regression analysis, most other explanatory variables play a secondary role. There is no economic justification in including the altruism and morality parameters in explaining effort choices in the private sector. Among the explanatory variables, only the variable, *business*, is significantly positive; thus, business students exert more effort in the private sector job relative to students from other disciplines. The following variables were found to be insignificant: Prime, male, age, income, religion, experience, and risk attitudes; see Table 11.

11.3 Public output in the public sector jobs

The production function in the two public sector jobs is $f(e) = \lambda e$ (see (2.2)). In the no-taking public sector job, the output distributed to society equals λe , while in the taking public sector

Table 10: Regression analysis of the effort choices in the private sector job (marginal effects).

Tobit	Model
private	0.19 [0.211]
prime	-0.05 [0.183]
male	0.14 [0.182]
age	0.03 [0.037]
income	-0.03 [0.063]
religion	0.20 [0.197]
experience	-0.28 [0.200]
business	0.37* [0.187]
CE	0.00 [0.003]
No. of Obs.	500

Notes: Robust standard errors, adjusted for clustering on individual subjects, are in the brackets.
* $p < 0.1$.

job the output distributed equals $(1 - \gamma) \lambda e$. We use the actual parameter values, $\gamma = 0.2$, $\lambda = 10$; and the actual effort levels chosen by the subjects for these parameter values.

Using data on effort choices by all our subjects, Figure 12 shows the histograms of the public output received by society (panel (a)), and the total public output produced (panel (b)), in both public sector jobs. The output received by society is relatively less dispersed and more concentrated towards the middle in the taking public sector job.

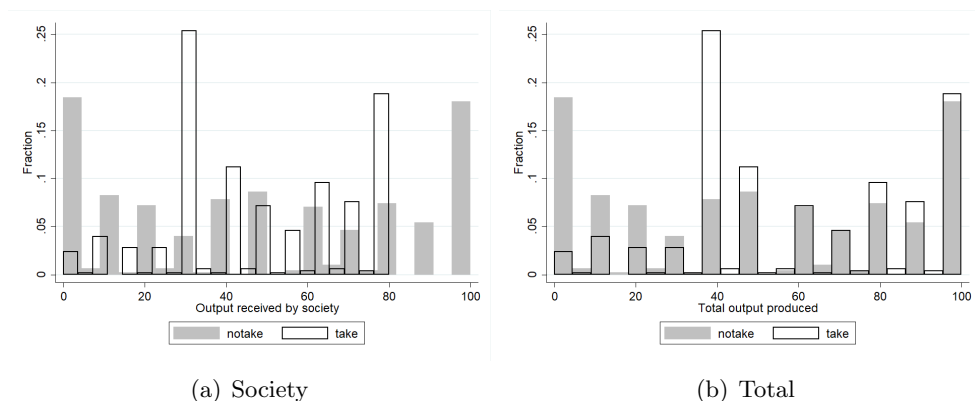


Figure 7: Public outputs in the two public sector jobs.

The average public output produced in the taking and the no-taking public sector jobs is, respectively, 60.6 and 48.6. The output produced in the taking public sector job is significantly higher (t -test p -value=0.000). Since public sector employees take $1/5$ of the output produced in the taking public sector job, the output received by society in the taking public sector job is 48.4. The outputs received by society in the two jobs, 48.6 and 48.4, are not statistically different (t -test p -value=0.949), but the distributions of the outputs are significantly different (KS test p -value=0.000). Thus, on average, corruption expands the size of the public sector, although it makes no difference to the output received by society.

12 Conclusions

The problem of occupation/effort choice between the private and public sectors in the presence of corruption has been an active area of research. Despite notable progress, several factors conspire against drawing firmer conclusions and establishing causality. These include the lack of a precise specification of the job characteristics that subjects are asked to choose between; the absence of an analysis of effort choice in these jobs; the absence of theoretical models that make precise predictions that can be tested; and the practice of using proxy preference parameters (e.g., from dictator game and die-rolling tasks) to correlate with occupation choice, rather than structurally estimating these parameters from occupation/effort choice data. The aim of our paper, and its main motivation, is to address all these concerns in one fell swoop.

