Political Selection and Bureaucratic Productivity*

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Abstract

Economic theory of public bureaucracies as complex organizations predicts that bureaucratic productivity can be shaped by the selection of different types of agents, beyond their incentives. This theory applies to the institutions of local government in the developing world where nationally appointed bureaucrats and locally elected politicians together manage the implementation of public policies and the delivery of services. Yet, we have no evidence on whether (which) selection traits of these bureaucrats and politicians matters for the productivity of local bureaucracies. This paper addresses the empirical gap by gathering rich data in an institutional context, of district governments in Uganda, which is typical of the local state in poor countries. We measure traits such as integrity, altruism, personality, and public service motivation of bureaucrats and politicians. We find robust evidence that higher integrity among locally elected politicians is associated with substantively better delivery of public health services by district bureaucracies. Together with the theory, this evidence suggests that policy-makers seeking to build local state capacity in poor countries should take political selection seriously.

Keywords: politicians, bureaucrats, local government, health services
JEL Codes: H1, H4, H75

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1 Introduction

The impact of anti-poverty and pro-growth policies and spending programs depends upon how well they are implemented or delivered by government bureaucracies. The quintessential "delivery unit" in developing countries consists of local governments helmed by appointed bureaucrats and locally elected politicians. Institutional arrangements in the local state, or the last mile at which delivery and implementation happens across countries like India, Indonesia, Nigeria, Brazil, Tanzania and Uganda, provide space for locally elected politicians to facilitate and monitor the administration of nationally funded programs (Ahmad and Brosio, 2006 and 2009). These local institutions correspond to the setting examined in principal-agent theory of the public sector: multiple principals and agents; and, complexity of tasks and objectives (Tirole, 1994; Dewatripont, Jewett and Tirole, 1999; Dixit, 2002). The theory suggests that productivity in such organizations can be enhanced through organizational design that increases motivation and improves selection of agents, going beyond incentives (Besley and Ghatak, 2005; Acemoglu, Kremer and Mian, 2007; Akerlof, 2017). However, there is little to no empirical evidence on whether selection of agents matters, and furthermore, which traits matter for performance.[1] We provide the first evidence on how political and bureaucratic selection traits correlate with the productivity of public sector organizations. We measure traits of local politicians and bureaucrats in an institutional context which is typical of the local state in poor countries–district governments in Uganda–and examine whether these measures are robustly and substantively correlated with variation in service delivery by these districts.

Surveys were undertaken during September-December 2015 in 75 of Uganda's 112 districts at that time,[2] the relevant local jurisdiction where both directly elected district politicians and nationally appointed bureaucrats share responsibility for implementing public

[1] Finan, Olken and Pande (2015) review a growing literature which measures selection traits of agents, focusing on frontline service providers, such as health workers, and their individual productivity. For example, Donato et al (2017) and Callen et al (2015) find that public health workers with better personality traits are less likely to be absent from their jobs. There is no evidence yet available in the literature on whether selection traits of bureaucrats and politicians who manage public sector organizations matters for the productivity of those organizations.

[2] The number of districts in Uganda has been changing, due to the splitting of districts to create more new ones (Green, 2010; Grossman and Lewis, 2014). The current number is closer to 121.

policies and delivering services. Modules available from the literature to measure integrity, altruism, cognition, risk-aversion, personality traits, and public service motivation, were administered to 1,357 district bureaucrats and 770 district politicians. Administrative data available on the implementation of nationally mandated public health programs serves as a measure of productivity of the district organization. These data reveal that the integrity of politicians is a robust predictor of district productivity in delivering health services. The size of the correlation is substantively large: a 1 standard deviation higher average integrity among local politicians is associated with a 0.2 to 0.4 standard deviation higher measure of performance in health service delivery. In terms of concrete indicators of health coverage, an increase of 1 s.d. in the average integrity of politicians is correlated with a 4.4 percentage point increase in child delivery at government facilities (9% increase at the mean); a 4.7 p.p. increase in share of households with latrine (6.2% at the mean); a 3.8 p.p. increase in share of pregnant women preventively treated for malaria (6.7% at the mean) and a 2.8 p.p. increase in pregnant women having at least 4 antenatal care visit (8.2% at mean).

In contrast to the correlation with political quality, we find no significant correlation of service delivery with measures of electoral competition such as the concentration of vote shares of competing candidates and the margin of victory. At the same time, we find that political integrity tends to be higher in places where there is greater electoral competition. This is suggestive evidence that competition can play a role through improving selection (such as, by enabling the election of politicians of higher integrity) rather than through incentives alone. Our results are consistent with other research that incentives generated by electoral competition may play an ambiguous role in public service delivery.[3] Our evidence also brings into the fore a hitherto neglected reason why quality (selection) of politicians might matter beyond incentives – because public sector bureaucracies are complex orga-

[3]Other research has cast doubt on the role of electoral incentives in improving outcomes. For example, political incentives to seek re-election can distort the allocation of public funds from what a benevolent social planner would choose (Finan and Mazzocco, 2017). Political parties can respond to greater electoral pressures by fielding criminals as candidates (Aidt, Golden and Tiwari, 2015), or by increasing vote-buying (Cruz, Keefer and Labonne, 2016; Khemani, 2015), rather than by improving services. Afridi et al (2017) provide both theory and consistent evidence that corruption in developing countries can increase with electoral competition. Consistent with our results, Grossman and Michelitch (2018) find that Ugandan local politicians do *not* respond to increased incentives (through a transparency intervention) in competitive constituencies by improving service delivery.

nizations whose performance depends upon the interaction between a large number of principals and agents. Stronger electoral incentives of one set of actors – politicians – may not generate the actions that are conducive to organizational or team productivity.

The evidence we contribute on political integrity lends broad support to the theory of public bureaucracies as complex organizations. In district governments in Uganda, as in local government agencies of most poor countries, two types of agents share responsibility for managing a swathe of public spending programs and implementing policies–nationally appointed bureaucrats and locally elected politicians.[4] While the nationally-appointed bureaucrats are expected to bring the technical competence needed for public sector management, the locally elected politicians are supposed to play a role in monitoring and facilitating service delivery, especially by liaising with citizens and communities, increasing public awareness and winning public support. The cadre of politicians whose quality (integrity) is revealed by our data as a significant correlate of service delivery–locally elected district councilors in Uganda—are elected from constituencies (sub-counties) at the frontlines of service delivery, where health clinics operate and public health workers perform their tasks. Monitoring these health service delivery units is cited as one of the significant duties that local councilors are expected to perform (Grossman and Michelitch, 2018). However, councilors have been described as typically failing to perform their duties of political oversight (Raffler, 2016). Our finding thus suggests that where these local politicians are of better quality (higher integrity), they undertake their monitoring and facilitating roles more effectively, thereby contributing to improvements in service delivery. While prior work has focused on the policy-making role of more powerful political leaders, at national or regional levels, our work shows that the quality of more local politicians, who wield facilitating and monitoring powers over service delivery, also matters.

This evidence on political integrity is consistent with theory on the importance of political selection. The paper thus contributes to filling a large gap between economic theory and empirical evidence on political selection (Besley, 2006 and Dal Bo et al, 2017, provide

[4]Section 2 of the paper reviews the institutional arrangements in Uganda, and shows how it is typical of local service delivery arrangements in developing countries (Ahmad and Brosio, 2006 and 2009).

reviews). The identity and characteristics of leaders can matter because the political institutions through which leaders gain office (such as, elections) offer only incomplete contracts, and lack of enforceability by third parties (Osborne and Slivinski, 1996; Acemoglu, 2003). Furthermore, the quality of politicians can matter because, as leaders, they can play a role in shaping social norms and policy preferences (Acemoglu et al, 2015; Bidner and Francois, 2013). Yet, despite strong theoretical reasons to care about political selection, there is little evidence of whether and how it matters. The few empirical studies available on political selection are constrained by not having access to data on typically unobservable dimensions of quality, such as integrity or honesty, and altruism or a sense of civic duty, which may not be captured by available measures such as education (Ferraz and Finan, 2009).[5] Indeed, in our own data we find only weak and small correlations between education and difficult-to-observe personality and behavioral traits.[6] Theory suggests that self-selection of political candidates on these difficult-to-observe variables, specifically, integrity and altruism, can play an important role in governance (Bernheim and Kartik, 2014). We find, in fact, that political integrity matters for service delivery.

We recognize and emphasize throughout the paper that this study can only report robust correlations, not a causal relationship. We cannot identify an exogenous institution that drives variation in political selection. Indeed, it is likely that some omitted variable, such as citizen preferences for public goods, is correlated with better quality citizens entering the political market as candidates, better quality candidates getting elected, and with better service delivery by health workers. We argue that the way to interpret the correlation we find in the data is arising from the interaction between citizens, local politicians and service providers, as in the framework provided in World Bank (2016a) of interdependent principal-agent relationships in government. This interaction yields an equilibrium in which citizen demand, political selection, and behavior of health workers are all endogenously determined. For example, one way in which higher quality local politi-

[5]One strand of the empirical literature on political selection has focused on the phenomenon of adverse selection of criminals as political candidates in India (Aidt, Golden and Tiwari, 2015; Asher and Novosad, 2018; George, Gupta and Neggers, 2018).

[6]Correlations reported in Table 3.

cians can improve service delivery is by sensitizing citizens to the value of these services and thereby increasing citizen demand and uptake. Politicians of higher integrity are expected to exert greater effort towards more public goods, relative to effort on private rent extraction. As a result, more public goods are produced in the equilibrium where higher integrity politicians are endogenously selected. The correlation between political integrity and local state productivity is thus driven by variation across the 75 different equilibria of district governments–in districts where higher integrity politicians are endogenously selected, these politicians exert greater effort towards public goods than rent-extraction. That is, omitted variables that capture citizens' political preferences or prevailing social norms may well be the underlying driver of variation in political selection, but the proximate channel of influence of political integrity on service delivery is through the effort exerted by selected politicians. We show that the correlation with political integrity holds even after accounting for plausible sources of variation in voter demands (such as partisan attachment to national leaders and the presence of local radio), thus suggesting that local politicians have a direct or proximate channel of influence on service delivery, apart from other channels through which citizens might influence service delivery without going through politicians.

We further provide qualitative evidence and support from other studies in Uganda of the role of local councilors in monitoring local health facilities, and how they can play these roles in obstructionist, rent-seeking ways (such as shielding absent health workers from disciplinary action, or pilfering funds at the health clinic) versus facilitating better delivery (such as encouraging health workers to show-up, and monitoring that clinic funds are appropriately used). We suggest that the measure of integrity is capturing the proclivity of politicians to exert effort in one type of action compared to another–whether in the extraction of private rents versus the promotion of broader service delivery. Higher integrity politicians are more motivated to pursue public goods and therefore more effective in improving public health service delivery.

Nevertheless, omitted variables that explain both integrity and the ability of politicians to influence service delivery could be biasing the coefficient on integrity that we estimate.

Random assignment of higher integrity politicians to districts may yield different estimates of impact on service delivery. However, random assignment of integrity may not be the appropriate way to test theories where political selection arises endogenously. Learning from correlations revealed by the data is valuable to test theories of endogenous relationships that arise in equilibrium, and to inform further theoretical development. For example, models of political selection have been quite separate from models of agent selection in complex organizations of the bureaucracy. Our results suggest scope for further developing a theory of how these two different types of agents, bureaucrats and politicians, interact in government agencies. Our study provides unique new evidence to understand the relative characteristics of these agents.

We find systematic differences across several dimensions of quality between politicians and bureaucrats, and, in which features of quality of these two types of agents matter for service delivery. For example, bureaucrats are more educated than politicians and education of bureaucrats is correlated with service delivery; in contrast, education of politicians is not correlated with service delivery. These differences in education between bureaucrats and politicians may be viewed as simply confirming what one might have suspected given the local institutional context where the bureaucrats have greater powers and are appointed from a professional national cadre, while the politicians are drawn from local communities and have fewer formal powers. Other differences, in integrity, altruism, personality, and public service motivation, are areas with fewer priors and more to learn from the data. We find that politicians report greater altruism when compared to bureaucrats. However, while altruism among bureaucrats matters for service delivery, it is the integrity of politicians that is associated with improved services (not their reported altruism or public service motivation). And it is political integrity which is in short supply: politicians score significantly lower than bureaucrats, and those who win elections tend to score less than contenders who lost.

