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Sustaining Honesty in Public Service:
The Role of Selection[†]

By Sebastian Barfort, Nikolaj A. Harmon, Frederik Hjorth,
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We study the role of self-selection into public service in sustaining honesty in the public sector. Focusing on the world's least corrupt country, Denmark, we use a survey experiment to document strong self-selection of more honest individuals into public service. This result differs sharply from existing findings from more corrupt settings. Differences in pro-social versus pecuniary motivation appear central to the observed selection pattern. Dishonest individuals are more pecuniarily motivated and self-select out of public service into higher-paying private sector jobs. Accordingly, we find that increasing public sector wages would attract more dishonest candidates to public service in Denmark. (JEL D73, H83, J31, J45)

Research on corruption has tended to emphasize formal differences in individual incentives for the misuse of public office, emphasizing monitoring and punishment as deterrents from engaging in corrupt behavior. While this focus has been very fruitful (see Olken and Pande 2012 for a recent survey), recent evidence has suggested that individual attributes such as cultural values may also play a prominent role (Fisman et al. 2015, Fisman and Miguel 2007).

This paper explores the role of individual selection in generating an equilibrium of honesty and low corruption in public service. Using Denmark as a low-corruption case study, we ask whether potential candidates for public service jobs differ in

their inherent propensity for dishonest behavior and, if so, whether systematic self-selection of honest types into public service may be one channel that helps sustain a low level of corruption. To draw lessons for combating corruption in other settings, we further ask how the observed selection pattern is related to other individual attributes, as well as the level of public sector wages.

Theory provides ambiguous predictions regarding the questions we pose. The inherent propensity for dishonesty could differ significantly across potential candidates for public service or could be relatively constant within a country. Moreover, even if dishonesty does vary across potential public service candidates, it is unclear how dishonesty should relate to preferences for entering public service. On the one hand, the relatively low level of public sector corruption in Denmark could discourage dishonest individuals from entering this sector. On the other hand, the Danish public sector is not immune to rent extraction (Amore and Bennedsen 2013), and the sheer size of public budgets in Denmark means that even small-scale rent extraction in the public sector may be very lucrative for dishonest individuals. Finally, the extent to which dishonesty correlates with other individual attributes that shape job preferences, such as risk aversion or pro-social motivation, may further complicate the observed selection pattern.

To provide empirical guidance on these questions, we conduct a survey experiment with students in the fields of law, economics, and political science at the University of Copenhagen in Denmark. Given its consistent ranking as the least corrupt country in the world, Denmark is a useful benchmark for studying how countries can sustain low levels of corruption. For studying selection into public service, the particular population of students we focus on is very well-suited. They face a very clear choice between public service and private sector careers and make up an important part of the public sector workforce.

We first examine the extent of heterogeneity in dishonesty and how this heterogeneity is related to preferences for entering public service. We adopt the experimental methodology of Hanna and Wang (2017) and subject students to a standard set of cheating tasks building on Fischbacher and Föllmi-Heusi (2013). In our implementation of the tasks, students can win money by correctly guessing the outcome of a series of dice rolls but are allowed to see the outcome of each roll before reporting their guess. Students therefore have the option of winning dishonestly by misreporting their guess, knowing that it can never be proven whether they were dishonest. Comparing the distribution of successful guesses in the dice game to the expected distribution without lying, however, allows us to construct estimates of individual propensities for dishonesty.

The cheating tasks reveal extensive heterogeneity among potential candidates for public service. We estimate that 14–17 percent of respondents barely cheat at all, while 17–23 percent cheat practically all the time. The remaining respondents fall somewhere in between, resulting in a standard deviation of cheat rates across individuals of 0.39. Relating dishonesty to job preferences, we find clear evidence of positive self-selection into public service, as honest individuals in Denmark are systematically more likely to want to enter public service. Students ranking public administration as one of their top two job choices cheat 10 percentage points less than other students.

To shed some light on why this selection pattern exists, we next examine how dishonesty and job preferences correlate with other attributes. We find no evidence that ability or risk preferences correlate with dishonesty. Differences in pro-social versus pecuniary motivation, however, turn out to be strong predictors of both dishonesty and job preferences. Pro-social individuals who donate more in a dictator game are both more honest and more likely to prefer a public service career. Conversely, pecuniarily motivated individuals who view the wage level as a particularly important job characteristic are less honest and less likely to prefer a public service career. This can explain a significant part of the observed selection pattern: controlling for two simple measures of pro-sociality and pecuniary motivation reduces the relationship between dishonesty and preference for public service by 30 percent.

Finally, we examine how the observed selection pattern is related to the level of public sector wages. Public sector jobs in Denmark are characterized by relatively low wages compared to the private sector. Combined with our findings regarding prosociality and pecuniary motivation, this suggests that the observed selection pattern may reflect that more pecuniarily motivated dishonest individuals self-select out of the Danish public sector due to its relatively low wage level. We provide evidence in favor of this hypothesis by analyzing a set of counterfactual job preference questions that ask students to choose between a job in the public and the private sector given different counterfactual relative wage levels. These show that increases in the level of public sector wages would attract more dishonest candidates to public service.

The idea that individuals may differ in their inherent propensity for dishonesty has a long tradition in the theoretical literature on corruption (Lui 1986, Cadot 1987, Andvig and Moene 1990) and is supported empirically by the fact that personality traits predict corrupt behavior (Callen et al. 2015). The role of selection on the dishonesty dimension has also received theoretical attention (Caselli and Morelli 2004, Besley 2004, Bernheim and Kartik 2014). In particular, our finding that higher public sector wages attract more dishonest candidates mirrors the theoretical predictions regarding the effect of politician salaries in the influential work of Besley (2004). Our result that the observed selection pattern is related to differences in pro-social versus pecuniary motivation also directly relates to the literature on job choice and extrinsic versus intrinsic motivation (Bénabou and Tirole 2003, Besley and Ghatak 2005, Delfgaauw and Dur 2008).

Empirically, a number of recent papers have examined selection into public service.[1] However, only a handful of empirical papers have focused on dishonesty. Closest to the present paper is Hanna and Wang (2017), which uses the same experimental methodology to show that dishonest university students are more likely to want to enter public service in India. Similarly, Banerjee, Baul, and Rosenblat (2015) runs a corruption experiment at two different Indian universities and finds

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[1] Dal Bó, Finan, and Rossi (2013); Ashraf, Bandiera, and Lee (2016); and Deserranno (2019) use field experiments to examine how pecuniary incentives affect selection into public service jobs in Mexico, Zambia, and Uganda in various dimensions, including ability and pro-social preferences. Combining survey and experimental data, Kolstad and Lindkvist (2013) and Serra, Serneels, and Barr (2011) examine how pro-social preferences correlate with wanting to work in the public sector in Tanzania and with working in the nonprofit sector in Ethiopia. Buurman et al. (2012) examines whether public sector employees in the Netherlands differ in risk preference or their level of altruism. Finan, Olken, and Pande (2015) provides a broader survey.

more dishonest behavior at the university targeting public service careers. Finally, Alatas et al. (2009) finds no correlation between preferences for working in the public sector and bribing behavior in an explicit corruption game among Indonesian students.

To our knowledge, this paper is the first to examine dishonesty and selection into public service in a low-corruption environment and is also the first to document a positive selection pattern in which honest individuals systematically prefer public service. Additionally, our paper provides the first evidence that the level of public sector wages may impact the selection of honest and dishonest individuals into public service.

Besides the literature on corruption and selection into public service, our paper builds on a larger experimental literature exploring the nature and causes of dishonest behavior across societies (e.g., Gino, Ayal, and Ariely 2009; Shalvi, Handgraaf, and De Dreu 2011; Weisel and Shalvi 2015; Gächter and Schulz 2016; Houser et al. 2016). Besides Fischbacher and Föllmi-Heusi (2013) and Hanna and Wang (2017), the design of our experimental dishonesty task draws particularly on Jiang (2013). Finally, by using experimental methods to study questions specifically related to corruption, our paper also relates to the experimental literature on corruption or bribery games (see Abbink and Serra 2012 for a recent survey).

The paper proceeds as follows. In Section I, we lay out the context and aim of the study. In Section II we present the survey experiment used to construct the key variables of the study. In Section III, we present the main results regarding dishonesty and selection into public service. In Section IV, we present additional results regarding the mechanisms behind the observed selection pattern and consider robustness. Section V concludes.

I. Context, Framework, and Aim of the Study

The present paper is motivated by the juxtaposition of two simple observations. The first observation is that some countries seem to be perennial high performers when it comes to maintaining a low level of corruption. While many countries struggle with high levels of corruption, some countries have been consistently able to sustain an equilibrium of honesty and low corruption in public service.