The predictions of our theoretical model are reasonably well supported by the data. Morality is a strong determinant of occupation choice and its effect is predicted by the theoretical model. The effects of altruism are more complicated. The vast majority of our subjects (94.2% in the neutral treatment and 91.7% in the primed treatment) choose either the taking public sector

job or the private sector job. In this binary job choice comparison, altruism is not a significant determinant of occupation choice. However, in job choice comparisons involving other pairs of jobs, altruism is either not significant (no-taking versus private), or when significant (no-taking versus taking), it appears to indicate that corruption leads to guilt and a response from subjects in the form of greater altruism.

Altruism increases public sector effort as predicted by our theoretical model. We use structurally measured parameters of altruism and morality from the occupation/effort choice game, and also proxies for these parameters from dictator and die-rolling games. Both sets of parameters are reasonably portable across both sets of games. Thus, our work also contributes to the literature on establishing portability of model parameters and establishing external validity. Those choosing the private sector are as altruistic, but more moral, relative to those choosing the public sector; yet they follow a simple heuristic of maximizing legal material payoffs and exhibit context dependent preferences. Another novel finding from our paper is that corrupt economies are likely to have a larger size of the public sector, but consumer welfare in corrupt and honest economies is similar.

Our paper puts the effects of morality and altruism on a firmer theoretical and experimental foundation. However, the work can be extended in several directions. For instance, to environments where corruption is not institutionalized and deterrence parameters play an important role. One could also extend our theoretical model to other possible job characteristics including non-pecuniary benefits such as status and image concerns arising from various jobs. Two new channels that appear to play a role in explaining our results but are not a part of our theoretical model deserve further exploration. The first is the “corruption to guilt to altruism channel” in occupation choice. The second is the relationship between risk aversion and overconfidence in explaining occupation/effort choice.

Acknowledgments

We are grateful to the Centre for Social and Behaviour Change (CBSE), Ashoka University, the National Natural Science Foundation of China (72003100), and Fellowship of China Postdoctoral Science Foundation (2020M670616) for the funding of this research. The experiments were run by the CSBC Behavioural Lab in the Field and we thank Aayush Agarwal for his assistance in the running the experiments. The authors are also very grateful for comments and suggestions during presentations of this paper at the University of Leicester, and the University of Liverpool. This RCT was registered as AEARCTR-0008008 (Dhami, Mamidi, and Wei, 2021).

Appendix: Proofs

Proof of Proposition 1: From (3.1), $\frac{d^2V^c}{de^2} = -c''(e) < 0$. Hence, V^c is a strictly concave function of e on a compact interval $[0, \bar{e}]$. Thus, a unique maximum value exists which can be found by setting $\frac{dV^c}{de} = 0$ in (3.1). This gives $e^c = c'^{-1}(\beta)$. Differentiating the optimal solution, we get $\frac{de^c}{d\beta} = c''^{-1}(\beta) > 0$ (because the inverse of an increasing function is also increasing), so e^c is strictly increasing in β . From (3.1), we directly get one corner solution $e^c = 0$ if $\beta \leq c'(0)$; and

the other corner solution $e^c = \bar{e}$ if $\beta \geq c'(\bar{e})$. ■

Proof of Proposition 2: (i) Differentiating (3.3) with respect to e we get $\frac{d^2V^n}{de^2} = -c''(e) < 0$. Hence, V^n is a strictly concave function of e on a compact interval $[0, \bar{e}]$. Thus, a unique maximum value exists. At an interior solution, $\frac{dV^n}{de} = 0$ in (3.1), which gives $e^n = c'^{-1}(\alpha\lambda)$. It follows directly from (3.3) that we get the corner solution $e^n = 0$ if $\alpha\lambda \leq c'(0)$ and the other corner solution $e^n = \bar{e}$ if $\alpha\lambda \geq c'(\bar{e})$.