Our results suggest that variation in personality of politicians plays a smaller role than variation in personality of frontline service providers as found in the work of others (Donato et al, 2017; Callen et al, 2015). Traits like conscientiousness and neuroticism might

matter much less for politicians than service providers because the latter are engaged in day-to-day active service delivery. Integrity, on the other hand, has been highlighted in theory as a particularly important characteristic of politicians (Bernheim and Kartik, 2014). However, while political integrity is revealed by the data as the most robust correlate of service delivery, to the exclusion of available measures of personality, altruism, or public service motivation of politicians, this could be because these other characteristics are harder to measure and what is available has not been fully validated in developing country settings (Laajaj and Macours, 2017). Our contribution is the tip of the iceberg in this regard, and a necessary one to build empirical evidence on political and bureaucratic selection in developing countries.

The empirical significance of political quality that we document, together with the existing theory of public sector bureaucracies which it broadly supports, suggests considerable scope for improving institutional design for local service delivery by taking political selection into account. Our results thus have implications for how to think about public policy in "deliverology" (Barber et al, 2011), or improving state capacity to implement public policies. In low resource environments, such as in poor countries, it may be possible to design policies for greater effect by leveraging the available human resource of local politicians. Most prior work on local state capacity has overlooked the available theory on the complex organizations of the state, and the role of politicians in it, focusing instead on technology (eg. Muralidharan et al, 2016), or exclusively on skills development and training of bureaucrats and service delivery professionals (World Bank, 2017, critiques the dominance of capacity building in development practice).[7]

Institutional space for the emergence of local politicians has been spreading across and

[7] A notable exception is the work of Raffler (2017) which evaluates the impact of training local politicians in Uganda to play a more effective role in monitoring the implementation of public investment projects. The results suggest that better trained councilors, who are provided financial and technical information about the projects being implemented in their constituencies, can become more active in exerting political oversight on the projects, but only in districts where the chairperson does not belong to the national ruling party. Raffler (2017) interprets this pattern as suggestive of weaker political incentives to monitor where the national ruling party is more powerful. Our finding of a negative correlation between voter support for the national political party's presidential candidate and health service delivery is consistent with Raffler's (2017) findings. Our contribution of examining the role of political selection goes beyond incentives and supports policy directions to encourage better quality citizens to enter local governments as political leaders.

within countries, even where national politics has veered towards authoritarianism (World Bank, 2016a). More research and policy experimentation are warranted to understand the quality of these emerging political leaders at the local level, and how they can play a role in building state capacity. Available research, has focused on understanding the incentives of politicians to perform, to the neglect of understanding selection. For example, Grossman and Michelitch (2017) is a recent study from Uganda, where research efforts were devoted to evaluating a transparency intervention targeted at strengthening political incentives. Interestingly, the study finds no effect on service delivery, and the authors explain this precisely by appealing to the role of multiple actors in service delivery organizations. A few studies are beginning to examine whether transparency interventions can be designed from the start to impact political selection, finding that entry of candidates is quite responsive to such interventions, resulting in greater representation of non-elite citizens (Gulzar and Khan, 2017; Banerjee et al, 2017). Much more work remains to understand whether such transparency interventions result in the selection of particular political traits, whether these traits matter for the performance of public sector organizations, and through what mechanisms.

The rest of the paper is organized as follows. Section 2 describes the institutional context and data gathered in Uganda to examine the role of selection traits of bureaucrats and politicians in the productivity of the district organization. This section presents evidence of systematic differences between bureaucrats and politicians across several dimensions of selection. Section 3 provides the empirical specification to examine the correlation between district productivity and selection traits of bureaucrats and politicians. Section 4 presents the main results of the robust correlates of local productivity in delivering health services. Political integrity emerges as a particularly significant and substantial covariate even after accounting for bureaucrat selection, and other socio-economic-political factors of the district. Section 5 examines the correlates of political integrity—what conditions are associated with the selection of better quality politicians. Section 6 discusses the pattern of evidence and provides an interpretation of the mechanisms behind it. Section 7 concludes.

2 Institutional Context and Data

The district government in Uganda exhibits institutional characteristics that are typical of the local organizations that deliver public services and implement public policies in developing countries. Bureaucrats appointed to the district by national ministries are responsible for managing national fiscal transfers to deliver public services across sectors–health, education, agriculture, roads, water, environment and natural resources. Following a wave of political decentralization across the developing world in the 1990s, Uganda promulgated The Local Government Act of 1997 to provide space for locally elected politicians in the functioning of the district bureaucracy. District councils, consisting of councilors elected from sub-district constituencies and headed by a directly elected chairperson, have legislative functions over matters devolved to the local council by the national state. Most importantly, these locally elected politicians are expected to perform unique roles of oversight or monitoring the bureaucracy, and of facilitating service delivery, as a liaison between local citizens and the state (Grossman and Michelitch, 2018; Raffler, 2017). An original survey was undertaken between September and December 2015 in 75 of Uganda's 112 districts (at the time) to measure the selection traits of these district bureaucrats and politicians who oversee the implementation of national programs.[8] Figure 1 provides a map of our study area.

In each District, all the following *elected politicians* were interviewed: the District Chairperson or Municipality Mayor; three District/Municipality Woman Councillors and three District/Municipality Directly Elected Councillors. In addition, all *non-elected contenders* for the position of District Chairperson were listed and approached for interviews. In total 770 district politicians and political contenders were interviewed. Among *bureaucrats*, all District Chief Administrative Officers (CAO), deputy CAO and the Resident District Commissioners (RDC) were interviewed. An extensive roster of senior officers were also included on the sample to be interviewed [9]; whenever they refused to be interviewed

[8] Annex 9.8 provides the list of surveyed districts

[9] They are the Chief Finance Officer, Senior Finance Officer (Expenditure), Senior Accountant (Accounts), District Planner, District Education Officer, Senior Education Officer, Senior Inspector of Schools, District Internal Auditor, District Production Officer, Senior Agricultural Officer, District Health Officer, Assis-

or the position was vacant, they were replaced by other members of the same department. A total number of 1,357 bureaucrats are included in the final sample.

Our survey respondents thus comprise key officials in leadership positions in local government, with two distinct lines of selection: (1) local politicians who contest elections and are voted in/out by locally-residing citizens; (2) bureaucrats who are appointed by national political leaders and technical ministries. We asked a series of questions in our survey about who has leadership powers in local government, and found evidence of an informal sharing of power between locally elected politicians and bureaucrats appointed by higher-tier politicians. For example, we asked: "Who in your district/municipality has the greatest ability to get civil servants to follow their orders?" Among the appointed bureaucrats and technocrats responding to this question, 93 percent indicated that the Chief Administrator Officer (CAO), who is appointed by national politicians, has the greatest authority. However, among the politicians responding to this question, a lower proportion, 70 percent, indicated the CAO, and 24 percent indicated that the directly elected District Chairperson or Municipality Mayor has the most authority. Local journalists—who head the radio stations which comprise the main news media serving these districts—were even more split in their responses: 43 percent indicated the CAO, 24 percent indicated the directly elected local politicians, and 21 percent indicated the Resident District Commissioners, who are another cadre of senior bureaucrats appointed by national politicians. This setting thus corresponds to the special features of public sector organziations that was discussed in Dixit (2002)–multiple stake-holders (principals) who together manage a complex set of policy implementation and service delivery activities. The key distinction between the two types of local leaders is that one type, the politician, is selected locally from among the residents of the local government through the electoral process, while the other, the bureaucrat, consist of career technocrats selected by national political and bureaucratic leaders from a national pool of candidates.[10]

tant District Health Officer (Environmental Health), and Assistant District Health Officer (Maternal Child Health/Nursing).

[10] As we will see further below, this distinction can help us understand the patterns revealed by the data about why it is political selection that appears more significant than bureaucrat traits. Bureaucrats may be strategically appointed by national leaders, making bureaucrat traits more endogenous to district character-

Survey modules were developed on the basis of the available literature to measure the integrity, altruism, cognition, risk-aversion, personality traits, and public service motivation of these bureaucrats and politicians, and are discussed in the section below. To our knowledge, this is the most comprehensive data gathered on a large number of key actors interacting in the complex organization of the public sector.

2.1 Selection traits of bureaucrats and politicians

Detailed modules measuring individual characteristics and behavioral traits were administered for both politicians and bureaucrats. Basic demographic characteristics include gender, age and educational attainment, as well as household-level characteristics such as family size and asset ownership. Other than basic demographic characteristics, our survey includes rich information about individuals' integrity, cognitive ability, risk preferences, non-cognitive traits and motivation to work in the public sector. Detailed information about each of these variables and the construction of aggregate measures are provided in Appendix 9.1 ; here we provide a brief description of these behavioral measures.

The *integrity* of respondents was assessed through the Moral Disengagement Measure, developed by Moore et al. (2012). The Integrity Index is a z-score using responses from eight sub-components. Taken together, the eight questions presented in Annex 9.4 have been shown to be correlated with unethical behavior in lab experiments. Individuals are asked to rate their agreement with the statement on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). We recode the variables such that higher values correspond to disagreement with unethical behavior, then proceed to take a simple average of the eight questions and normalize it to obtain the Integrity Index.

In assessing *non-cognitive ability*, the survey follows the World Bank STEP (Skills Towards Employability and Productivity) methodology. It includes not only the popular Big Five Index - a set of 15 questions used to assess five broad domains of personality -, but also the more specific dimensions of Grit, Decision-Making and Hostility Bias. The motivation to work in the public sector is measured using *Perry's PSM Index*, composed of 36

istics which directly predict service delivery.

questions measuring motivation in six different dimensions - Attraction to Policy Making, Commitment to Public Interest, Social Justice, Civic Duty, Compassion and Self-Sacrifice[11].

Risk Preferences are assessed using a simple, non-incentivized risk game, detailed in the Appendix 9.7. Similarly, *Altruism* is measured by a hypothetical game in which the individual is given UGX 50,000[12] and has to decide how much of it to share with an anonymous individual.

To assess *cognitive ability*, the survey uses a digit span memory test, in which an increasingly longer string of numbers is read to the respondent, who is in turn asked to repeat it. We use the number of digits the respondent can correctly recall as a proxy for cognitive ability.[13]. We complement this measure, following Dal Bo, Finan and Rossi (2013), with an indicator assessing whether the respondent chooses a dominated option in the risk game described above.

Tables 1 and 2 present descriptive statistics on the survey sample, highlighting differences in means between politicians (including non-elected contenders) and bureaucrats. Table 1 presents basic socio-demographics characteristics and confirms the intuition that politicians are very different from bureaucrats in basic observable characteristics. Politicians are much more likely to be females, to have been born in the same District where they currently work [14] and also to come from less wealthy households (they have larger families and hold less assets). The most striking distinction between bureaucrats and politicians is in educational attainment: whereas half of politicians have not completed college, 96 percent of bureaucrats did, including half with postgraduate degrees. These numbers are broadly consistent with Raffler's (2017) data on subcounty politicians and officials in Uganda, and paint broadly the same scenario of policy environment: local politicians oversee project execution led by highly educated and centrally appointed bureaucrats.

Table 2 presents descriptive summaries of selection traits. Panel A reports, for each of the components on the Integrity module, the share of individuals who agree or strongly

[11]Perry's PSM Index has been widely used in the recent personnel economics literature, such as Dal Bo, Finan and Rossi (2013) and Callen et al. (2015)

[12]Approximately USD 15, at the conversion rate of USD 1 = UGX 3,400 (average during the survey period).

[13]This is the same methodology used in Weaver (2016).

[14]Which is not surprising given that bureaucrats are centrally appointed.

agree with each statement. For all components a larger share of politicians than bureaucrats agree with statements such as "People shouldn't be held accountable for doing questionable things when they are just doing what an authority figure told them to do". It's worth noting, however, that for all items a significant majority of all respondents do not agree with the statements. Overall, politicians score on average 0.32 standard deviation lower than bureaucrats on the aggregate Integrity Index.