The second observation is that differences in individuals' inherent propensity for dishonesty may play a role in shaping corruption. Whether a public official engages in corrupt behavior will depend on many institutional features of the environment he faces, such as monitoring and punishment schemes and the size of the potential gains. In addition to these factors, however, it may also be influenced by his own inherent propensity for engaging in dishonest behavior. For a given level of monitoring and other factors, a public sector that primarily attracts inherently honest employees may thus exhibit lower levels of fraudulent behavior than one that attracts more dishonest individuals.

Put together, these two observations raise the question of whether systematic selection of honest individuals into public service may be one reason that some countries are able to maintain persistently low levels of corruption. With this hypothesis in mind, the main aim of our analysis is to examine whether there is systematic

self-selection of honest (or dishonest) individuals into public service in one of the world's least corrupt countries, Denmark. Additionally, we aim to shed some light on possible mechanisms that explain the observed selection pattern.

In the rest of this section, we first lay out the conceptual framework for our analysis and then describe the particular empirical context we examine.

A. *Dishonesty: Conceptual Framework*

At the heart of this paper is the idea that when faced with the same exact situation, some individuals may be more likely to be dishonest than others. The way we conceptualize individual dishonesty is a simple application of this idea: throughout the paper, when we say that some individual A is inherently more dishonest (or has a higher propensity for dishonesty) than some individual B, we simply mean that in a given situation, individual A has a higher likelihood of engaging in dishonest behavior than individual B.

There are several things to note about this definition. First, the definition above does not take a stand on *why* some individuals are more dishonest. For example, individual A may be more likely to engage in dishonest behavior because dishonesty is an important fundamental personality trait for him, or because his particular risk preferences, his level of prosociality, or his other characteristics makes dishonesty more attractive or palatable. In either case, we may worry that individual A would engage in more corrupt behavior during a potential public service career. Accordingly, for the main part of the paper, we examine the unconditional relationship between dishonesty and job preferences without controlling for any other variables that may explain or correlate with dishonest behavior. When we turn to shedding light on the mechanisms behind the observed selection pattern, however, we do examine specifically how dishonesty correlates with other individual variables. As we shall see, the evidence suggests that dishonesty is particularly strongly correlated with differences in pro-social versus pecuniary motivation.

Second, the definition above implicitly assumes that individual dishonesty is relatively stable across settings. If the ranking of individuals in terms of dishonesty is wildly different in different settings, it makes little sense to talk of differences in overall dishonesty. As we return to in Section III, however, previous work has documented that individuals who behave more dishonestly in our experimental dishonesty task also tend to behave more dishonestly in a range of other settings. This suggests that individual dishonesty does indeed exhibit stability across settings.

Finally, there are a number of different theories for why individual dishonesty (as defined above) may be positively or negatively correlated with preferences for a public service career. We return to these in Section IV, after we have presented our main result regarding the overall selection pattern.

B. *Study Setting: Denmark*

Most research on corruption focuses on high-corruption settings and aims to understand why corruption is so prevalent or how it is affected by policy changes. This paper takes the opposite approach. We focus on a benchmark country that has

been successful in maintaining a consistently low level of corruption and try to shed light on how this low-corruption equilibrium is being sustained.

Accordingly, the setting of the study is Denmark. For studying how to sustain honesty in public service, Denmark is a natural benchmark country given its consistent ranking among the very least corrupt countries in the world. Figure 1 shows the levels of corruption in different countries from 1996–2014 as measured by Transparency International's commonly used Corruption Perceptions Index (CPI), with Denmark highlighted (Transparency International 2016). Since 2007, Denmark has ranked as the least corrupt country in the CPI every year but two, and in the history of the CPI, Denmark has never ranked lower than fourth.[2]

C. *Study Population*

Within Denmark, the population we study consists of university students in the fields of law, economics, and political science. Higher education is highly specialized in Denmark, and practically all university students complete both a bachelor's and master's degree in their chosen field of study, which in turn strongly influences the jobs available to them upon graduation.

For the purpose of our study, students in law, economics, and political science are ideal for two reasons. First, these students face a very clear choice between entering the private sector or going into public service. For current employees with a background in economics, law, or political science, around 46 percent work in the public sector, mostly in public administration, and 54 percent in the private sector, typically in finance, law firms, and lobbying organizations. Second, this population is large and influential enough to actually affect the corruption level of the public sector. About 60 percent of all state-level employees in administrative functions have a background in one of the three fields we study or in a closely related field. They are also dominant at the top level of the public sector. At the time of the study 100 percent of deputy secretaries and about 40 percent of members of parliament held a degree in one of the three fields.

D. *Possibilities for Corruption*

Given the motivation for our study, it is worth considering what types of corrupt behavior our student population can undertake in their public service careers. For those entering public administration at the local level, many of them will be engaged in direct administrative work that affects individual citizens and businesses and offers the opportunity of bribe-taking or other forms of misbehavior. Amore and Bennedsen (2013), for example, has documented rent extraction in the procurement of local public services in Denmark. In other instances, potential corruption could take a more indirect form. Some graduates work in offices that help develop and prepare legislative input for elected officials. These may be influenced into serving

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[2]This pattern is not exclusive to the CPI. For example, the World Bank Governance Indicator "Control of Corruption," detailed in Kaufmann, Kraay, and Mastruzzi (2010), has ranked Denmark as the least corrupt country in the world every year since 2007 and never ranked Denmark lower than second.
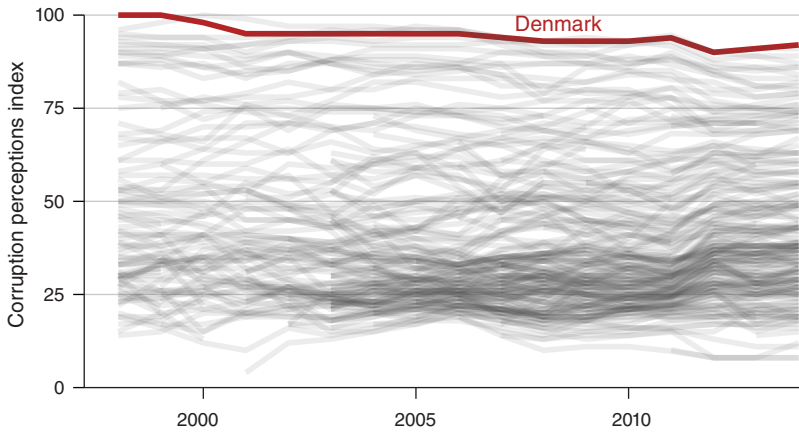
FIGURE 1. CORRUPTION ACROSS COUNTRIES 1996–2014

Notes: The figure shows the corruption perceptions index (CPI) 1996–2014 for all available countries. The highlighted red line is Denmark, while the gray lines show the series for other countries.

the interests of private companies or other organizations. Additionally, our student population may also engage in smaller scale dishonesty at their workplace such as fraudulent absenteeism or the abuse of expense accounts.

As discussed in the previous section, it is by all accounts rare that any Danish public employee engages in corrupt behavior. However, this does not imply that there is no corruption in Denmark or that it is impossible for public sector employees to take advantage of the corruption opportunities described above. A recent corruption scandal involving the information technology company Atea showcases how dishonesty, in the form of bribe-taking, can be found in rare but serious cases throughout the Danish administrative system. Since 2015, Danish authorities and state prosecution have indicted multiple state, regional, and local public employees for accepting bribes from Atea. The bribes have been given with the aim of providing Atea with a more favorable bidding position in public procurement auctions. The indictments have, up until this point, led to more than ten convictions of higher level public employees from many branches of government, including the Ministry of Foreign Affairs, the Region of Southern Denmark, the Municipality of Copenhagen, and the Danish State Railways. The bribes were mostly given in the form of gifts, such as paid trips or discounts on personal IT equipment, and ranged in value from US$1,000 to US$50,000. The indicted have, for the most part, been employed in positions and organizations that are dominated by employees with the same educational background as the students in our sample.

In sum, graduates from our student population face serious opportunities for corrupt behavior in their public service careers. As a reflection of the sustained low corruption level in Denmark, however, they rarely take advantage of these opportunities. One explanation for this is likely the monitoring schemes and institutional setup of the Danish public sector. Another, complementary explanation may be that graduates who actually choose a public service career tend to be systematically very honest individuals who often refrain from corrupt behavior even in cases where they

could get away with it. The next section explains the data we use to examine dishonesty and selection into public service within our student population.