(ii) Differentiating the optimal interior solution we get

$$\frac{de^n}{d\alpha} = \lambda c''^{-1}(\alpha\lambda); \quad \frac{de^n}{d\lambda} = \alpha c''^{-1}(\alpha\lambda).$$

Suppose that $0 < \alpha < \frac{c'(\bar{e})}{\lambda}$, then from (3.3) we get an interior solution to effort, $0 < e^n < 1$. We then have $\frac{de^n}{d\alpha} > 0$ and $\frac{de^n}{d\lambda} > 0$. (because the cost function is increasing and convex; and the inverse of an increasing function is increasing) ■

Proof of Proposition 3: (i) From (3.5), we have $\frac{d^2V^t}{de^2} = -c''(e) < 0$. Hence, V^t is a strictly concave function of e on a compact interval $[0, \bar{e}]$. Thus, a unique maximum value exists. At an interior solution, $\frac{dV^t}{de} = 0$ in (3.5), which gives $e^t = c'^{-1}(\phi\lambda)$. We get the corner solution $e^t = 0$ if $\phi\lambda \leq c'(0)$ and the other corner solution $e^t = \bar{e}$ if $\phi\lambda \geq c'(\bar{e})$.

(ii) At an interior solution, we must have $0 < \phi < \frac{c'(\bar{e})}{\lambda}$. Otherwise if $\phi \leq 0$ or if $\phi \geq \frac{c'(\bar{e})}{\lambda}$, then from (3.5), we get, respectively, the corner solutions, $e^t = 0$ and $e^t = \bar{e}$. Differentiating the optimal interior solution to effort, with respect to λ we get $\frac{de^t}{d\lambda} = \phi c''^{-1}(\phi\lambda) > 0$. In order to study the other comparative static effects, first note that

$$\frac{de^t}{d\phi} = \lambda c''^{-1}(\phi\lambda) > 0.$$

Now using the definition of $\phi = \alpha + \gamma(1 - \alpha - \theta)$ given in (2.7), we can determine $\frac{de^t}{d\alpha} = (1 - \gamma)\frac{de^t}{d\phi} > 0$; $\frac{de^t}{d\theta} = -\gamma\frac{de^t}{d\phi} < 0$; and $\frac{de^t}{d\gamma} = (1 - \theta - \alpha)\frac{de^t}{d\phi} \geq 0$, but if $0 \leq \alpha + \theta < 1$, then $\frac{de^t}{d\gamma} > 0$. ■

Proof of Proposition 4: Using (4.4), (4.5), the taking job is preferred if $V^t > V^n \Leftrightarrow \phi > \alpha$. Using (3.8), we can write this as $V^t > V^n \Leftrightarrow 1 > \alpha + \theta$. Otherwise, the public sector employee prefers the no-taking job, i.e., $V^t \leq V^n \Leftrightarrow 1 \leq \alpha + \theta$. ■

Proof of Proposition 5: Suppose that we use the tie breaking rule that when indifferent between the private and the public sector jobs, the individual chooses the private sector job.

Case-I: $1 > \alpha + \theta$.

From Proposition 4, the taking public sector job is preferred. Hence, in this case, the relevant choice is between a 'taking' public sector job and a private sector job. The individual chooses the taking public sector job if $V^t > V^c$. Using (4.3), (4.5), one can easily verify that $V^t > V^c$ implies the condition in (4.7).

Case II: $1 \leq \alpha + \theta$.

From Proposition 4, the no-taking public sector job is preferred. Hence, in this case, an individual who is deciding between the private job and the no-taking public sector job, chooses the public sector job if $V^n > V^c$. Using (4.3), (4.4), one can easily verify that $V^n > V^c$ implies the condition in (4.8). ■

Proof of Proposition 6: From (6.1) we get

$$\frac{dU_M}{dr} = u'(r) - \tilde{\theta}. \quad (12.1)$$

The second order condition is $\frac{d^2U_M}{dr^2} = u''(r) < 0$, so U_M is a strictly concave function of r , defined on the compact interval $[s, \bar{s}]$. Thus, a unique maximum exists, and can be found by solving the first order condition $\frac{dU_M}{dr} \leq 0$. At an interior solution, $\frac{dU_M}{dr} = 0$, which gives $r^* = u'^{-1}(\tilde{\theta})$. Differentiating this condition, we get $\frac{dr^*}{d\theta} = u''^{-1}(\tilde{\theta}) < 0$ if $r^* > s$ and $\frac{dr^*}{d\theta} = 0$ if $r^* = s$ is at the lower boundary of the feasible set $[s, \bar{s}]$. Thus, r^* is decreasing in θ . ■