Panels B and C present results on personality traits. Politicians do fare better than bureaucrats in other non-cognitive dimensions. They score 0.12 s.d. higher on average in the Big-Five Index, though their advantage is restricted to two domains in which we would indeed expect politicians to perform better: Extraversion and Agreeableness. When we consider other measures of non-cognitive ability, bureaucrats fare better on Grit, Decision Making and Hostility Bias, such that we find no distinction between the two groups when pooling all dimensions above in a Non-Cognitive Index. We find no significant difference between politicians and bureaucrats in the Public Sector Motivation Index: bureaucrats report higher Compassion but score lower on Civic Duty and Self-Sacrifice; in other dimensions we observe no gap.[15].

Finally, Panel D presents results on cognitive traits and measured attitudes of altruism and risk preferences. Consistent with large differences in educational attainment, politicians fare significantly worse in both cognitive measures: on average they can recall 0.3 less numbers than bureaucrats, and are also 3 p.p. more likely to choose a dominated option on a simple risk game (choosing a UGX 1 million reward instead of a gamble of equal probability between UGX 1 million and UGX 2 million)[16]. Regarding altruism, politicians donate a slightly larger fraction of a hypothetical prize on average, and also make less risky

[15]One advantage of using the same modules as other surveys in the literature is comparing the results obtained in Uganda with other settings. This paper uses the same modules for measurement of PSM and Big-Five as Dal Bo, Finan and Rossi (2013) in Mexico, so we can actually compare some of the descriptive statistics to their Table II. Our mean values for Big Five measures are across the board lower, indicating a "worse" pool of individuals in terms of these non-cognitive traits. For PSM, however, the scores are pretty similar.

[16]The share of individuals who make a mistake, for both politicians and bureaucrats, around 10 percent in the Uganda sample, stand in stark contrast to the results of Dal Bo, Finan and Rossi (2013) where almost 40 percent of individuals who were being considered for the position of social workers in Mexico made this error.

choices in lottery games.[17]

While Table 2 suggests politicians have very distinct behavioral traits from bureaucrats, it is possible that all these differences disappear when we compare individuals with similar observable characteristics. Is that the case, or do individuals who select to be politicians fundamentally differ from those at bureaucratic positions once we control for observable traits such as gender, education and age? Figure 2 presents the average difference in traits between politicians and bureaucrats, once we account for a range of observable individual characteristics. Most of the previous results stand: politicians still perform worse in Integrity and Other Non-Cognitive measures (Grit, Decision Making and Hostility Bias), but better in the PSM, Big Five and Altruism. The main distinction from the previous findings is that differences in cognitive attainment become very small and statistically insignificant, suggesting that any differences between the two groups are simply mediated by differential educational attainment.[18]

Consistency of individuals' traits measures

One possible caveat to this discussion is the reliability of these behavioral measures, which are self-reported. Whereas we cannot rule out entirely that desirability bias dominates our measurement, we provide some evidence they seem to capture important dimensions of personality.

First, as discussed above, there's quite a lot of variation in answers. Even for questions that might induce a strong desire to conform, such as "Is it OK to take credit for others' ideas?", 20 percent of respondents answer they disagree and only 20 percent assert they strongly agree. Furthermore, we identify large and systematic differences between answers of politicians and bureaucrats.

Second, Table 3 provides pairwise-correlation between several of the individual traits' measures. All indices are constructed in such way that higher values are considered posi-

[17] While all figures discussed in these tables refer to differences in means, Figures 3 and 4 presents the CDF of traits for each group and Kolmogorov-Smirnov tests reject equality of distributions.

[18] Indeed simply controlling by education makes the difference in cognitive attainment become not statistically significant (not reported).

tive traits - accordingly, all pairwise correlations (with exception of PSM-Cognitive, which has a negative point estimate but very close to zero) are positive and most of them significant. Personality traits - Big Five, Non-Cognitive, PSM and Integrity - are all strongly and significantly correlated with each other. The correlation of PSM/Big Five is 0.35 and PSM/Non-Cognitive is 0.39.[19] This suggests that these measures, captured in different questionnaire modules, do capture some underlying behavioral traits of the interviewees.[20]

2.2 Measure of productivity of district bureaucracies

These survey data on bureaucrats and politicians are matched to government data on the productivity of districts in implementing national programs. The Ministry of Health (MoH) in Uganda compiles detailed information on the performance of districts in delivering nationally mandated public health programs. Using the Health Management and Information System (HMIS), the MoH compiles the data reported by local health facilities into Health District League Tables (DLT) that are intended to capture the relative performance of service delivery across districts (See Figure 12 for details). The DLTs are part of the Annual Health Sector Performance Report by the MoH. The closest year to our survey for which the DLT data are available is FY 2014/2015. The bureaucrats and politicians we interview in September-December 2015 were the presiding officials during FY 2014/2015 when the health performance indicators were compiled by MoH .

Table 4, top panel, presents descriptive statistics on the quality of health services across districts. Whereas there is little variation in some of the individual indicators (the median coverage of DPT3 vaccination is 98 percent), other indicators vary widely between Districts: the average share of women having 4 or more ante natal care visits is only 34 percent (s.d.: 10.9) and the average share of pregnant women receiving preventive malaria treatment in pregnancy (IPT2) is 53 percent (s.d.: 11.6). The DLT total score is a weighted average of 14 quality care and management practice indicators ranging from 0 to 100 - the

[19] Dal Bo, Finan and Rossi (2013) report a 0.54 correlation for PSM/Big Five. Whereas we find a rather precisely estimated zero correlation between PSM and our Cognitive measure, Dal Bo et al find a 0.12 correlation between PSM and IQ.

[20] In Appendix 9.2 we provide interitem average correlations and Cronbach's alphas for both our aggregate indices and its components.

average District scores 73 points. In the analysis below we will often use a normalized version of the total score, so that changes can be interpreted as standard deviation variation in the score (7.25 points).

These health service delivery indicators are the best measures we have available in our study context to capture the productivity of the district bureaucracy as a complex organization. Rasul and Rogger (2016) and Rasul, Rogger and Williams (2017) review the available measures of productivity of national bureaucracies and focus on completion rates of projects undertaken. The advantage of the setting we examine–of district-level bureaucracies–is that productivity can be measured in terms of services that are directly linked to development outcomes, such as health in poor communities.

3 Empirical Specification

The empirical analysis in this paper is not positioned to causally identify the effect of any variable on health service delivery performance. Rather, we examine what are the robust correlates, if any, of variation in performance across districts using all available data on a variety of potentially significant correlates for this purpose. The main question guiding the analysis is whether (which) selection traits of bureaucrats and politicians are significant in explaining district performance. In order to control for the role of other district socio-economic and political characteristics in driving any correlation, by simultaneously influencing both selection traits and health service delivery, we use other District level administrative data on these district characteristics.

Specifically, we estimate variants of the following equation:

$$Y_{ij} = \alpha + \bar{X}_i'\beta + Z_i'\theta + \gamma_j + \epsilon_{ij} \tag{1}$$

where Y_{ij} will often be the standardized health score in the District League Table for district *i* in region *j*. In some instances, Y_{ij} will instead be specific components of the DLT score. The vector $\bar{X}_i$ includes our main variables of interest: the average trait of politicians

and/or bureaucrats in District i; different specifications will use different subsets of traits. Z_i is a vector including a series of socio-economic and political characteristics of districts and γ_j allows for region-specific intercepts.

The variables contained in the vector Z_i come from administrative and survey data. The 2014 Census provides information on Districts' population and urbanization rates, while poverty rates are estimates for 2013 (World Bank, 2016b)[21]. We complement these socio-economic data with average students' score at the UCE in 2011, a nationally administered exam students take at the end of lower secondary school, as the best available proxy for education in the population.[22] Our survey also gathered data on the population of radio stations operating in Uganda at the time of the survey, from which we derive a variable of the number of radio stations headquartered in a district. Access to radio, and to media in a more general sense, has been shown to impact the public scrutiny of local politicians (Ferraz and Finan, 2008) and affect citizens' investment in health and education (Khemani and Keefer, 2015; Khemani and Keefer, 2014). We also consider that the existence of local radio stations might proxy for other unobservables such as the dynamism of local markets.

In addition, we compile data on local vote shares from the 2011 elections, the last one before our survey. The main variables are the vote share of the presidential candidate of the NRM, the national ruling party (labeled "Voter Attachment to National Party"), at the district level, and voting Herfindhal Indices[23] for district politicians [24].

The lower panel in Table 4 presents descriptive statistics of administrative data for the 75 Districts included in the survey. The median District in our sample has approximately 250,000 people and is overwhelmingly rural[25]. Poverty rates, at 23 percent in the median

[21]These are small areas estimates produced by the World Bank, using data from the 2013 UNHS and 2014 Census data. For details on methodology see for example Ebers, Lanjow and Lanjow (2002).

[22]Note that higher values of the UCE score are indicate of lower education performance, as described in the data Appendix. We include 2011 UCE performance since those cannot be influenced by current politicians, who were elected in that year.

[23]The Herfindahl Index is most commonly used as measure of firm competition in a given market, but has been widely used to measure political competition . The Herfindahl Index is obtained, at the electoral area level, by the sum of the squares of candidates' votes. Higher values are associated with a less competitive environment (the index ranges from 1/N to 1, where N is the number of candidates).

[24]We compute all the results at the electoral area level and then obtain the district-level average across all areas.

[25]According to the 2014 Census only 16 percent of the population in Uganda lived in urban areas.

District, are only slightly higher than the national rate of 20 percent in 2013. The numbers also show the subdued level of political competition in presidential elections: the candidate of the ruling party won 70 percent of the popular vote for president in the median district during the 2011 presidential election.

4 Results: correlates of district productivity

This section presents the main results of the paper, assessing the correlation of politicians' and bureaucrats' selection traits and service delivery. We start by presenting raw correlations between actors' selection traits and districts' health outcomes. Here we document that integrity is the only trait of politicians' that is correlated with health outcomes, while among bureaucrats' both risk-aversion and altruism show positive correlations with health quality.

Our main result is to assess whether these correlations hold in multivariate regressions. Because of the problem of having a small number of observations (75 districts) relative to a large number of potential regressors (40 in total, counting all selection traits and district socio-economic and electoral characteristics on which we have data available), we face the issue of model selection – should we just include all covariates, at the cost of having very noisy parameter estimates, or should we try to restrict the model to covariates we a priori think are "better"? The available economic theory provides little guidance on this. Our reading of the literature suggests that a machine-learning process such as LASSO has become the methodology of choice in such situations, to allow the data to reveal which variables have greater predictive power. We therefore use a model that includes variables chosen by LASSO – which drops variables that explain little of the variation in the data– as our main specification. We think this strategy should make our readers less worried that we are "cherry-picking" a model that makes some results look better. We also present in the robustness section a range of OLS estimations with an exhaustive list of controls. These estimates suggest that politicians' integrity is the most robust predictor of variation in health outcomes among all selection traits of policy actors.

We then proceed to perform a series of additional robustness checks on our main result. Having established the role of politicians' integrity as an explanation for overall health service quality, we show that the correlation holds not only for the aggregate score but also for a majority of individual sub-components of the index. The results become stronger if we use the first principal component of individual health indicators.

Finally, we provide evidence consistent with the mechanism that higher political integrity influences bureaucratic productivity through improved oversight and facilitation by district councilors who are elected at the frontlines of health service delivery. Among the three types of politicians surveyed - local councillors, District Chairperson and non-elected Contenders -, it is the integrity of councillors, who are supposed to monitor and facilitate delivery, that is robustly correlated with several indicators of health service delivery.

4.1 Overall correlations

To investigate whether characteristics of politicians and bureaucrats in Uganda's districts are robustly correlated with the quality of service delivery, we start by presenting simple graphs showing how the DLT Health Scores and average traits of local policy actors covary in the sample of 75 districts in Figures 6 and 7. To account for broad differences in income across districts, we regress the DLT scores on district poverty rates, and present the scatter plot of estimated residuals against selection traits.

The first finding is that, among politicians, integrity is the only robust predictor of variations in DLT between districts: a 1 s.d. increase in politicians' average Integrity Index is correlated with a 0.3 s.d. increase in the residual of health score. The only other trait of politicians that is marginally correlated with health scores is Altruism. Importantly, personality traits like those measured by the Big Five Index and Public Sector Motivation are not correlated with quality of service delivery.

Among bureaucrats, the scatter plots indicate no correlation between average integrity and quality of service delivery. Three traits of bureaucrats are significantly correlated with

DLT scores: districts where bureaucrats are more risk-averse and more altruistic, and Districts where bureaucrats' PSM is lower, also have higher scores.[26].