II. Data and Experimental Design

Our empirical analysis is based on an online survey experiment conducted at the University of Copenhagen during December 2014. The university administration provided us with complete lists of everyone who enrolled as undergraduates in law, economics, and political science, including student email addresses. From these lists, random samples of 1,000 students who enrolled over the years 2009–2011 and 2013–2014[3] were drawn from each of the three fields and were invited to participate in the survey experiment.[4] The invitation to participate was sent as an email with a link to the survey along with a username and password.[5] Participants were told that the survey dealt with their attitudes about various topics and "how they acted in situations characterized by uncertainty." The latter referred to the various incentivized games that they would encounter in the survey, which will be outlined in detail below. Participants were also told that they would be paid to participate. In accordance with the actual outcomes, participants were informed that the average participant would earn no less than 50 Danish Kroner (Dkr) (the equivalent of US$8), the maximum payoff was above Dkr 300 (US$50), and the survey would take approximately 20 minutes to complete.[6] For comparison, the student population in question would, in a typical student job, usually receive a union-defined hourly wage of about Dkr 110 (US$18), corresponding to Dkr 37 (US$6) per 20 minutes.

In total, 863 students completed the survey. From these, we dropped one individual who experienced technical difficulties during the main dishonesty experiment in the survey, leaving us with a base sample of 862 participants. In terms of representativeness, our sampling scheme by definition implies that the pool of invitees is statistically representative within each field of study. At the end of Section IV and in online Appendix A.9, we examine potential issues related to selective nonparticipation by exploiting the availability of administrative university data for nonparticipants.

A. *Measuring Dishonesty: Experimental Dice Task*

The first main purpose of our survey experiment is to measure respondents' inherent propensities for dishonesty. We follow Hanna and Wang (2017) and measure dishonesty using a repeated variation of the dice-under-cup game approach from Fischbacher and Föllmi-Heusi (2013). Behavior in these types of games has

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[3] Students who enrolled prior to 2009 were not invited as many of them have graduated and therefore may no longer use their student email. Pilot studies were run on students enrolling in 2012, so these were not invited so as to not contaminate the subject pool.

[4] A translated version of the invitation email can be found in online Appendix A.10.

[5] The experiment was run using a software called ILab developed by Andreas Gotfredsen and Alexander Sebald.

[6] These announcements were based on observed outcomes in pilot studies and ended up closely mirroring actual outcomes. The realized maximum payoff for a participant was Dkr 315 (US$53) and the average payoff was Dkr 80 (US$13). The median time from opening the survey to completion was 25 minutes. At the time of the survey experiment, US$1 equaled about Dkr 6.

become a widely used measure of dishonesty (see, for example, Shalvi, Eldar, and Bereby-Meyer 2012; Gneezy, Rockenbach, and Serra-Garcia 2013; Hilbig and Hessler 2013; Cohn, Fehr, and Maréchal 2014; Ariely et al. 2014) and has been shown to predict real-world dishonest behavior and rule-breaking in a range of settings (Cohn, Maréchal, and Noll 2015; Cohn and Maréchal 2015). Given that the present paper is motivated by understanding public sector corruption, we note in particular that dishonesty in dice-under-cup games has been shown to predict actual fraudulent behavior among public sector employees (Hanna and Wang 2017).

For our specific implementation of the dice-under-cup approach, we build on the computer-based variation of Jiang (2013).[7] Our implementation works as follows.[8] At four different points in the survey experiment, participants were asked to play ten rounds of a dice guessing game. Students were told that the game was intended to test how they "guess in situations characterized by randomness" and that they could win money in the game by correctly guessing the outcome of a dice roll. In each round of the dice game, respondents were first asked to think of a number between one and six that they expected the dice to show after the dice roll. Students then clicked "next" while keeping their guess in mind. A dice was rolled on screen, and the outcome of the dice roll was reported. The participants were then asked to report their guess while the actual outcome of the dice roll was still displayed. On the following screen, the payoff from the round was reported. Reporting a correct guess yielded a gain of Dkr 2 (US$0.33) relative to an incorrect one.[9]

The point of the dice guessing game is that in each round, respondents have the option of winning dishonestly by reporting the actual outcome of the dice roll regardless of what their initial guess was. Moreover, two strengths of the design are that respondents are not explicitly primed to think about dishonesty and respondents know in each round that it can never be revealed whether, in fact, they reported their guess honestly.[10] Because an honest individual always has a one-in-six chance of correctly guessing each dice roll, however, we can make statistical statements about individual dishonesty after observing more repetitions of the game. The next section formalizes this and presents the individual-level estimate of dishonesty that we use in our analysis.

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[7] Our motivation for using the computer-based implementation is that it can be conducted online. Using an online implementation allowed us to systematically sample and invite participants directly from the university email database, while simultaneously keeping participation costs low and ensuring as high a participation rate as possible. Both of these features are important for dealing with the issue of sample representativeness, which is particularly critical given that our focus is on estimating the relationship between job preferences and dishonesty in the underlying population.

[8] Screen captures of the game as viewed by the respondents, including exact translations of all instructions for the game, are presented in online Appendix A.11.

[9] In our pilot studies, we explicitly tested whether behavior depended on the level of payoffs or gains and found no evidence of stakes dependency in our setting.

[10] One may still worry that upon realizing that they can lie undetected in the game, students implicitly feel that being dishonest is the point of the game. In an attempt to mitigate this type of experimental demand, we concluded the introduction screen by stating that "it is important that you are careful about remembering and reporting the exact number on which you guessed prior to rolling the die."

B. *Measuring Dishonesty: Econometrics*

The data from our dice-under-cup task consists of a sample of N respondents, which we index by i. Each respondent participates in a series of K rounds of a dice game, which we index by k. As described above, our experiment has $N = 862$ and $K = 40$. In each round, the respondent can either win or lose. The rounds are independent of each other with a constant probability of winning of p^*. In our experiment, the probability of (truthfully) guessing a dice roll is one in six, so $p^* = 1/6$ in our case. We do not directly observe whether respondents win or lose, however. For each round and each respondent, we instead observe a self-reported measure of whether the respondent won or not, where respondents are free to report dishonestly. We let y_{ik} be an indicator variable for whether respondent i reported winning in round k. In the context of our implementation of the dice guessing game, y_{ik} is simply an indicator for whether the reported guess matches the actual dice roll. We let $Y_i = \sum_{k=1}^{K} y_{ik}$ denote the total number of wins (total number of correct guesses) reported by respondent i.

We introduce heterogeneity in the propensity for being dishonest by assuming that when reporting the outcome of a given round, respondent i reports dishonestly some fraction $\theta_i \in [0,1]$ of the time.[11] We further make the assumption that if reporting dishonestly, a respondent reports a win for sure in that round. Otherwise, he or she reports the truth. The individual-specific θ_i therefore captures respondent i's propensity for dishonesty, and we refer to it as respondent i's *cheat rate*.

In order to examine the relationship between cheat rates, job preferences, and other attributes, we will construct individual measures of each respondent's cheat rate. The probability of observing a win for a respondent with a given cheat rate, θ_i, is $\Pr(y_{ik} = 1|\theta_i) = E(y_{ik}|\theta_i) = p^* + (1 - p^*)\theta_i$. From this, we can construct an unbiased method of moments estimator of i's cheat rate by replacing population moments with empirical moments, rearranging and plugging in for p^*:[12]

$$\widehat{CheatRate}_i = \frac{6}{5} \cdot \left(\frac{Y_i}{40} - \frac{1}{6} \right).$$

We refer to this as individual i's *estimated cheat rate* and use this as our main measure of individuals' propensity for dishonesty.

Three properties of the measure are worth highlighting.

First, the inherent randomness in whether dice rolls match respondents' (honest) guesses implies that the estimated cheat rate suffers from measurement error. As

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[11] Note that here we do not take a stance on whether cheating behavior exhibits dependence over time. In the construction of our cheat rate estimator, we only require weak stationarity so that the (unconditional) probability of cheating (and thus of reporting a win) is the same in any given round. In online Appendix sections A.1 and A.2, however, when deriving the variance of our cheat rate estimator and developing our estimator of the full distribution of dishonesty, we do it under the assumption that cheating behavior is independent over time for a given individual.

[12] Unbiasedness is easily seen from $E\left(\widehat{CheatRate}_i|\theta_i\right) = \frac{1}{1-p^*}\frac{1}{K}\sum_{k=1}^{K} P(y_{ik} = 1|\theta_i) - \frac{p^*}{1-p^*} = \theta_i$. It is worth noting that the estimated cheat rate will be negative for any respondent who reports winning fewer than $K\frac{p^*}{1-p^*}$ times, in spite of the fact that in fact $\theta_i \geq 0$ by assumption. It is possible to define different estimators that are nonnegative; however, these estimators will not be unbiased and are therefore unattractive for our purposes (see section A.1 in the online Appendix).

we show in Section A.1 in the online Appendix, however, this measurement error is classical. Using the estimated cheat rate as the outcome variable in a regression therefore provides consistent estimates of the relationship between the true cheat rate and the included covariates under the usual conditions.