Proof of Proposition 7: From (6.3), we have

$$\frac{dU_A(y; \tilde{\alpha})}{dy} = u'(y) - \tilde{\alpha}. \quad (12.2)$$

Since $\frac{d^2U_A(y; \tilde{\alpha})}{dy^2} = u''(y) < 0$, U_A is a strictly concave function of y , defined on the compact interval $[0, \bar{y}]$. Thus, a unique maximum value exists and it can be found by solving the first order condition $\frac{dU_A(y; \tilde{\alpha})}{dy} \leq 0$. At an interior solution, $\frac{dU_A(y; \tilde{\alpha})}{dy} = 0$, which gives the solution $y^* = u'^{-1}(\tilde{\alpha})$. Differentiating the optimal solution, it follows that $\frac{dy^*}{d\tilde{\alpha}} = u''^{-1}(\tilde{\alpha}) < 0$. Thus, $y^*(\tilde{\alpha})$, the amount kept by the dictator, is decreasing in the altruism parameter of the dictator. If $\frac{dU_A(0; \tilde{\alpha})}{dy} \leq 0$ or $u'(0) \leq \tilde{\alpha}$, then the dictator chooses to keep nothing, or $y^* = 0$. If $\frac{dU_A(\bar{y}; \tilde{\alpha})}{dy} \geq 0$ or $u'(\bar{y}) \geq \tilde{\alpha}$, then the dictator chooses to give nothing, or $y^* = \bar{y}$. ■

Supplementary Section

In the supplementary section, we give more statistical information about our results.

12.1 Distributions of the Altruism and Morality parameters from the occupation/effort choice game and from the experimental games

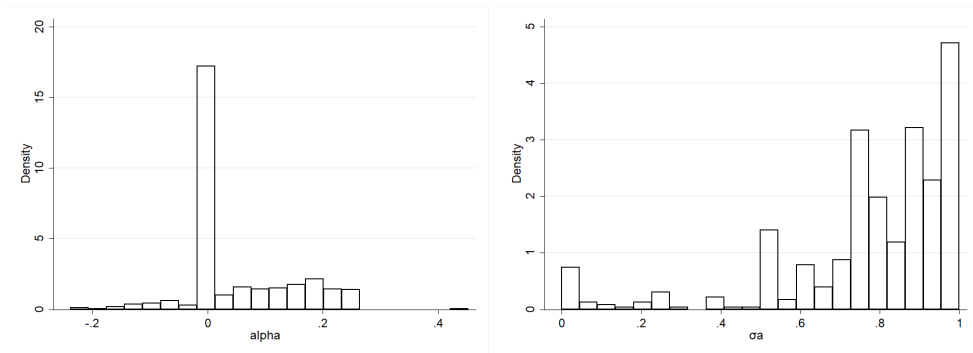


Figure 8: Histograms of α and σ_a .

The distributions of the two altruism parameters, α (from the occupational choice game) and σ_a (from the dictator game), are shown in Figure 8. Recall that in our theoretical model we allow for $\alpha \geq 0$, but by construction $\sigma_a \in [0, 1]$ because it is the share of the endowment given by the dictator to the receiver. The sign of the estimate of α depends on whether the

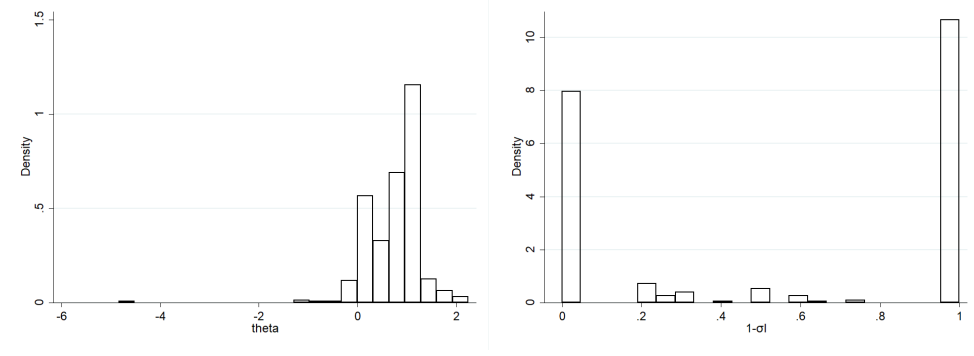


Figure 9: Histograms of estimates of θ and $1 - \sigma_l$.

optimal effort response to an increase in productivity, λ , in the public sector is positive ($\alpha > 0$), zero ($\alpha = 0$), or negative ($\alpha < 0$).