While these scatter plots are informative of broad correlations, individual bureaucrats' and politicians' traits most likely covary with other District level characteristics such as education levels and support for the central government. In order to assess how robust are these correlations when we compare similar Districts, we estimate different specifications of Equation (1), first including each one of the average traits of bureaucrats and politicians separately as regressors (i.e. $\bar{X}_i$ is always a scalar). Figure 8 reports point estimates and CI for the coefficient on average traits. The results are broadly consistent with the simple correlations. Among politicians' traits, only the average Integrity Index is significantly correlated with better health outcomes, suggesting that a 1 s.d. increase in average integrity is correlated to 0.23 s.d. increase in the DLT score [27]. Regarding bureaucrats, altruism is the only trait that is (marginally) significantly correlated with health outcomes once we control for District level characteristics. These results suggest that, among all behavioral traits measured for politicians and bureaucrats, politicians' integrity seems to be the one robustly correlated with service delivery - even after taking into account several other socio-economic characteristics[28].

4.2 Assessing predictive power of all behavioral traits

While the previous section reports findings from regressions that include each selection trait separately in equation (1), we would like to assess whether the findings hold when we allow for all individual traits to affect health outcomes simultaneously. Given the large number of individual traits we measure in the survey and the limited number of observations (districts), we are faced with the question of what model to estimate: should we include all individual traits, at the expense of lots of imprecision in estimates? Should we restrict attention to politicians' integrity and include districts' characteristics as controls?

[26]The correlation between Risk-Aversion and health scores, however, disappears if we drop the outlier district of Amudat.

[27]The estimated effect is 30% smaller than in the simple correlation, suggesting that part of the observed raw correlation is driven by other district characteristics that covary with politician integrity.

[28]Results in regression form are presented in Table A6

Following the literature, we proceed by reducing the "degrees of freedom" in model selection and instead relying on regularization techniques of machine learning [29] (Athey, 2018). In particular, we use the LASSO procedure (Tbishirani, 1995) to choose, among all District characteristics and interviewees' selection traits, which variables are most predictive of DLT scores. LASSO is considered to be particularly suited, among other machine learning techniques, when estimates for several of the potential explanatory variables are believed be approximately zero (Abadie and Kasy, 2017). In practice, the LASSO minimizes an objective function that includes a goodness-of-fit term (sum of squared errors) and a penalization for the sum of covariates' coefficients. The weight of the penalization, the lambda parameter, is chosen by cross-validation, i.e. by estimating the model in test subsamples and evaluating its performance in the remainder of the sample (Athey, 2018).

Following Best, Hjort and Szakonyi (2017), we proceed in two steps. We first estimate a LASSO model[30] with District-level health score as the dependent variable and a set of 40 covariates. We then select the variables with non-zero coefficient in the LASSO model and report the results of both bivariate and multivariate regressions.

The 40 variables used in the LASSO model include the average for 12 selection traits already explored, separately for bureaucrats and politicians: PSM, Integrity, Big Five, Non-Cognitive, Altruism, Indicator for mistake in risk game, Cognitive, Risk Aversion, Assets and indicators for 3 education levels. We also include regional dummies and the following socio-economic and political District level characteristics: vote share of the presidential candidate of the NRM, Number of radio stations, Poverty rates, log Population, Share of urban population, Herfindahl index for Councillors vote share and the UCE score as a measure of education in the district population (lower values are asdociated with better education outcomes).

The LASSO model selects eight variables with non-zero coefficients: four socio-economic-political characteristics of Districts (Vote share of the presidential candidate of the NRM,

[29] We nonetheless report OLS estimates of different specifications as robustness checks in Table 5.

[30] Specifically, we use Friedman, Hastie, and Tibshirani (2010) algorithm implemented in the R-package -glmnet-. It runs a LASSO regression with a lambda parameter that minimizes the 10-fold mean cross-validation error.

Poverty Rate, Number of Radios and UCE score), three bureaucrats' traits (Altruism, Risk-aversion and indicator of less than college education) and politicians' Integrity. Figure 9a reports the point estimates and 95 percent confidence intervals for bivariate regressions for each of the selected variables, while Figure 9b reports the results for a multivariate regression including all selected variables [31]. All variables are standardized, so the coefficients can be compared and interpreted as the effect of a 1 s.d. increase of the explanatory variable on the health score.

The integrity of politicians appears to be the most relevant selection trait to affect health scores: in the multivariate regression, we estimate that an increase of 1 s.d. in average integrity is correlated with a 0.24 s.d. increase in the Health Score, while all other point estimates for selection traits are smaller in absolute size (though not statistically different from the Integrity estimate) and sometimes not statistically different from zero. The estimates also suggest that bureaucrats' altruism significantly impact health outcomes, but the coefficient is half the size of politicians' integrity. The indicator for bureaucrats with lower than college education (recall that only 4 percent of bureaucrats have less than college education) is also large in magnitude (-0.2 s.d.) and significant.

It is worth noting that the only variables with larger absolute effect are the number of radio stations headquartered in a district and voter attachment to NRM: an increase in 1 s.d. in the number of radio stations is correlated with a 0.3 s.d. in the health score; while a 1 s.d. increase in vote share for the NRM presidential candidate is correlated with a 0.25 lower health score. [32].

4.3 Robustness

We start our robustness checks by estimating OLS regressions with Districts' DLT score as dependent variable and politicians' average integrity as explanatory variable in Table 5, and estimating models with increasing number of controls. Column (1) presents the simple bivariate regression, while column (2) reproduces the estimate in Figure 8, suggesting

[31] Full results in table format are presented in Table A8

[32] Note that if individual traits are measured with more noise than Districts' overall characteristics, we should expect the coefficient on traits to be biased toward zero.

a 1 s.d. increase in average politicians' integrity is correlated with a 0.23 s.d. increase in the health score. In column (3) we include not only districts' characteristics but also other selection traits of politicians as explanatory variables. The coefficient on politicians' integrity barely changes, but standard errors become larger and the coefficient is no longer statistically significant (p-value = 0.11). As in the model chosen by LASSO, we find that a higher number or radio headquartered in a district is a strong predictor of better health services, as is scores at the UCE national examination.

In column (4) we add the average integrity of bureaucrats as explanatory variable in order to assess if it has independent explanatory power. The coefficient on politicians' integrity remain unchanged, and that of bureaucrats' integrity is an order of magnitude smaller and not statistically different from zero. Given the large standard-errors of estimates, however, we cannot reject that these two coefficients are equal (p-value = 0.41). In a very demanding test, in column (5) we include all of bureaucrats' and politicians' traits simultaneously as explanatory variables, together with districts' characteristics. In this model, the coefficient on politicians' integrity is smaller (0.16) and not statistically different from zero. We should caution, however, that in this specification we are estimating 40 parameters with 75 observations. That is, the F test of a "horse race" between bureaucrat and politician integrity, is a weak test in our setting. We provide other tests below that reveal politicians' integrity, not that of bureaucrats', as a robust correlate of service delivery. The available economic theory does not provide any predictions about whether bureaucrat or politician characteristics should matter more. We do not conclude from the results that bureaucrat traits don't matter, and indeed find that bureaucrats' altruism does show-up as a significant correlate in several specifications. Other bureaucrat traits might matter as well, but perhaps we are unable to discern it for a variety of reasons (we are underpowered; we have not measured the relevant traits well; local bureaucrats may be strategically appointed by national bureaucrats and politicians, making bureaucrat traits more endogenous to district characteristics which directly predict service delivery.) The one result that is revealed systematically by the data is that political quality (and specifically, the characteristic of integrity) matters significantly for the productivity of bureaucratic organizations.

All results presented so far document how politicians' integrity correlates with overall health scores. The details of the health service delivery index construction are presented in Appendix 9.3, but it's reasonable to assert that the weights attributed to each of the components, while linked to overall policy objectives, are somewhat arbitrary. This section decomposes the overall index in its individual indicators and evaluates the correlation between politicians' Integrity and each of the components. Figure 13 reports regression estimates of the coefficient on politicians' integrity, using the same specification as in column (2) of Table 5, but having each of the sub-components indicated as dependent variable. We standardize all components so that the coefficients are comparable across regressions.

The results reported in Figure 13 suggest that Politicians' integrity is robustly positively correlated with the majority of the components: the coefficient is statistically different from zero (at 10 percent level) for eight of the fourteen components, and point estimates are positive for all but four components. It suggests that an increase of 1 s.d. in integrity is correlated with a 0.4 s.d. increase in anti-Malaria coverage for pregnant women (IPT2 coverage); a 0.4 s.d. increase in the share of households having a latrine; and a 0.3 s.d. increase in the share of infants delivered in government or Private Non- Profit facilities. Higher politician' integrity is also positively correlated with measures of good administrative practice in the health sector, such as completeness and promptness of health facilities' reporting.

In a further robustness test on how much our finding depends on the measure of health outcomes, we replace the DLT score as dependent variable with the first component of a Principal Component Analysis (PCA) of the 14 health indicators. The first principal component used explains 22% of the variance in the sample [33]. We replicate the OLS specifications from Table 5 in Table 6, but using the first component as dependent variable. Results are broadly similar: estimates suggest that an increase of 1 s.d. in average politicians' integrity leads to an increase of 0.2-0.4 s.d. in the first component of health outcomes. Note that here,

[33]It's worth noting that the PCA has negative factor loading in four our of our fourteen variables: TB success rate, Completeness of monthly reports, Completeness of facilities reports and Reports sent on time. This means that higher values in these variables, which should reflect higher performance, has a negative effect on the first component.

using the first component of health outcomes instead of the health score, the estimated coefficient on politicians' integrity remain statistically different from zero in all specifications, even after including all of politicians' and bureaucrats' traits simultaneously. Furthermore, we reject in the specification in column(3) that the effect of bureaucrats' integrity is the same as politicians' integrity (p-value < 0.1).

We also investigate whether the correlation between politicians' integrity and health outcomes holds when we measure integrity for different groups of politicians. Table 7 presents results where the explanatory variable is the average Integrity Index of different groups of politicians. Column (1) replicates the result that, once we control for several District characteristics, a 1 s.d. in integrity is associated with a 0.23 s.d. increase in the health score. Column (2) through (4) assess how this result changes if we calculate the average integrity for each politician type: local councillors, chairperson and political contenders. Results are noisier and in no specification statistically different from zero. When we include all three integrity measures simultaneously, nonetheless, it is the average integrity of councillors that remains predictive: the coefficient is 0.27, very similar to estimates for the overall politician integrity, and the coefficients on both chairperson and candidates are much smaller and indistinguishable from zero[34].

In Figure 11 we repeat a similar exercise as performed for overall integrity, assessing the correlation between politicians' traits and each of the subcomponents in the overall health index. The results suggest that it is indeed councillors' integrity which drive the correlation with good service delivery: not only councillors' integrity is significantly correlated with health indicators such as IPT2 and antenatal coverage, but point estimates are often larger than those obtained using chairperson's or contenders' integrity measures. These results, disaggregated by type of politician, are somewhat sensitive to including health spending and age of district as controls– the estimates of the correlation with councillor's traits becomes noisier for some of the individual health indicators, while the estimates of correlation with chaiperson's traits become more significant.[35]

[34]Note, nonetheless, that in this specification we lose 10 observations since we do not have chaiperson/candidate observations for all districts.

[35]These results are not reported in the paper because including health spending reduces sample size by 3

As a final check of robustness, in Table 8 we examine whether other organizational characteristics, that have been highlighted in the literature, matter in our data and whether our main results are robust to including them. First, in column (1) we include as control an index of bureaucrats' perception on management quality[36]. Rasul and Rogger (2016), drawing upon Bloom and Van Reenen (2007), have documented a positive correlation between management practices and project completion in Nigeria. Including a variable on management practices does not change the positive effect of politicians' integrity, and the coefficient on the management variable is not statistically different from zero, although the point estimate is positive and large.

We also examine whether ethnic heterogeneity among the districts' bureaucrats and politicians play a role in service delivery in columns (2)-(3), as in the literature on the role of ethnic diversity in teams (Hjort, 2014) and in economic development more generally (Alesina and La Ferrara, 2005; Alesina et al, 2017). Our proxy for ethnic diversity is a Herfindahl Index of self-reported ethnicities. We first include as control the index for all surveyed individuals, and in column (3) we include separate herfindahl indices for bureaucrats and politicians. Once again the correlation between integrity and service delivery remains broadly unchanged. The point estimates on the herfindahl indices are small and not significant. In column (4) we include both ethnic diversity and management practices measure as controls; the coefficient on politician integrity remains significant, and with little change in size across all these different specifications.