Second, despite not affecting the consistency of our estimates, the measurement error in the estimated cheat rate does lower the precision of our estimates. In Section A.1 of the online Appendix, we invoke simple assumptions on the time dependence of dishonest behavior to show that the amount of measurement error is decreasing in the number of dice guessing rounds that each person plays and increasing in the true probability of a correct guess. This motivates our chosen implementation of the dice guessing game that has many rounds and a low win probability in each round.

Third, because our estimated cheat rate is a linear transformation of the total number of reported wins, alternative approaches that use the raw number of correct guesses (or total winnings) as measures of dishonesty would simply rescale the regression results we present later.

Given the properties above, the main analysis of the paper involves regressing respondents' estimated cheat rates on other characteristics, in particular preferences for entering public service. We note, however, that one can also use the data from our experimental dice task to estimate the full distribution of dishonesty in the population as well as how this distribution relates to job preferences. In Sections A.1 and A.2 of the online Appendix, we discuss, develop, and implement such estimators in detail.

C. *Measuring Job Preferences*

The second key variable in the empirical analysis is the students' preference for public service jobs. For our main measure of job preferences, we asked students to imagine that they have obtained their academic degree and are now free to choose between jobs. In this scenario, they were then asked to rank eight categories based on the most common jobs held by graduates from our student population: public administration, a private sector job in the financial sector, a private sector job in a political party or lobby organization, a private sector job within public relations, a private sector job in a law firm, a job in the Danish Central Bank, another public sector job, or another private sector job. These particular categories were chosen to match the eight most common industry categories for our study population in the official Danish employment statistics. As noted, public administration is by far the most important public service career for our population. For our main measure of students' preferences for entering public service, we therefore focus on the rank given to public administration.

For robustness, we also elicited additional measures of job preferences. In one question, we asked students to report the likelihood of them ending up in each of the eight job categories described above.[13] In addition, we administered a standard 16-item questionnaire measuring Public Service Motivation (PSM), which is often

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[13] To ease students' way through the survey, we did not require that the reported probabilities sum to one hundred. In the empirical analysis, we rescale them appropriately.

used as an indication of respondents' dispositional preferences for working in the public sector (Perry and Wise 1990).[14]

Finally, for examining the role played by the level of public sector wages, we subjected all respondents to nine different counterfactual wage scenarios. In each scenario, respondents were asked to choose between their preferred job in the private sector and their preferred job in the public sector given a particular wage gap between the two jobs ranging from the private sector job paying Dkr 20,000 (US$3,300) more per month to the public sector job paying Dkr 20,000 more per month.

D. *Additional Measures*

To examine how dishonesty and self-selection into public service are related to other student attributes, we included a range of other standard experimental tasks and questions in the survey experiment. At the beginning of the survey experiment, we asked respondents to play a simple dictator game. Respondents were given a gift of Dkr 15 (US$2.50).[15] They were then offered to get the money transferred to their account when the survey was finished or to donate some or all of the money to one of five charities of their choice. Furthermore, as they increased their own donation, we matched their donation amount with up to Dkr 4 (US$0.75) using a concave matching schedule.

We also included an incentivized measure of risk aversion at the beginning of the survey. Students were told that one in ten of them would be randomly selected to enter into a coin-flip lottery at the end of the survey. They were then asked to choose between five different such lotteries with varying risk profiles.[16]

As a proxy of ability, we asked students to report their high school grade point average (GPA). High school exams are standardized nationally in Denmark and provide a good measure of ability for the population we study. In the empirical analysis, we standardize GPAs across fields of study to avoid mechanical correlations stemming from the admissions cutoffs for the different fields.[17]

To get direct measures of students' preferences regarding job characteristics, we asked them to rank the following five job characteristics in order of importance: wage level, work hours and other terms of work, importance, entertainment value, and job security.

Finally, we use data on the students' gender. Table 1 provides summary statistics. As the table shows, a few of the observations lack information about some variables.

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[14] Given the setup of our survey, we note that all our job preference measures are likely to center on students' preferences for the first job out of university. They may therefore miss potential differences in long-term career plans.

[15] In pilot studies, we experimented with the placement of the dictator game but found no evidence that the timing of the dictator game mattered for dishonest behavior or public sector preferences.

[16] The lotteries were designed based on the range of constant relative risk aversion coefficients reported for the Danish population in Harrison, Lau, and Rutström (2007). The most risky coin lottery involved a gain of Dkr 200 (US$33) in the case of heads and Dkr 0 for tails. The least risky lottery involved a gain of Dkr 80 (US$16) regardless of the coin flip.

[17] Admission to different fields in Danish higher education is based on high school GPA, with the necessary GPA varying widely across different fields. This introduces strong mechanical differences in student GPAs across fields, which are unrelated to their own career preferences.

<div align="center">Table 1—Summary Statistics</div>

Statistic	Observations	Mean	SD	Min	Max
Number of correct guesses	862	20.724	13.186	0	40
Estimated cheat rate	862	0.422	0.396	−0.200	1
Public administration rank ≤ 2	862	0.422	0.494	0	1
Higher ranking of public administration	862	−3.414	2.079	−8	−1
Public service motivation score	860	2.440	0.521	0.250	3.950
Public sector picked at current wage	862	0.281	0.450	0	1
Probability of public administration	858	0.207	0.130	0	0.900
GPA (standardized)	861	−0.002	0.998	−5.914	2.332
Picks risky lottery	862	0.501	0.500	0	1
Job security rank ≤ 2	862	0.119	0.325	0	1
Donation	862	6.798	6.521	0	15
Wage rank ≤ 2	862	0.288	0.453	0	1
Male	862	0.536	0.499	0	1

Notes: The table shows summary statistics for the participants in the survey experiment. The variables are the number of reported correct guesses across the 40 dice games, the estimated cheat rate, an indicator for whether public administration was ranked in the top two of the eight job categories, the flipped actual rank given to public administration (so that a higher value means a stronger preference for public administration), the public service motivation score, an indicator for whether the public sector was picked in the wage scenario corresponding to the current wage gap, the subjective probability of ending up in public administration, GPA standardized by field (the nonzero mean is due to the one excluded participant), an indicator for choosing one of the two most risky lotteries, the amount donated in the dictator game, the student's gender, and indicators for whether job security and wage were ranked in the top two of the five job characteristics.

These are caused by erroneous reporting and a few students experiencing technical issues during parts of the survey experiment.

III. Main Results: Dishonesty and Self-selection

We start our empirical investigation by examining the variation in dishonest behavior in our dice guessing experiment. Figure 2 shows the distribution of the observed number of correct guesses across students in our dice guessing experiment, along with the distribution of correct guesses that would be expected if students reported their guesses completely honestly. Comparing the expected honest distribution with the actual outcomes in the experiment, we see evidence of extensive dishonest behavior. For example, the probability of an honest respondent having 10 or more correct guesses is about 12 percent, yet 73 percent of respondents report 10 or more correct guesses in our sample.

The figure also suggests that the amount of dishonest behavior differs very significantly across individuals. While many students' report a number of correct guesses well above the ninety-ninth percentile of the honest distribution, other students actually report fewer correct guesses than what would be expected under full honesty.[18] In Sections A.1 and A.2 of the online Appendix, we show how the data in Figure 2 can be used to construct estimators of the full distribution of dishonesty across individuals if one imposes simple assumptions on the time dependence of dishonesty. Applying such estimators, we find that 14–17 percent of individuals in our data are practically completely honest and cheat less than 2 percent of the time, while

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[18] Under full honesty, the ninety-ninth percentile is 13 correct guesses, while the expected number of correct guesses is 6.7.
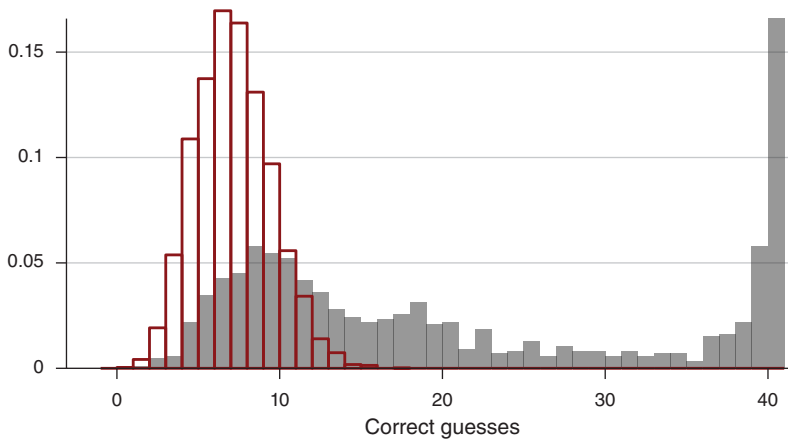
FIGURE 2. DISTRIBUTION OF CORRECT GUESSES AND PREDICTED DISTRIBUTION UNDER FULL HONESTY

Note: The histogram shows the observed number of correct guesses across students in our dice experiment (solid bars) and the predicted distribution under full honesty (outlined bars).