The distributions of the estimates of the two morality parameters, θ (from the occupational/effort choice game) and $1 - \sigma_l$ (from the die-rolling game), are shown in Figure 9.

12.2 Descriptive statistics on effort

Figure 10 depicts the distribution of effort levels in the taking and the no-taking public jobs. In our strategy method, the subjects made 21 effort choices at different levels of the productivity parameter $\lambda \in \{0, 1, 2, \dots, 20\}$ in each of the two public sector jobs. We used the Kolmogorov-

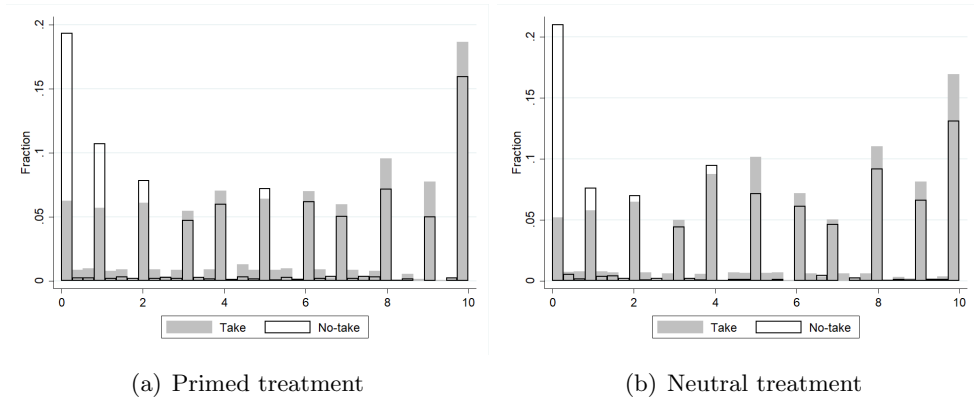


Figure 10: Histograms of efforts in the taking and no-taking public jobs.

Smirnov test (KS test) to compare the effort distributions in the two jobs; the data is pooled across all subjects and for all values of λ . 48.8% of the subjects choose significantly different effort distributions in the taking and no-taking public jobs³⁸. The two-sided t test shows that, in a comparison of the two public sector jobs, 37% of the subjects exerted significantly higher effort in the taking public job; 7.2% of the subjects exerted significantly higher effort in the no-taking public job; and the effort choices of the remaining 55.8% of the subjects' in the two public sector jobs are not significantly different.

³⁸The Mann-whitney test revealed a similar proportion of the subjects (48.6%) whose effort choices were different.

The distributions of the effort levels in the two treatments (primed versus neutral) are significantly different for the taking public sector job (KS test, p -value= 0.012), and for the no-taking public sector job (KS test, p -value= 0.018).

As noted in the paper, the estimated sign of the altruism parameter, α , from the occupational/effort choice game, depends on how effort changes in response to an increase in productivity in the public sector, λ : If effort increases, then $\alpha > 0$ (altruism), if effort stays the same, then $\alpha = 0$ (altruism-neutral), and if effort decreases, then $\alpha < 0$ (spite). Using the sign of the non-parametric Spearman correlation coefficient between effort and productivity, we get the following results. (1) In the taking public sector job, 59% of the subjects were altruistic; 6.4% of the subjects were spiteful; and the remaining 34.6% of the subjects were altruism-neutral. (2) The corresponding percentages in the no-taking public sector job are 39.8% (altruistic), 8.8% (spiteful), and 51.4% (insignificant Spearman correlation coefficient).

A potential explanation for the relatively higher altruism in the taking public sector job, as discussed in the introduction, is that engagement in corruption may cause feelings of guilt.³⁹ In order to mitigate the guilt, subjects then respond by increasing their effort levels in the taking public sector job to ensure that a greater amount of the public output is distributed to society, net of the leakage due to corruption. This is supported by our results in the paper. However, the precise testing of this specific channels relies on the measurement of the underlying beliefs of the subjects (see, e.g., Dhami et al., 2022), and modeling endogenous preferences, which we leave for future research.

12.3 Effort choices in the private sector

Figure 11 shows the distribution of effort in the private sector job. There is no significant difference in the effort distributions in the primed and neutral treatments. (KS test, p -value= 0.958). Hence, in Figure 11, we have pooled the data from both treatments.