Finally, we consider whether the integrity of different types of bureaucrats–those with greater leadership powers, such as the Chief Administrative Officer (CAO) and the Resident District Commissioner (RDC), versus those within the technical health bureacracy, such as the District Health officer– matters for service delivery, and whether this disaggregation by bureaucrat type changes the results for political integrity. We calculate the integrity in-

observations, owing to missing values for 3 districts. The overall significance of average political integrity is unchanged. We discuss further in the next section that the sensitivity when including age of district is owing to significantly lower integrity of chairpersons in young districts, as erstwhile councillor positions are converted to chairperson positions with the carving-out of a new district from a councilor's seat.

[36]It includes six questions on whether bureaucrats believe that senior management recruit and promote the best employees.

dex separately for the leaders of the bureaucratic organization - CAOs and RDCs - and for bureaucrats working in the health sector, and include these in the specification reported in column (5). The coefficient on bureaucratic leaders' integrity is very small in magnitude, while that for health bureaucrats is somewhat larger but noisily estimated. More importantly, we see no difference in the results on politicians' integrity.

5 Correlates of integrity

The previous section documented a robust correlation between politicians' integrity, in particular that of local councillors', and health outcomes. While we are not in a position to identify an exogenous source of variation in political integrity, we would like to explore where variation in integrity might be coming from by exploring its covariates in the data. Our question in this section is therefore: which variables predict high integrity among politicians?

We start this analysis by presenting disaggregated data on behavioral traits by type of politician; do Councillors and elected Chairs, or contenders vs. elected Chairs, differ systematically from one another? Table 9 presents average characteristics of Chairpersons, non-elected contenders for Chairperson and Councillors. The first overall finding is that Councillors underperform elected Chairpersons and contenders for that position: they are much less educated, perform worse in the cognitive test and score lower in Integrity and Non-Cognitive measures. Among those who ran for Chairperson, differences are less systematic between winners and losers: winners seem to perform slightly worse in Integrity and Non-Cognitive measures, but estimates are noisy. The one significant and meaningful difference is in the asset index, suggesting winners come from wealthier households than those defeated.

We then proceed to evaluate whether politicians' integrity is consistently correlated with Districts' socio-economic and political characteristics and individuals' observable traits. Column (1) of Table 10 presents estimates for all politicians, while columns (2)-(4) restrict the sample to Chairpersons, Contenders to Chairperson and Councillors, re-

spectively. Two results are worth noting. One, electoral competition is associated with higher political integrity among winning candidates; and two, younger districts tend to have worse integrity among chairpersons. Lower competitiveness, as measured by the average Herfindahl index for councillors, is correlated with worse integrity in the pooled sample, as well as separately for elected chairpersons and councilors (significant at the 10 percent level). Chairperson integrity is lower in younger districts–those that are carved out of sub-district units which used to be the seats of councillors. This result is consistent with the general finding that councillors tend to have worse integrity than chairpersons, as chairpersons in younger districts are more likely to come from the pool of councillors. Theoretical models of candidate entry into political markets (Caselli and Morelli, 2004; Mattozzi and Merlo, 2008; Leon, 2013) may be extended to account for the empirical pattern we observe–that politicians in lower-level positions have worse integrity. Politicians in lower-level positions of councillors face greater challenges in signaling their type to voters, because their actions and impact on service delivery outcomes are harder to discern, since they have fewer formal powers over service delivery compared to higher-level actors. For example, lower-level politicians can claim that service delivery failures are all due to lack of funding being provided by senior district and national-level leaders. Therefore, following the logic of the theoretical literature, "bad" types may be more likely to enter as candidates, and win, in lower-level positions compared to higher levels. However, other strands of literature would suggest that voters have more information about more local politicians, perhaps because they are closer to their social networks (Munshi and Rosenzweig, 2008; Casey, 2015). Our finding of lower integrity among more local politicians is therefore a puzzle that cannot be easily explained by arguments available in the literature.

In other results, politicians from more urban Districts score worse on the integrity index. Older politicians and those with a post-graduate degree score higher, on the other hand. These results, however, are not very robust when we restrict the sample to different kind of politicians: standard errors of estimates become very large and coefficients often change signs. Furthermore, estimates for region fixed-effects are not significant, suggesting that average integrity of politicians does not vary substantially after accounting for

other observables. Therefore, the evidence suggests that, as far as measured, politicians' integrity is not systematically correlated with Districts' socio-economic characteristics (that is, characteristics other than electoral competition).

We also examine the correlation between integrity and other behavioral traits. In documenting bivariate correlations between integrity and a wealth of personal characteristics, we follow Cantone et al. (2016) and present p-values adjusted for multiple hypotheses testing. Table 11 presents these correlations using the disaggregated components of behavioral indices explored above. Both Public Sector Motivation and Non-Cognitive traits are positively correlated with reported Integrity. In particular, politicians scoring higher in Commitment to Public Interest, Social Justice, Compassion and Self-Sacrifice (PSM indicators), and Extraversion, Conscientiousness and Decision Making (Non-Cognitive measures) also score higher on the Integrity Index. Cognitive ability, Altruism or Risk-Aversion are not significantly correlated with integrity; there is also no correlation with gender or household asset index. While completing college is not a significant predictor, having a post-graduate degree is significantly correlated with higher integrity.

Having shown that several of the behavioral traits are systematically correlated with higher integrity among politicians, we proceed to evaluate whether these individual correlations hold when we keep fixed other characteristics. Table 12 presents the estimated coefficients of a regression with politicians' Integrity Index as dependent variable, and also include District fixed effects. Several of the patterns presented above hold in a multivariate regression setting: measures of PSM and Non-Cognitive ability (Big Five) are strong correlates of individual integrity. Among measures of public sector motivation, politicians with higher Commitment to Public Interest and Compassion also score higher on Integrity, while for non-cognitive measures Extraversion and Conscientiousness feature as prominent correlates.

The pattern of correlation between integrity and Conscientiousness, and between integrity and one particular component measure of the Public Service Motivation index– Commitment to Public Interest– suggests that the influence on bureaucratic productivity of political selection is occurring through greater intrinsic motivation to perform assigned

duties (Conscientiousness), as well as, possibly, greater pro-social preferences (Commitment to Public Interest) which motivate agents to deliver public goods such as public health. Future work on political and bureaucratic selection in local bureaucracies could focus on better measuring pro-social preferences, and attempt to disentangle the roles of different sources of non-pecuniary motivation, whether arising from integrity or conscientiousness to do one's job as tasked, or, preferences for public goods. The currently available measure of Public Service Motivation is drawn from a literature focused on American bureaucracies and the political context of the United States (Perry, 1996) and needs greater testing and validation in poor country contexts. As mentioned before, we regard the results we present here as just a start, albeit an important first step, towards closing the empirical gap between theory and empirics on the role of non-pecuniary motivation in shaping productivity of bureaucracies.

6 Discussion of mechanisms

The interpretation we offer of the robust correlation between political integrity and health service delivery is that in districts where higher integrity politicians are endogenously selected, these politicians are more motivated to perform their multiple roles within the complex organization of district bureaucracies to improve public health, including sensitizing citizens to the value of health services, and monitoring and supporting health workers at the frontlines to deliver. As discussed in section 2, government institutions in Uganda explicitly provide a role to locally elected politicians to monitor and facilitate service delivery, working as liaisons between citizens and the technocrats in charge of delivering nationally-mandated programs. In particular, primary health and education services in Uganda have been examined in prior research as areas where local politicians exercise influence (Akin et al, 2005; Reinikka and Svensson, 2004; Brosio, 2000). This prior research has, in fact, raised concerns about local political accountability for providing public goods and managing fiscal resources. For example, Akin et al (2005) argue that district governments are more likely (than the center) to spend on private goods rather than public goods.

Brosio (2000) refers to opinion surveys of local councilors in Uganda to suggest that these councilors are more concerned about paying themselves allowances rather than ensuring that health facilities are well equipped with drugs and implements. In a celebrated study of "leakage" in public spending, Reinikka and Svensson (2004) suggest that local politicians diverted funds from a national transfer of capitation grants intended for schools, and instead used these funds for their political campaigns. In such an environment, higher integrity politicians can be reasonably expected to differ in their motivation and therefore in the degree to which they positively influence service delivery. However, there are competing, alternate explanations that we consider below.

Perhaps the most important alternate explanation is that underlying (unobserved) conditions of household demand for health, or social norms that facilitate health service delivery, may be simultaneously shaping the selection of politicians and service delivery performance, with no direct connection between the two. Other explanations centered around omitted variables, that local economic and political conditions are driving both political selection and health services, are somewhat attenuated by our ability to control for local area poverty estimates, education, and electoral competition (as reported in the results section). However, citizen demand and social norms are harder to account for. We argue that two variables–locally headquartered radio stations, and vote share of the national political leader–are likely to go a long way towards mopping-up the direct influence of citizen demand and social norms. These are, in fact, the only two other variables, other than political integrity, that are robustly significant in explaining variation in health service delivery. However, the significance of political integrity survives the inclusion of these variables. This suggests that political selection plays an additional and independent role in shaping service delivery, through the behavior of politicians. Nevertheless, the coefficient on political integrity that we are able to estimate can be biased because of omitted variables, such that our results cannot be extended to predicting the size of any service delivery impact of random assignment of politicians of higher integrity.

What about reverse causality? This is the other problem to consider when exploring how to interpret a robust empirical correlation in the data. Would places with better health

services be more likely to select better politicians? There is nothing in the voluminous literature on Uganda that would support such an interpretation. One reason to doubt it is that the health services being measured are related to maternal and child mortality, rather than to adult human capital, such as through education, which may shape political behavior such as deciding whether to vote for corrupt or clean candidates. We use data on districts' average students' score at the UCE, a nationally administered exam students take at the end of lower secondary school, as the best available proxy for education in the population. There is indeed a positive correlation between better education outcomes and better health service delivery. However, including or excluding the education variable does not change the coefficient on political integrity.

Another way to think about reverse causality is consistent with our preferred interpretation of mechanisms (that politicians of higher quality take better actions to improve service delivery): if experience with better health services gives citizens greater trust or confidence in local institutions, and thus makes them more likely to select clean candidates, part of the reasons why they would do so is because of the expectation (that should be fulfilled if this were the equilibrium) that clean candidates will be able to do a better job of ensuring service delivery. There is a specific role district councilors are supposed to play to monitor health facilities. If active citizens choose better quality politicians, by that very logic, we may reasonably expect them to choose politicians who can do a better job monitoring the health facilities. Hence, the proximate reason behind the correlation of political integrity and service delivery would, logically, be more active politicians.

In ongoing work in a seperate research project in the district of Hoima, we discover qualitative evidence of the role of local politicians (Ferraz, Habyarimana, and Khemani, ongoing). We held meetings with district bureaucrats and politicians and asked them to deliberate upon the most important problems of their district and what they could do to improve the situation. Health services were identified by the local politicians in Hoima as the most important problem, and the role of local politicians was highlighted to empower technical officials to deliver it. Interestingly, our data shows that Hoima's district councilors have significantly higher integrity than councilors in other districts, although they

are undistinguished on other selection traits.

In the course of the deliberations in Hoima, the District Health Officer is recorded as saying: "*We as technical people, we need support from different leaders*", to which the directly elected district chairperson responds as follows: "*And as leader, I want to promise total political support to my technical team, where it is necessary… political support, we shall not interfere with what you are doing in line with health. So we should also empower our health workers, down on ground that you are in charge, feel yourself that you are in charge and when you're commanding for example the health in-charge your staff, let them feel that you are the boss of that health facility and they are supposed to do what you have directed them to do. Be empowered that you are the boss and you want something to happen as we have agreed here. That empowerment is what am talking about*". In another part of the discussion, the same politician talks about the importance of lower-level politicians–the councilors–monitoring health facilities: "*Our parish chiefs must make sure that they are monitoring our facilities and write reports, the parish chief can report to our sub county chief, then the sub county chief writes a report to the DHO, then the DHO writes a report to the CAO. So that now the CAO can present such ideas for action and adjustments where necessary. So that is what we are now going to plan to put into place… to enforce because it is in the existence...*". This exchange suggests that local politicians can play both negative and positive roles in the delivery of services–interfering to obstruct versus monitoring to facilitate better services.