17–23 percent are practically completely dishonest and cheat more than 98 percent of the time. The remaining respondents are spread fairly evenly in between, and the standard deviation of cheat rates across individuals is 0.39.[19] Despite facing the same opportunities and incentives to behave dishonestly in the survey experiment, we thus see extensive heterogeneity in dishonesty within our pool of potential candidates for public service.

Dishonesty and Self-selection into Public Service.—Next, we turn to the main focus of the paper and examine whether the observed differences in the propensity for dishonesty are correlated with preferences for a public service career. We do this in the context of a simple regression that relates individual i's estimated cheat rate to an indicator for whether individual i prefers a public service career, $PublicService_i$. Here and throughout the paper, we use the estimated cheat rate as the outcome variable in the regression to deal with the measurement error in our cheat rate estimate:[20]

$$\widehat{CheatRate}_i = \beta_0 + \beta_1 PublicService_i + \varepsilon_i.$$

The estimate of β_1 in this regression estimates the average gap in individual cheat rates between individuals who have a preference for a public service career and those who do not.

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[19] This is relative to a mean of 0.42. The result that many respondents cheat a little bit but not the full amount is a standard finding in these types of dice games (Fischbacher and Föllmi-Heusi 2013; Hilbig and Hessler 2013; Shalvi, Handgraaf, and De Dreu 2011).

[20] $\widehat{CheatRate}_i$ is equal to individual i's true cheat rate plus classical measurement error. If we place it on the left-hand side of the regression, we can therefore ignore the fact that we are using the estimated cheat rate instead of the actual cheat rate. See Section II and Section A.1 in the online Appendix.

Table 2—Dishonesty and Public Service Job Preferences

	Estimated cheat rate					
	(1)	(2)	(3)	(4)	(5)	(6)
Public administration ranked ≤ 2	−0.102 (0.027)					
Higher ranking of public administration		−0.022 (0.006)				
Public service motivation score			−0.152 (0.026)			
Public sector picked at current wage				−0.090 (0.029)		
Probability of public administration					−0.285 (0.105)	
Principal component of all five measures						−0.023 (0.006)
Constant	0.465 (0.018)	0.345 (0.025)	0.793 (0.066)	0.447 (0.016)	0.481 (0.026)	0.422 (0.013)
Observations	862	862	860	862	858	856
R^2	0.016	0.014	0.040	0.010	0.009	0.015
Standardized coefficient	−0.127	−0.118	−0.200	−0.102	−0.094	−0.123

Notes: The table shows regressions of students' estimated cheat rates on various measures of public service job preferences. The job preference measures are an indicator for whether public administration was ranked in the top two of the eight job categories, the flipped actual rank given to public administration (so that a higher value means a stronger preference for public administration), the public service motivation score, an indicator for whether the public sector was picked in the wage scenario corresponding to the current wage gap, and the subjective probability of ending up in public administration. The last row of the table presents the standardized coefficients on the different job preferences measures that reflect the implied standard deviation change in cheat rates when the preference for public service is increased by one standard deviation. Robust standard errors are in parentheses.

Table 2 shows estimates of this regression using different measures of job preferences. Column 1 focuses on our main measure of job preferences: whether students rank public administration in the top two of the eight job categories described in Section II. The estimated coefficient on the indicator for job preferences is −0.10 and is highly significant, suggesting that more honest individuals are systematically more likely to prefer a public service career. In Figure 3, we provide a transparent illustration of this main result by comparing the average cheat rate between students who rank public administration among the top two jobs and those who do not. Students ranking public administration in the top two cheat 36 percent of the time, on average, while other students cheat 46 percent of the time.

Columns 2–5 of Table 2 examine the robustness of the result against using other measures of job preferences. In column 2, we replace the indicator variable from column 1 with the flipped actual rank given to public administration (so a higher value means a stronger preference for public service). In column 3, we use the measured PSM score. In column 4, we use data from our counterfactual wage question, focusing on whether the student would choose the public sector over the private sector if faced with a sectoral wage gap of Dkr 5,000 (US$833) per month, corresponding to the typical gap in starting wages between the two sectors. Finally, in column 5, we include the students' reported probability of entering public administration. Across all these measures, we see a negative and highly significant correlation between cheat rates and expressing a preference for entering public service. At
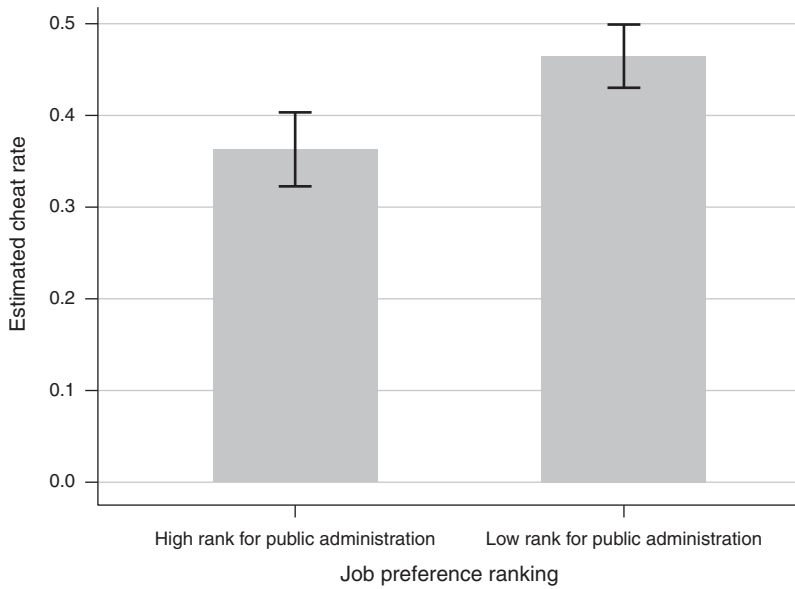
FIGURE 3. MEAN ESTIMATED CHEAT RATES BY RANKING OF PUBLIC ADMINISTRATION

Notes: Mean estimated cheat rates for individuals ranking public administration in the top two (left) and individuals ranking public administration lower (right). The difference between the groups corresponds to the coefficient in column 1 of Table 2. Error bars represent 95 percent confidence intervals.

the end of Section IV and in the online Appendix, we show that this result is robust to a wide range of other checks on the specification.

Next, we examine whether the magnitude of the observed correlation depends on the exact measure of job preference we use. The bottom row of Table 2 rescales each of the estimated coefficients so that they reflect the change in cheat rate associated with a 1 standard deviation increase in the relevant job preference measure. We see that the relationship between dishonesty and job preferences is relatively stable across the different measures. Across all job preference measures, a 1 standard deviation increase in preference for public service is associated with a decrease in the estimated cheat rate of 0.09–0.20 standard deviations.

Finally, we can examine whether the observed selection pattern is driven by particularly strong job preferences among students with a certain level of dishonesty or whether it reflects differences in job preferences across the distribution of dishonesty. To answer this question, Sections A.1 and A.2 of the online Appendix construct estimators for the entire joint distribution of dishonesty and job preferences. Applying such estimators, we find that the observed selection pattern reflects particularly strong job preference for public service among the very least dishonest students.[21]

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[21] Among students who virtually never cheat, 53 percent prefer a public service career. Moving up the dishonesty distribution, this figure drops rapidly to just under 40 percent among students who cheat about a third of the time. In the upper part of the distribution (from students who cheat 50 percent of the time and up), however, the share preferring public service remains fairly constant around 35 percent.

In sum, we find a clear pattern of positive self-selection into public service in Denmark, as more honest individuals systematically tend to prefer public service jobs. In our baseline specification, we find that students ranking public administration among the top two job options cheat 10 percentage points less than other students. Relative to the mean cheat rate of 0.42, this represents a 24 percent relative gap in cheat rates.

IV. Additional Results: Mechanism and Robustness

In the previous section, we saw that there is systematic self-selection of more honest individuals into public service in Denmark. Next, we try to shed light on why this selection pattern exists.

Many different factors could contribute to the observed selection pattern. If more honest individuals tend to stand out in terms of other attributes or preferences, the particular job characteristics offered in public service may systematically attract these individuals. For example, we might imagine that being dishonest is correlated with lower levels of risk aversion and that people with different risk preferences tend to be attracted to systematically different types of jobs.