The regression analysis in Table 11 shows that except for business students who exert significantly higher effort in the private sector, relative to other students, none of the explanatory variables is significant.

12.4 Distribution of output in the two public sector jobs

Using data on effort choices by all our subjects, Figure 12 shows the histograms of the public output received by society (panel (a)), and the total public output produced (panel (b)), in both public sector jobs. The output received by society is relatively less dispersed and more concentrated towards the middle in the taking public sector job.

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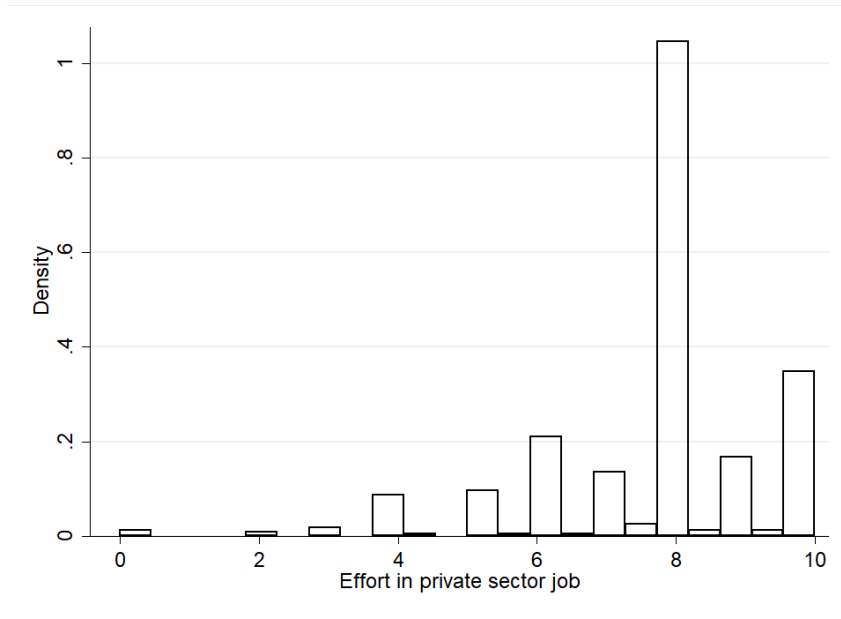


Figure 11: Histograms of effort choice in the private sector job.

Table 11: Regression analysis of the effort choices in the private sector job (marginal effects).

	Tobit	Model
private		0.19 [0.211]
prime		-0.05 [0.183]
male		0.14 [0.182]
age		0.03 [0.037]
income		-0.03 [0.063]
religion		0.20 [0.197]
experience		-0.28 [0.200]
business		0.37* [0.187]
CE		0.00 [0.003]
No. of Obs.		500

Notes: Robust standard errors, adjusted for clustering on individual subjects, are in the brackets.
* $p < 0.1$.

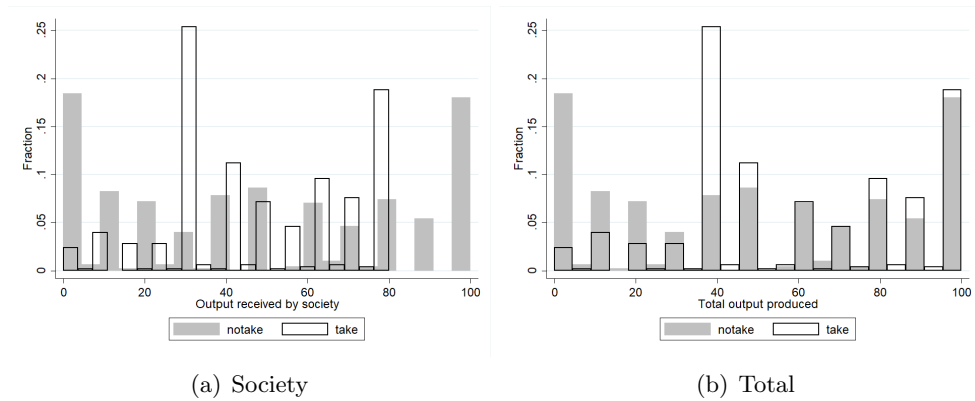


Figure 12: Public outputs in the two public sector jobs.

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