The integrity of local politicians can be expected to matter in whether they obstruct or support the technical officers in delivering services within the complex organization of local government. For example, if local politicians are colluding with health service providers to extract rents from the health facility, they may obstruct disciplinary action by district management. In another study, in Pakistan, Callen et al (2014) find that doctors with connections to political leaders are more likely to be absent from public health clinics, and the public officials who manage these doctors are more likely to report political interference when trying to apply sanctions. In a study in Uganda, in the district of Arua (which is in our sample, and has significantly lower average political integrity compared to Hoima), Grossman, Platas and Rodden (2018), report qualitative evidence that the Medical

Officer In-charge of a health center had been absent for several months, and that it took a community-wide meeting facilitated by external actors to get this issue to be reported to the district leaders and prompt them to take disciplinary action. In such a setting, the integrity of local polticians who are supposed to monitor and make reports to management, can play a direct role in whether the politicians take actions that improve or discourage service delivery. Grossman, Platas and Rodden (2018) also provide qualitative evidence that district bureaucratic leaders rely on local councilors to resolve service delivery problems raised by citizens, since these councilors are located at the sub-district level where service delivery happens, and are equipped to mediate between citizens and frontline service providers. The results of Groassman et al's (2018) evaluation of a citizen engagement intervention in Arua shows that these interventions targeted at increasing citizen activism did not impact health service delivery. This evidence supports our interpretation that citizen activism alone cannot explain the correlation between political quality and service delivery; actions by local politicians are likely to be the proximate route through which political quality matters.

7 Conclusion

This paper contributes to understanding local state capacity to deliver public goods. In a recent review, Dal Bo and Finan (2016) list as an open question the effect of decentralization on the delivery of public goods, despite more than two decades of policy effort towards establishing local governments in poor countries. The research agenda has shifted away from comparing centralized versus decentralized provision of public goods towards examining principal-agent relationships within myriad complex organizations of government. Key findings from available research are in the nature of confirming basic economic principles such as: pay for performance tends to strengthen incentives and improve service delivery (Banerjee et al, 2008); higher wages can improve the selection of state personnel (Dal Bo et al, 2013); and monitoring can reduce corruption (Olken, 2007).

The open question which is particularly relevant for policy-makers in Africa and other

developing regions is how to structure principal-agent relationships in frontline jurisdictions of government, that is, the local governments which implement national policies and deliver spending programs. Local bureaucracies are tasked with multiple complex jobs, such as managing cadres of health workers and teachers to deliver basic health and education services on which poor households rely, and implementing infrastructure programs for local agriculture and economic growth. Finan et al (2015) conclude their review of the personnel economics of the state with the observation that when government bureaucracies have to perform multiple complex tasks, questions of how to structure the principal-agent relationships within these bureaucracies receive few answers from existing research. This paper is beginning to fill the gap.

We provide evidence consistent with economic theory of complex principal-agent relationships in which non-pecuniary motivation and selection of different types of agents influence organizational productivity. We gather unique survey data to measure selection traits–integrity, altruism, personality, public service motivation, risk aversion, cognitive ability–of bureaucrats and politicians who make-up the complex organization of local government to provide the first evidence of whether (which) selection traits are correlated with organizational productivity. We provide robust evidence that it is political integrity in particular that matters for service delivery, to the exclusion of other traits. This evidence is particularly relevant for understanding local state capacity for policy implementation in poor countries. This is because budget and human resource constraints in poor countries can limit the extent to which highly trained professionals can be attracted to the public sector, or be given sufficient incentives to make them accountable for their performance. On the other hand, politics is flourishing in poor countries– with widespread participation of citizens as voters and as contenders for political leadership at local levels (World Bank, 2016a)–whether for ill or good. The evidence in this paper shows that local politicians can exert significant influence over the functioning of bureaucracies at the frontlines. Policy efforts to build capacity of the local state would do well to take seriously the role of political selection, going beyond incentives, when crafting the principal-agent relationships (who is tasked with doing what) in local bureaucracies.

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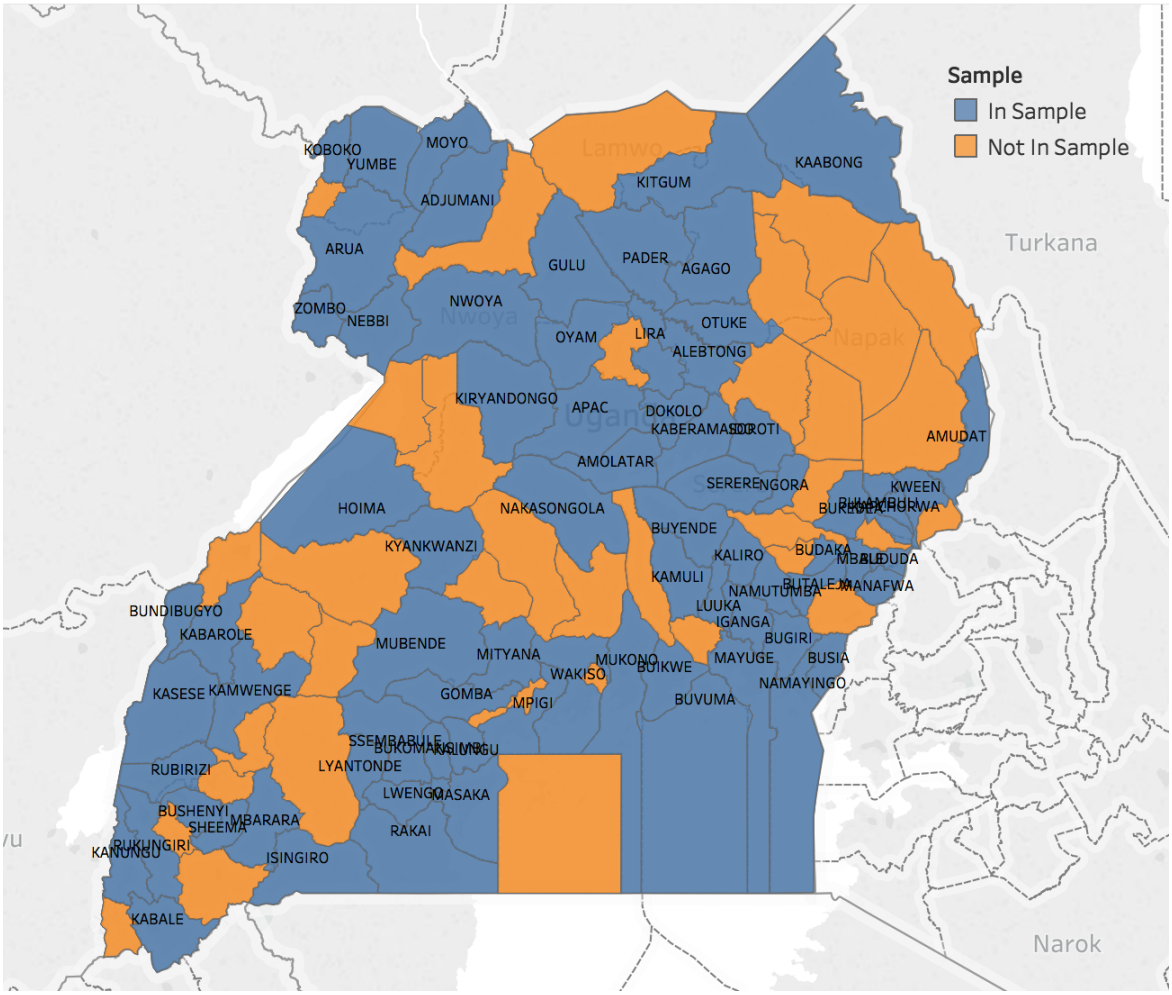


Figure 1: Districts of Uganda - Survey Sample

Table 1: Politicians vs. Bureaucrats - Demographics

	Bureaucrat	Politician	Diff	p-value	N
Individual characteristics					
Female	0.18	0.34	0.16	0.00	2126
Age in years	45.81	46.36	0.55	0.15	2126
Born in district where works	0.39	0.78	0.38	0.00	2126
Household characteristics					
Household members	7.94	9.48	1.54	0.00	2125
Owns a car (percentage)	0.64	0.46	-0.18	0.00	2122
Owns a TV (percentage)	0.93	0.74	-0.18	0.00	2119
Owns a computer (percentage)	0.74	0.49	-0.25	0.00	2120
Owns a DVD (percentage)	0.84	0.68	-0.16	0.00	2119
Owns a fridge (percentage)	0.69	0.47	-0.21	0.00	2119
Owns a gas stove (percentage)	0.39	0.24	-0.15	0.00	2118
Asset index - total	2.27	1.66	-0.61	0.00	2123
Individual education					
Less than Secondary	0.00	0.21	0.20	0.00	2125
Less than College	0.04	0.29	0.25	0.00	2125
Complete College	0.47	0.40	-0.07	0.00	2125
Masters/PhD	0.49	0.11	-0.38	0.00	2125

Note: This table compares average characteristics of politicians and bureaucrats. Column (1) reports the average characteristic for all politicians, while column (2) does the same for bureaucrats. Details about the construction of variables are presented in the Annex. Column (3) presents the difference between politicians' and bureaucrats' means. Column (4) presents the p-value of a test with null hypothesis of equal means. Column (5) reports the number of observations with non-missing values in each test.

Table 2: Politicians vs. Bureaucrats - Selection Traits

	Bureaucrat	Politician	Diff.	p-value	N
Panel A: Integrity measures					
OK to spread rumors	0.05	0.11	0.06	0.00	2124
OK to borrow without permission	0.02	0.04	0.02	0.01	2124
Not a sin to exaggerate credentials	0.12	0.17	0.05	0.00	2124
Follow authorities orders	0.14	0.22	0.07	0.00	2124
No blame if group does the same	0.04	0.09	0.05	0.00	2124
OK to take credit for others' ideas	0.20	0.23	0.02	0.21	2124
Some people lack feelings to be hurt	0.11	0.13	0.02	0.18	2124
People are mistreated for a reason	0.31	0.36	0.05	0.02	2124
Integrity Index	0.12	-0.20	-0.32	0.00	2124
Panel B: Non cognitive measures					
Extraversion	2.88	3.07	0.19	0.00	2126
Conscientiousness	3.34	3.24	-0.09	0.00	2126
Openness	3.11	3.11	-0.01	0.75	2126
Emotional Stability	2.88	2.87	-0.01	0.72	2126
Agreeableness	2.94	3.06	0.12	0.00	2126
Big five index (mean of z-scores)	-0.04	0.08	0.12	0.01	2126
Grit	2.72	2.68	-0.04	0.07	2126
Decision making	3.26	3.13	-0.13	0.00	2126
Hostile Bias	3.05	2.91	-0.14	0.00	2126
Other Non-Cognitive Index (Grit,Decision,Hostile)	0.12	-0.21	-0.34	0.00	2126
Non-Cognitive index (Big Five + Others)	0.02	-0.04	-0.07	0.13	2126
Panel C: Public Sector Motivation					
Attraction to Policy Making	3.51	3.51	0.00	0.83	2126
Commitment to Public Interest	4.08	4.07	-0.01	0.55	2126
Social Justice	4.09	4.08	-0.00	0.80	2126
Civic Duty	4.05	4.10	0.05	0.00	2126
Compassion	3.75	3.67	-0.07	0.00	2126
Self-Sacrifice	4.05	4.14	0.08	0.00	2126
PSM Index	-0.01	0.02	0.04	0.43	2126
Panel D: Cognitive and risk profile measures					
Altruism - percentage shared	0.29	0.32	0.04	0.00	2125
Choose dominated risk option	0.10	0.13	0.03	0.04	2126
Risk-aversion (1-5)	3.72	3.91	0.19	0.01	1869
Cognitive ability - Number of digits remembered	5.52	5.25	-0.28	0.00	2126

Note: This table compares average characteristics of politicians and bureaucrats. Column (1) reports the average characteristic for all politicians, while column (2) does the same for bureaucrats. Details about the construction of variables are presented in the Annex. Column (3) presents the difference between politicians' and bureaucrats' means. Column (4) presents the p-value of a test with null hypothesis of equal means. Column (5) reports the number of observations with non-missing values in each test.