Alternatively, if dishonest individuals are attracted by the opportunity to profit from corrupt behavior, the currently perceived scope for public sector dishonesty may influence selection patterns.[22] This could imply that negative or positive selection patterns may be self-reinforcing. It could also imply that the observed selection patterns respond to the level of monitoring and punishment in the public sector as dishonest individuals opt out of public service when the opportunities for public sector corruption diminishes.

Given that our survey experiment does not yield any variation in the perceived corruption level or the level of monitoring and punishment, we are unable to explore the role played by these factors. Since our survey experiment measured a range of additional attributes, we can, however, examine whether honest individuals stand out in terms of other attributes and whether this appears to play a role in shaping job preferences. We can also examine the role played by public sector wages using the counterfactual wage questions.

A. *Correlates of Dishonesty and Job Preferences*

We start our investigation by asking whether dishonest individuals and/or individuals preferring public service careers stand out in terms of other attributes. In doing so, we focus on four key attributes that ex ante seem likely to correlate both with dishonesty and job preferences: ability, risk aversion, pro-social versus pecuniary motivation, and gender.

We again use a simple regression framework to examine the correlation between dishonesty, job preferences, and these additional attributes. For each attribute, we

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[22] Corbacho et al. (2016) has shown that such a self-reinforcing effect is present when individuals are deciding whether to engage in corruption.

regress the individual estimated cheat rate and the indicator for preferring a public service career on a measure of the attribute in question, *Attribute$_i$*:

$$\widehat{CheatRate}_i \ = \ \gamma_0 + \gamma_1 Attribute_i + e_i,$$

$$PublicService_i \ = \ \eta_0 + \eta_1 Attribute_i + u_i.$$

In these regressions, γ_1 shows how the attribute correlates with dishonesty, while η_1 shows how it correlates with job preferences. Table 3 shows the results. Panel A of Table 3 shows the regressions using the estimated cheat rate as the outcome variable, while panel B shows the regressions using the indicator for preferring a public service career as the outcome variable.

Column 1 of the table examines how dishonesty and job preferences correlate with ability, as measured by GPA. We see no evidence that ability correlates with dishonesty or job preferences in our data. In both panels, the estimated coefficient on GPA is close to zero and statistically insignificant.

In columns 2 and 3, we examine risk aversion. In column 2, we focus on our incentivized risk-aversion measure and include an indicator for whether the student chose one of the two most risky lotteries offered.[23] In column 3, we instead include an indicator for whether the student ranked job security among the two most important job characteristics. Panel A shows no statistically significant correlation between dishonesty and either of the two risk-preference measures. In panel B, there is some indications that risk-averse individuals prefer public service. In column 2, we see that individuals who chose one of the risky lotteries are 5.9 percentage points less likely to prefer public service, and this difference is marginally significant ($p = 0.09$); however, the estimated coefficient on valuing job security in column 3 points in the opposite direction and is insignificant.[24]

Columns 4 and 5 look at differences in pro-sociality and pecuniary motivation, as measured by donations in the dictator game, and whether individuals ranked wage among the two most important job characteristics. These turn out to be strong predictors for both dishonesty and job preferences. In column 4, we see that each additional krone donated in the dictator game is associated with a 1.6 percentage point decrease in the cheat rate and a 0.9 percentage point increase in the likelihood of preferring public service.[25] Conversely, in column 5, we see that individuals who rank the wage as an important job characteristic cheat 8.3 percentage points more

[23] Fifty percent of students in our sample chose one of the two most risky lotteries, so the simple indicator measure summarizes most of the variation in risk aversion in our sample. We get similar results if we use the risk rank of the chosen lottery, the implied coefficient of relative risk aversion, or dummies for each of the lotteries.

[24] If risk-averse individuals rank job security as important and prefer public service, we would expect the coefficient in column 3 to show a *positive* association between preference for public service and ranking job security as important.

[25] The highest possible donation was Dkr 15, so the estimates imply that an individual who donates the maximum amounts cheats 24 percentage points less and is 14 percentage points more likely to prefer public service than an individual who donates nothing; 33 percent of students choose the maximum possible donation of Dkr 15, while 40 percent choose to donate nothing.

TABLE 3—CORRELATES OF DISHONESTY AND JOB PREFERENCES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Estimated cheat rate			
Panel A							
GPA (standardized)	0.007						0.014
	(0.014)						(0.014)
Picks risky lottery		0.035					0.036
		(0.027)					(0.027)
Job security rank ≤ 2			0.002				−0.002
			(0.039)				(0.038)
Donation				−0.016			−0.016
				(0.002)			(0.002)
Wage rank ≤ 2					0.083		0.048
					(0.029)		(0.029)
Male						0.061	0.034
						(0.027)	(0.027)
Constant	0.422	0.404	0.422	0.533	0.398	0.389	0.481
	(0.013)	(0.019)	(0.014)	(0.019)	(0.016)	(0.019)	(0.028)
R^2	0.000	0.002	0.000	0.073	0.009	0.006	0.082
				Public administration rank ≤ 2			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel B							
GPA (standardized)	0.001						−0.002
	(0.017)						(0.017)
Picks risky lottery		−0.058					−0.042
		(0.034)					(0.034)
Job security rank ≤ 2			−0.072				−0.093
			(0.051)				(0.049)
Donation				0.009			0.006
				(0.003)			(0.003)
Wage rank ≤ 2					−0.202		−0.184
					(0.035)		(0.036)
Male						−0.126	−0.092
						(0.034)	(0.035)
Constant	0.423	0.451	0.431	0.364	0.480	0.490	0.513
	(0.017)	(0.024)	(0.018)	(0.024)	(0.020)	(0.025)	(0.036)
R^2	0.000	0.003	0.002	0.013	0.034	0.016	0.058
Observations	861	862	862	862	862	862	861

Notes: Panel A of the table shows regressions of students' estimated cheat rates on various measures of other student attributes. Panel B of the table shows the same regressions but replaces the outcome variable with an indicator for whether students ranked public administration in the top two of the eight job categories. The measures of other attributes are GPA standardized by field, an indicator for choosing one of the two most risky lotteries, the amount donated in the dictator game, an indicator for being male, and indicators for whether job security and wage were ranked in the top two of the five job characteristics. Robust standard errors are in parentheses.

and are 20 percentage points less likely to prefer public service. All of these differences are highly statistically significant.

Column 6 looks at gender. We see that men cheat 6.1 percentage points more than women and are 13 percentage points less likely to prefer public service. Both differences are statistically significant.

Finally, in column 7, we include all six measures in the regressions simultaneously. In panel B, dictator game donation, gender, and the importance of the wage

level remain statistically significant predictors of job preferences, and the estimates are very similar to those reported in the previous columns. In panel A, dictator game donation continues to show up as a strong predictor of dishonesty, while the coefficient on ranking wage among the two most important job characteristics drops a bit and becomes only marginally significant ($p = 0.10$). The coefficient on gender drops even more, however, and becomes insignificant. We interpret this as evidence that the relationship between gender and dishonesty is working mostly through gender differences in prosociality and pecuniary motivation.

B. *Self-selection Conditional on Attributes*

The results in the preceding section suggest that systematic selection of honest individuals into public service may be related to differences in pro-social versus pecuniary motivation. Pro-social individuals who make large donations in the dictator game are systematically more honest and more likely to prefer a public service career. Conversely, pecuniarily motivated individuals that rank the wage level as an important job characteristic are systematically less honest and less likely to prefer a public service career.

These patterns offer an intuitive explanation for the observed selection pattern. As we return to below, public sector wages in Denmark tend to be systematically lower than in the private sector, suggesting that nonpecuniary motivations are important for entering public service in Denmark. On the other hand, a main motivation for dishonest behavior is—in our lab experiment, as well as in real world settings—that it offers material gains. This, in turn, suggests that dishonesty should be more prevalent among pecuniarily motivated individuals.[26]

To further explore this explanation, we can examine selection into public service conditional on the different attributes in our data. In particular, we include the different measures from Table 3 as controls in the regression of estimated cheat rate on job preferences:

$$\widehat{CheatRate}_i = \pi_0 + \pi_1 PublicService_i + \pi_2 X_i + \nu_i.$$

In this regression, π_1 captures the relationship between job preferences and dishonesty after conditioning on the attribute X_i. To the extent that the observed self-selection of honest individuals into public service is driven by one or more other attributes, the estimate of π_1 should decrease when the attribute(s) are added as controls.

Table 4 shows the results. Across columns 1–3, we add the different measures for ability and risk aversion as controls. As would be expected, given the results in Table 3, none of these controls affect the estimated relationship between dishonesty and preference for public service. The coefficient on the indicator for ranking public service among the two most attractive jobs is -0.10 in all three columns. This is the same as in the specification without controls in Table 2.

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[26] Indeed, some studies in personality psychology even find that dishonesty and greediness can be treated as part of the same fundamental personality trait (see, for example, Ashton and Lee 2007).

TABLE 4—DISHONESTY AND JOB PREFERENCES CONDITIONAL ON OTHER ATTRIBUTES

	Estimated cheat rate							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Public administration rank ≤ 2	−0.103 (0.027)	−0.100 (0.027)	−0.102 (0.027)	−0.078 (0.026)	−0.091 (0.027)	−0.095 (0.027)	−0.068 (0.027)	−0.072 (0.026)
GPA (standardized)	0.007 (0.014)						0.014 (0.014)	
Picks risky lottery		0.030 (0.027)					0.033 (0.027)	
Job security ranked ≤ 2			−0.005 (0.039)				−0.008 (0.037)	
Donation				−0.016 (0.002)			−0.016 (0.002)	−0.015 (0.002)
Wage ranked ≤ 2					0.064 (0.029)		0.036 (0.029)	0.041 (0.029)
Male						0.048 (0.027)	0.027 (0.027)	
Constant	0.466 (0.018)	0.449 (0.023)	0.465 (0.019)	0.561 (0.021)	0.441 (0.021)	0.436 (0.023)	0.516 (0.032)	
Observations	861	862	862	862	862	862	861	861
p-value, test of whether the estimate in the first row is the same as in Table 2	0.85	0.35	0.89	<0.01	0.04	0.10	<0.01	<0.01

Notes: The table shows regressions of students' estimated cheat rates on preference for public service, while controlling for various measures of other student attributes. The job preference measure is an indicator for whether public administration was ranked in the top two of the eight job categories. The measures of other attributes are GPA standardized by field, an indicator for choosing the most risky lottery, the amount donated in the dictator game, an indicator for being male, and indicators for whether job security and wage were ranked in the top two of the five job characteristics. Robust standard errors are in parentheses.

Columns 4 and 5 add the measures of pro-sociality and pecuniary motivation to the regression. This reduces the estimated coefficient on the indicator for preferring a public service career. Controlling for donations in the dictator game lowers the estimated coefficient on job preferences to −0.08, while controlling for whether individuals ranked wage as an important job characteristic reduces the coefficient to −0.09. As shown at the bottom of the table, these differences in the estimated coefficients are statistically significant. Column 6 adds gender as a control. This also lowers the estimated coefficient on job preferences slightly, although this difference is only marginally significant ($p = 0.10$).

Finally, in column 7, we control for all the different measures simultaneously. After conditioning on all the measures, the coefficient on job preference is −0.07. As shown in column 8, this change is driven entirely by controlling for dictator game donations and the indicator for ranking wage as an important job characteristic.[27]

[27] In online Appendix section A.8, we reexamine this result using the alternative measures of job preferences in our data. Across all measures, we see that the coefficient on preference for public service drops when dictator game donations and the indicator for ranking wage as an important job characteristic are added as controls. The drop in the coefficient is slightly larger when we use the alternative job preference measures (the drop is between 32–44 percent for these other measures).

Overall, we conclude that systematic differences in pro-social versus pecuniary motivation can explain a significant part of the observed selection pattern. Conditioning only on our two simple measures of prosociality and pecuniary motivation reduces the cheat rate gap between students with a preference for public service and other students by 30 percent.[28] Conversely, none of the other attributes we examine appear important for the observed selection pattern.

C. *The Role of Public Sector Wages*

Next, we focus on the role played by the level of public sector wages in shaping selection into public service. The results in the preceding sections have interesting implications for the effect of public sector wages on selection. If dishonest individuals tend to be motivated by pecuniary incentives while honest individuals tend to be motivated more by pro-social concerns, we might expect high public sector wages to affect selection by systematically attracting more dishonest individuals to public service.

Two features of our institutional setting lend support to this idea. First, public sector wages in Denmark tend to be systematically lower than private sector wages. For the population we study, entry-level wages in the private sector are typically around Dkr 5,000 (US$833) higher per month. This stands in stark contrast to the considerable public sector wage premiums that are typical in many developing countries struggling with corruption (Finan, Olken, and Pande 2015). Second, in Section A.3 in the online Appendix, we analyze the job preferences of dishonest individuals in our sample and document that dishonest individuals are particularly likely to want jobs in the financial sector, which, for our student population, stand out as by far the best-paid job category. This is indicative that the positive selection pattern we observe is driven in part by dishonest individuals being more pecuniarily motivated and self-selecting out of public service jobs and into higher paid private sector jobs.[29]

To provide a more direct test of how public sector wages relate to the observed selection pattern, we use data from our set of counterfactual wage gap questions. As described in Section II, these questions ask students to choose between their preferred private and public sector jobs, conditional on the two jobs having different wage gaps. From the answers to these questions and the individuals' estimated cheat

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[28] The fact that there is still a significant cheat rate gap after conditioning on these measures is suggestive that other factors also play a role in shaping the observed selection pattern. It could, however, also reflect the simplicity of our measures of prosociality and pecuniary motivation. Our measures are based on behavior in a single dictator game and a single question regarding the ranking of job preferences, which may not perfectly capture all underlying differences in prosociality and pecuniary motivation.

[29] Public sector jobs may stand out from private sector jobs in other dimensions than the wage level. In the Danish context, another salient difference between public and private sector jobs is that public sector contracts tend to be more family friendly. For example, while all parents are entitled to 11 months parental leave at partial pay, public sector employees typically receive full pay for a larger fraction of the leave period. Public sector jobs are also traditionally viewed as offering a lower unemployment risk, although it is somewhat unclear whether this is a salient difference, especially for the population we study. Formal employment protection is fairly similar between public sector and private sector contracts in Denmark, and our student population already faces a very low unemployment risk upon entering the labor market.

Panel A. Average cheat rate for those preferring the public and private sectors in each wage scenario
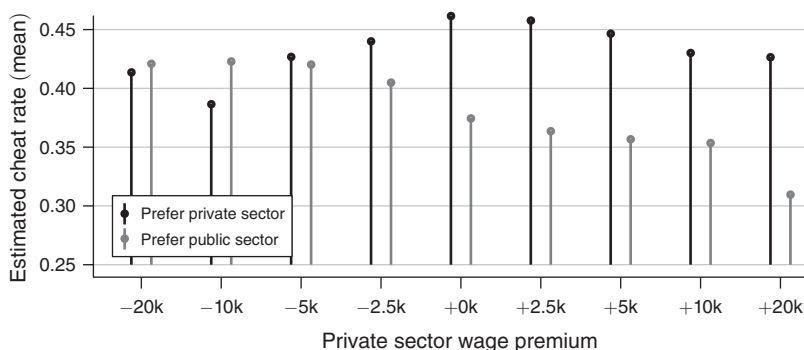
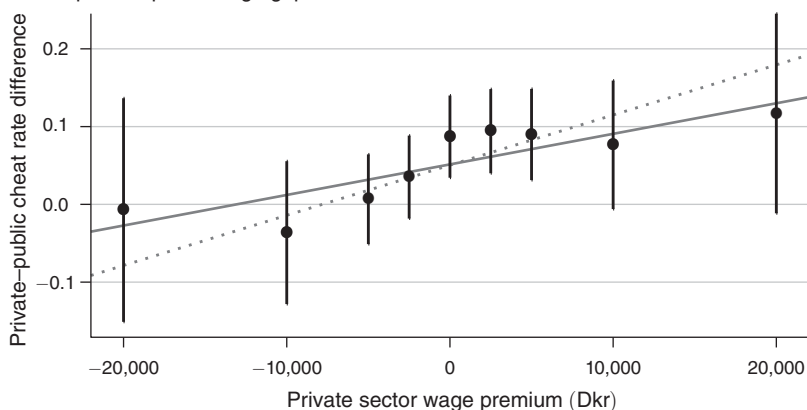Panel B. Private–public difference in average cheat rate by size of private–public wage gap

FIGURE 4. THE PRIVATE–PUBLIC WAGE GAP AND THE PRIVATE–PUBLIC DISHONESTY GAP

Notes: Panel A shows the average estimated cheat rate among students preferring the public and private sectors in different counterfactual wage scenarios that vary the private sector wage premium. Each pair of one black and one gray line correspond to a different wage scenario. Black lines show the estimated cheat rates of those choosing the private sector in the wage scenario. Gray lines show the estimated cheat rates for those choosing the public sector. Panel B shows plot differences in estimated cheat rates between students preferring the private and public sectors against the private–public wage gap. Error bars show 95 percent confidence intervals. The dashed vertical line shows the approximate current private sector wage premium of +Dkr 5,000.

rates, we can examine how changes in the private–public wage gap would affect the selection of honest and dishonest individuals into public service.