Table 3: Selection Traits - Correlations

	Education	Cognitive	Big Five	Non-Cognitive	Integrity	PSM	Altruism
Education	1						
Cognitive	0.0380	1					
Big Five	0.0339	0.0435*	1				
Non-Cognitive	0.0736***	0.0776***	0.912***	1			
Integrity	0.0451*	0.0512*	0.159***	0.218***	1		
PSM	0.0584**	0.0284	0.353***	0.385***	0.273***	1	
Altruism	-0.0164	0.0615**	0.102***	0.102***	0.00573	0.0728***	1

Note: All figures in this table refer to a pooled sample of bureaucrats and politicians.

Table 4: Descriptive Statistics - District Level

	Mean	SD	p50	N
Panel A - Health outcomes				
DPT3 Coverage	100.77	20.50	98.20	75
Deliveries in govt and PNFP facilities	47.78	17.56	46.80	75
OPD Per Capita	1.22	0.48	1.10	75
HIV testing in children born to HIV positive women	93.26	83.69	71.60	75
Latrine coverage in households	75.21	16.18	78.20	75
IPT2	53.89	11.59	54.00	75
ANC4	34.69	10.92	33.80	75
TB success rate	79.91	12.98	81.90	75
Approved posts that are filled	70.15	20.08	70.20	75
Monthly reports sent in on time (3)	88.87	11.64	92.40	75
Completeness monthly reports (2)	84.39	28.88	100.00	75
Completeness facility reporting (3)	95.99	7.03	99.50	75
Completeness of the annual report (2)	70.85	34.19	84.80	75
Medicine orders submitted timely	94.00	10.22	96.40	75
Total Score Health DLT	73.30	7.25	75.00	75
Panel B - District socio-economic characteristics				
District Population	324001.89	251864.32	251512.00	75
Urban population share	0.13	0.09	0.11	75
Poverty rate 2013	0.23	0.16	0.23	75
Number of radios (HQ)	1.89	3.06	1.00	75
Voter Attachment to National Party - 2011	0.68	0.15	0.70	75
Average Score UCE - 2011	53.37	3.31	54.04	75

Note: This table presents descriptive statistics of health outcomes and characteristics of the 75 Districts included in the survey. Health outcomes are from the District League Tables produced by the Ministry of Health. The remaining district characteristics are from the 2010 Census and the Uganda Electoral Comission - details on the variables are provided in the Appendix.

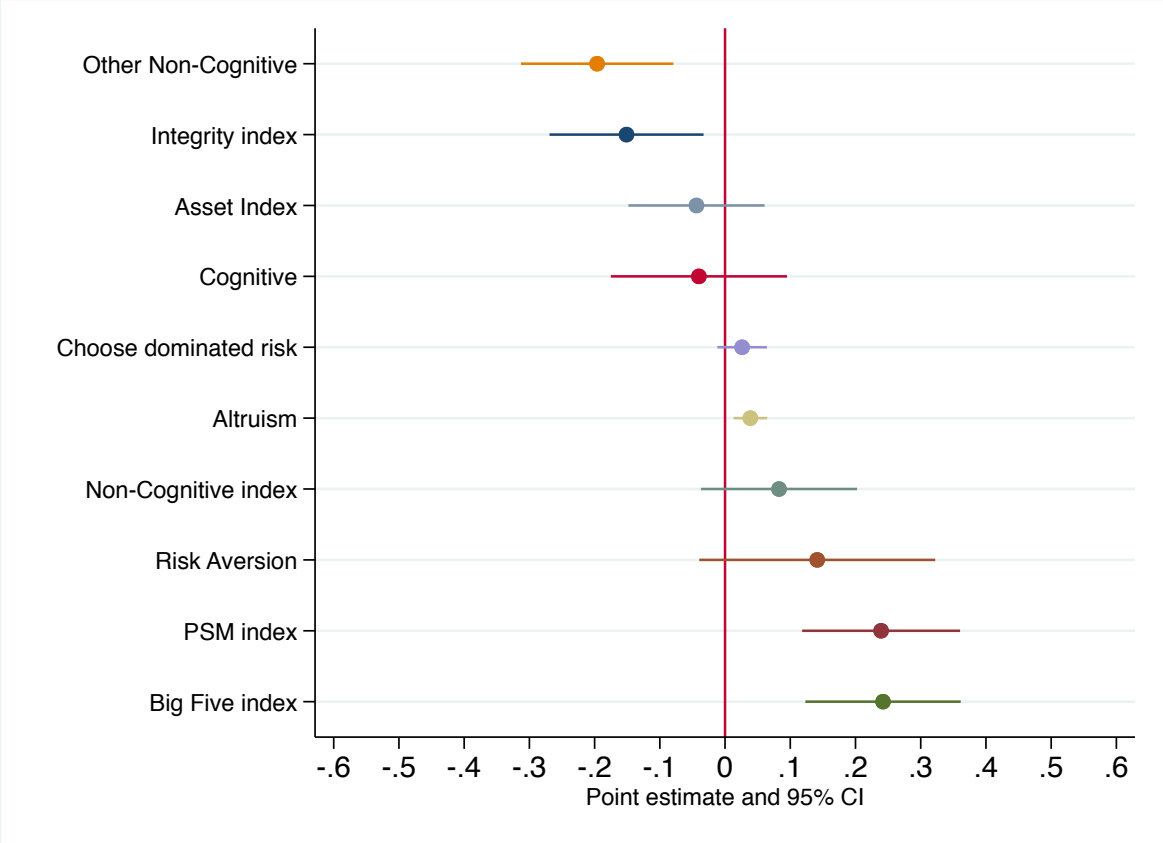


Figure 2: Politician vs. Bureaucrats Selection Traits

Note: This graph reports point estimates and 95 percent CI for the coefficient on "Politician" dummy variable, in regressions with selection traits as dependent variable and district fixed-effects and individual characteristics (gender, age education, household size and father education) as controls. Each reported coefficient refers to a separate regression.

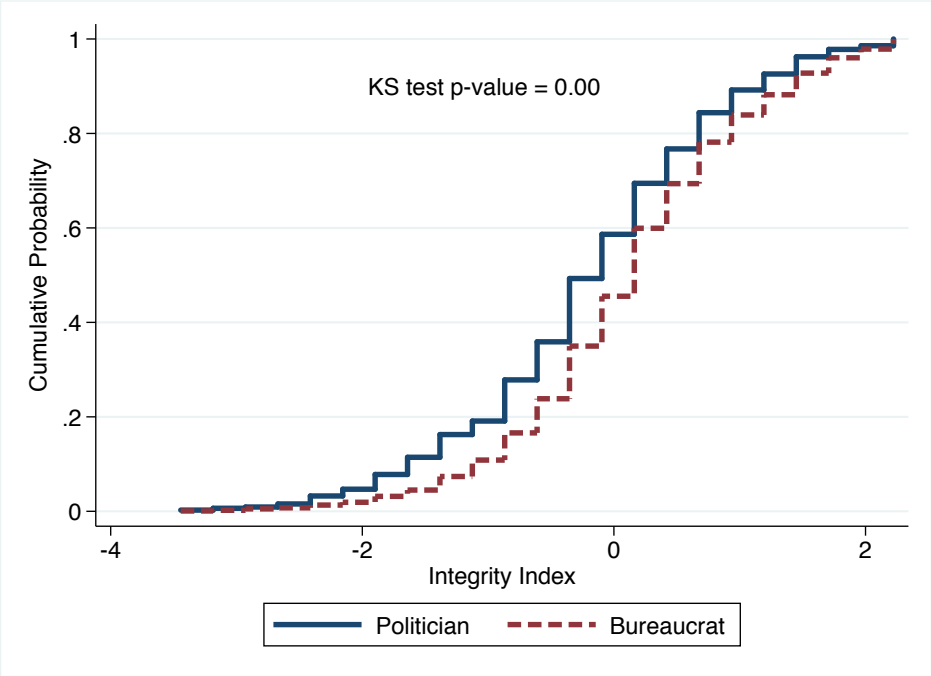
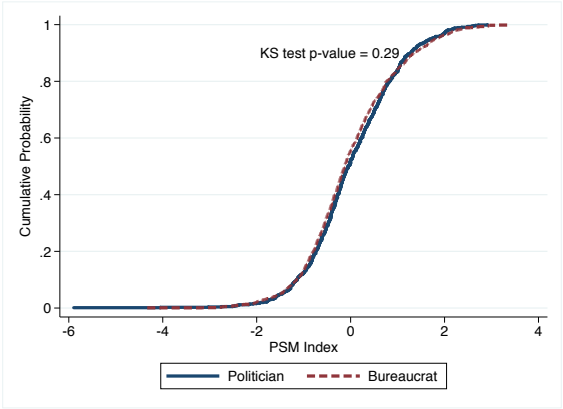
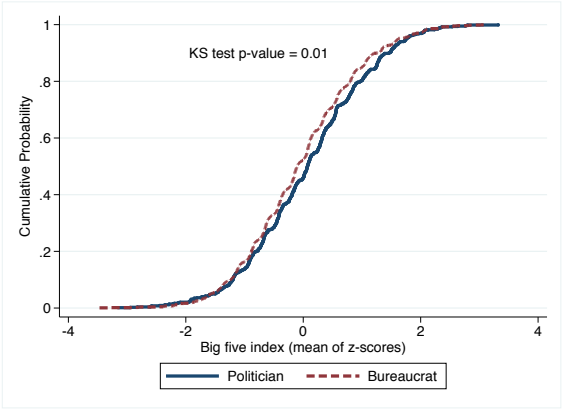


Figure 3: Integrity

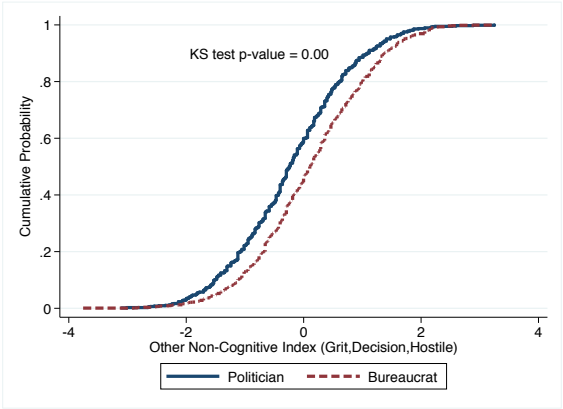
Note: The graph presents the cumulative distribution function for the Integrity index, separately for politicians and bureaucrats. It also reports the p-value for the Kolmogorov-Smirnov (KS) test, under the null hypothesis of equality of distribution.