Panel A of Figure 4 shows the results from the counterfactual wage gap questions. Each pair of lines in the panel corresponds to a different hypothetical wage gap scenario, ranging from the private sector paying Dkr 20,000 less per month (US$3,333) to the private sector paying Dkr 20,000 more. For each wage gap, the height of the lines shows the average estimated cheat rate among those who would prefer the public and private sector at the given wage gap.

Furthest to the right, in the scenario where the private sector job pays Dkr 20,000 more, the average estimated cheat rate among students preferring the private sector is 0.43 as opposed to only 0.31 among students preferring the public sector, a gap

of 12 percentage points. Moving left to scenarios in which the public sector wage is relatively higher, the average cheat rates in the two groups begin to converge. In the scenario in which the private sector pays Dkr 5,000 more, roughly the current level of the private–public wage gap for our student population, the gap in cheat rates is down to 9.0 percentage points. Moving further left, the pattern continues. As the relative public sector wage is increased, the average cheat rate increases among public sector candidates and the private–public gap in dishonesty narrows. It eventually flips in scenarios in which the public sector wage is Dkr 10,000 or more above the private sector wage.

To understand the quantitative relationship between the private–public wage gap and the cheat rate gap, panel B plots the value of the implied private–public cheat rate gap in the different wage scenarios against the value of the private–public wage gap in each of these scenarios (error bars show 95 percent confidence intervals for the cheat rate gaps in each scenario). Mirroring the conclusion from panel A, we see a clear upward-sloping relationship between the points in the figure. The solid line in the figure adds the corresponding regression line. Its slope implies that a relative increase in private sector wages of Dkr 1,000 per month (US\$166) would increase the average gap in cheat rates between candidates for the private versus public sector by 0.4 percentage points (with a standard error of 0.1).

Looking at the plot and regression line, we note that the leftmost and rightmost points in the plot correspond to quite extreme wage scenarios and also involve very imprecisely estimated cheat rate gaps.[30] To check that these are not driving the results, the dotted line therefore shows how the regression line changes if we exclude these two points. We see that the line actually becomes slightly steeper; a Dkr 1,000 relative increase in private sector wages is now estimated to increase the gap in cheat rates by 0.6 percentage points (with a standard error of 0.2).

To the extent that students' answers in the hypothetical wage scenarios reflect actual preferences, these results suggest that higher public sector wages would lead to a more dishonest pool of candidates for public service jobs. This supports the notion that the relatively low level of public sector wages in Denmark is important for the observed selection pattern.

D. *Robustness Checks*

We finish this section of the paper by summarizing some additional results and robustness checks that are presented at length in the online Appendix.

Our experimental approach to measuring dishonesty has been widely used in the literature and has been validated to predict fraudulent behavior among public sector employees by Hanna and Wang (2017). As always however, differences in the exact experimental implementation may be a concern when comparing results to existing papers or relying on past validations. In Section A.4 in the online Appendix, we compare the data from our survey experiment with data from the closely related

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[30] The imprecisely estimated cheat rate gaps in these scenarios reflect that when the wage gap becomes very large, relatively few students select the lower paying sector. This implies that the average cheat rate for those preferring the lower paying sector is imprecisely estimated.

experiment of Hanna and Wang (2017). We see remarkably similar correlations between dishonesty and other inherent attributes across the two datasets, suggesting that the differences in experimental implementation do not affect the measurement of dishonesty. This mirrors previous conclusions in Hilbig and Zettler (2015).[31]

Another potential concern with our empirical analysis is whether our survey-based job preference measures successfully capture the actual job preferences that students express upon graduating and entering the labor market. In Section A.5 in the online Appendix, we examine this concern using administrative data on actual post-graduation job outcomes for a subset of our sample. Using the most recent administrative data available to us, we can examine the 155 students from our sample that had graduated and entered the labor market by the end of 2017. The job preferences measures from our survey turn out to be strong (and statistically significant) predictors of actual job outcomes. If we regress the estimated cheat rate on actual job outcomes as opposed to stated job-preference measures, we also get virtually the same estimated coefficient as in our main analysis, although in the much smaller sample, none of these are statistically significant. Overall, the administrative data suggest that the job preference measures from our survey capture actual job preferences well.

In Section A.7 of the online Appendix, we also conduct a series of robustness checks to shore up various concerns with our empirical analysis: To address concerns that the many repetitions in our dice game have made respondents fatigued or otherwise affected their behavior, we try only using data from different subsets of the dice rolls in our experiment, including using only the first dice roll for each respondent.[32] To address concerns that some respondents may be affected by knowledge of the existing academic literature on dishonesty and its relation to our experimental tasks, we try dropping respondents that indicate awareness of experimental dishonesty games. To address concerns that our results are driven only by extreme cheaters, we try excluding respondents who guess correctly in every round of our dice guessing game. Our results are robust to all of the alternative sample restrictions mentioned above.

Finally, as usual when analyzing survey or experimental data, representativeness and selective nonparticipation is a concern. In Section A.9 of the online Appendix, we examine issues of nonparticipation by exploiting the fact that the administrative university data contains information on enrollment year, field, completed classes, and gender for everyone invited to our survey experiment. Although our participation rate of 29 percent is reasonably high, our participant population does differ somewhat from invited nonparticipants. Participants are a bit younger, more likely to study economics, and slightly more likely to be male. Although selection in terms of unobservables can never be ruled out, we apply reweighing procedures that correct nonparticipation and find no evidence that selective nonresponse affects our results.

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[31] Hilbig and Zettler (2015) compares a survey-based measure of dishonesty with behavior in a range of different variations of the basic *dice-under-cup* game, including a dice guessing similar to the one used here. They find very similar correlations across all the different implementations of the game.

[32] Our estimated cheat rate remains an unbiased (although quite noisy) estimate of the true cheat rate even when we only use data on a single roll for each respondent. As a result, we can still use it to estimate differences in dishonesty between different groups of respondents (Houser, Vetter, and Winter 2012). The evolution of win rates across the different rolls is shown in online Appendix section A.6.

V. Conclusion

We study the role of self-selection into public service in sustaining an equilibrium of low corruption and low public sector dishonesty. Focusing on the world's least corrupt country, Denmark, we conduct a survey experiment among a relevant student population to obtain individual measures of dishonesty, preferences for entering public service, and other relevant attributes.

We document extensive heterogeneity in dishonesty among potential candidates for public service and a clear pattern of positive self-selection; students expressing a preference for entering public service cheat 10 percentage points less in a standard experimental dishonesty task. This result stands in sharp contrast to previous results from more corrupt countries.

To shed some light on the mechanisms behind the observed selection pattern, we examine whether dishonesty and job preferences correlate systematically with other attributes. Differences in pro-social versus pecuniary motivation turn out to be strong predictors of both dishonesty and job preferences. Pro-socially motivated students who make large donations in a dictator game are systematically more honest and more likely to prefer a public service career. On the other hand, pecuniarily motivated students who rank the wage level as an important job characteristic are systematically less honest and less likely to express a preference for a public service career. We find that this pattern can explain a significant part of the association between honesty and preference for public service.

Finally, we examine the role of public sector wages in shaping the observed selection pattern based on a set of counterfactual job preference questions that vary the wage gap between the public and private sector. Consistent with the results regarding pro-social versus pecuniary motivation, we find that higher public sector wages would attract more dishonest candidates to public service in Denmark.

Overall, our results confirm that systematic selection of honest individuals into public service may be part of the reason that Denmark is able to maintain its low levels of corruption and public sector dishonesty. To the extent that current levels of public sector dishonesty affect the future career choices of honest and dishonest individuals, this suggests that Denmark may be benefiting from a virtuous cycle where low levels of corruption and the self-selection of honest individuals into public service are mutually reinforcing. Such virtuous cycles can explain why some countries are consistently able to sustain an honest public sector while many other countries struggle with high levels of corruption.

At the same time, however, our results regarding public sector wages suggest that it is possible to change the observed selection pattern by changing policy. In fact, our results suggest that the standard policy recommendation of combating corruption by increasing public sector wages may have unintended negative effects on selection. The implication of this is not that countries struggling with high levels of corruption should simply start lowering public sector wages; the effect of changes in public sector wages is not necessarily the same across high- and low-corruption settings, and high public sector wages may still have large beneficial effects on the incentives for corruption if they raise the cost of being fired for corruption or if they are necessary to keep public employees' incomes above subsistence levels. At the

same time, however, our results do suggest that high public sector wages is *not* the reason Denmark has been and continues to be among the world's least corrupt countries. Understanding the factors and policy choices that affect selection into public service should thus be a key objective for future research.

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