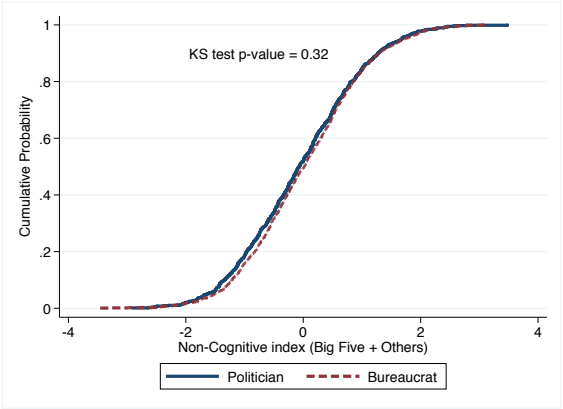
(a) Public Sector Motivation index



(b) Big Five Personality index



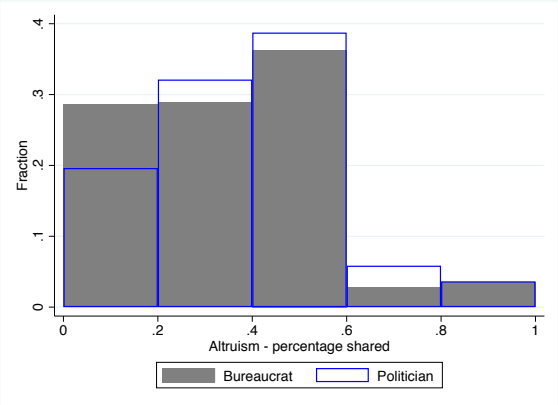
(c) Other Non-Cognitive Traits Index



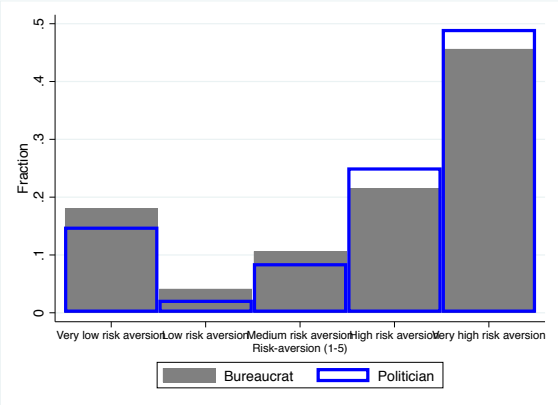
(d) Overall Non-Cognitive index

Figure 4: Distribution of Selection Traits - CDF

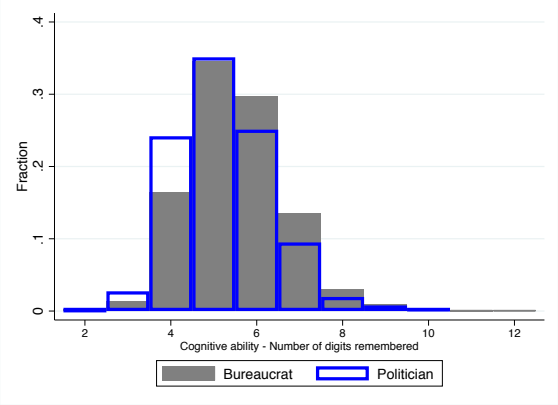
Note: The graphs present cumulative distribution functions for selection traits, separately for politicians and bureaucrats. It also reports the p-value for the Kolmogorov-Smirnov (KS) test, under the null hypothesis of equality of distribution.



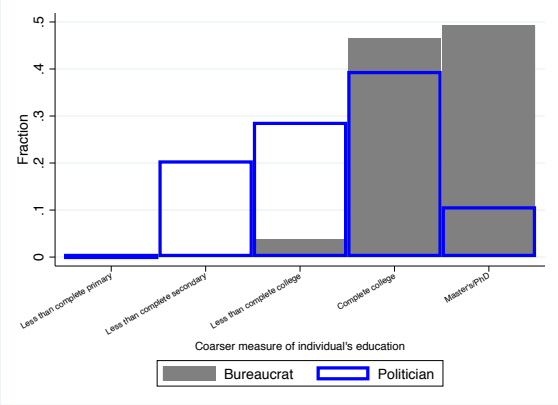
(a) Altruism



(b) Risk Aversion

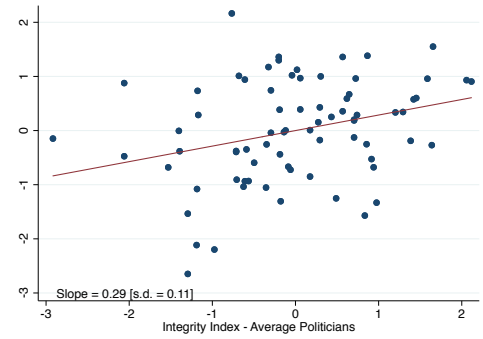


(c) Cognitive Ability

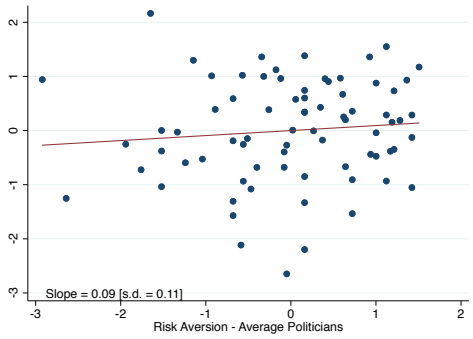


(d) Education level

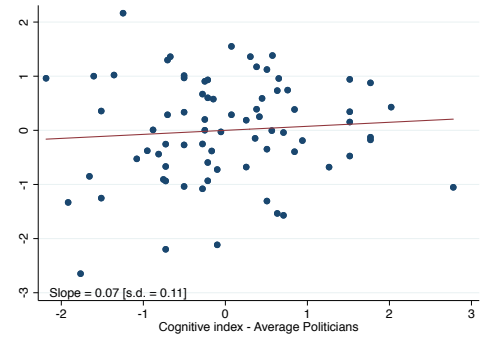
Figure 5: Distribution of Selection Traits



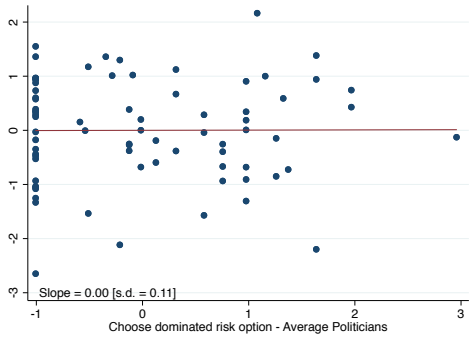
(a) Integrity Index



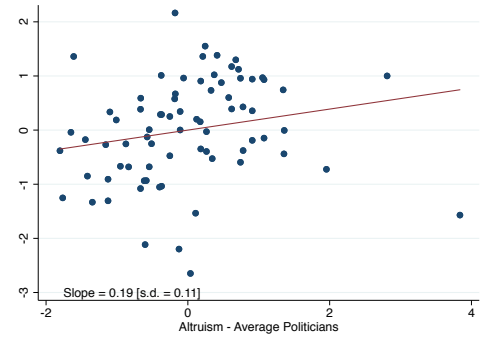
(b) Risk Aversion



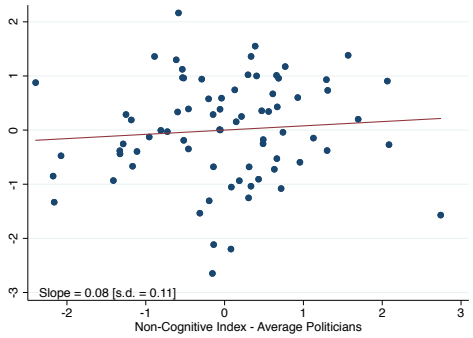
(c) Cognitive Index



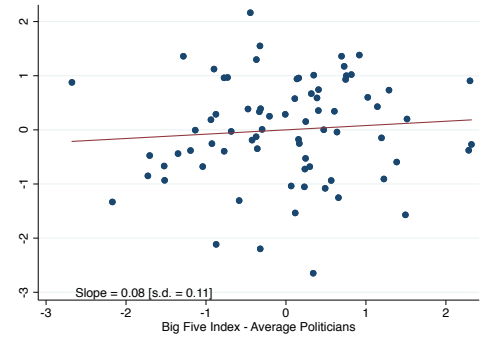
(d) Dominated Risk Option



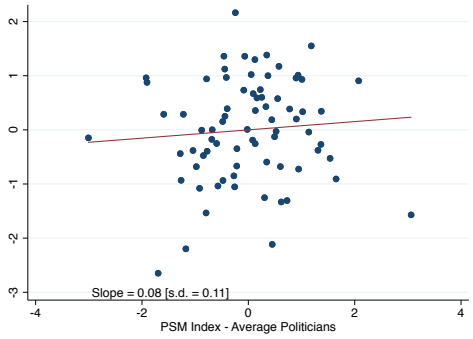
(e) Altruism



(f) Overall Non-Cognitive Index



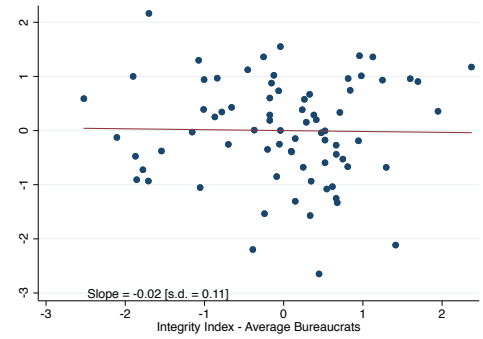
(g) Big Five Personality index



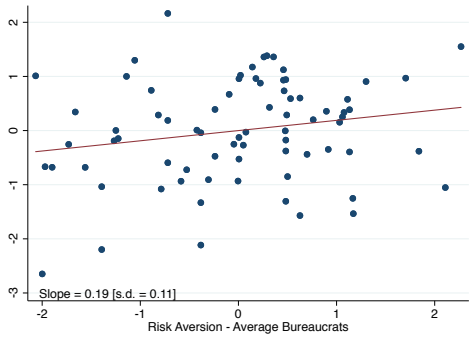
(h) PSM index

Figure 6: DLT Score vs. Selection Traits - Politicians

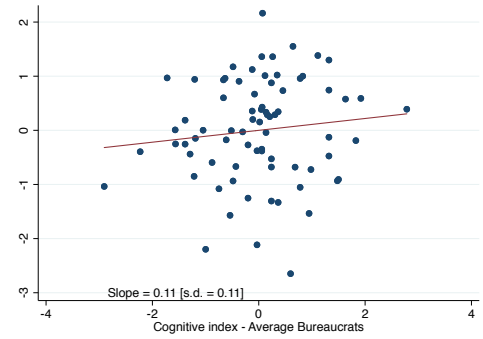
Note: The graphs present scatter plots, at the District Level, between the residual of a regression of DLT Score on District poverty rates, and selection traits of interviewees.



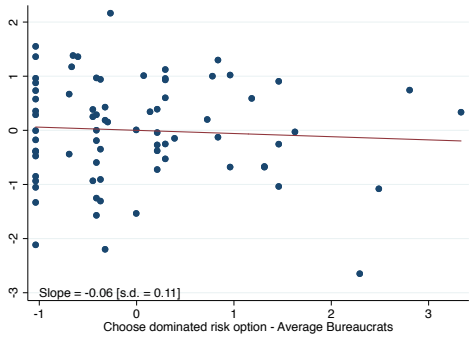
(a) Integrity Index



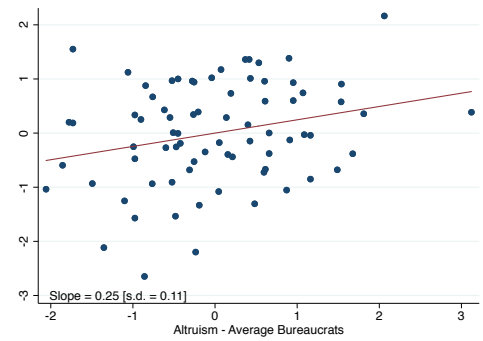
(b) Risk Aversion



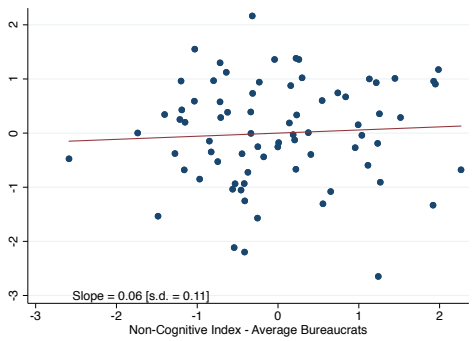
(c) Cognitive Index



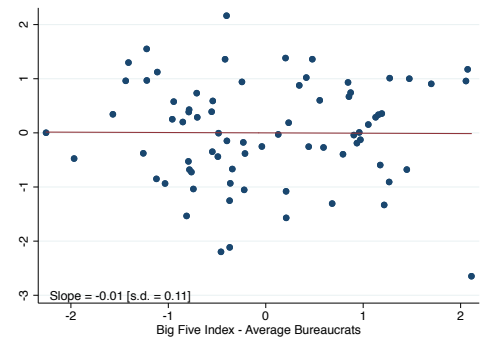
(d) Dominated Risk Option



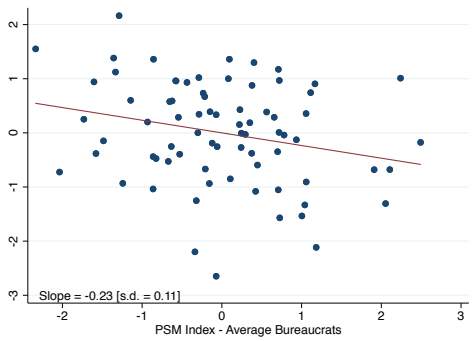
(e) Altruism



(f) Overall Non-Cognitive Index



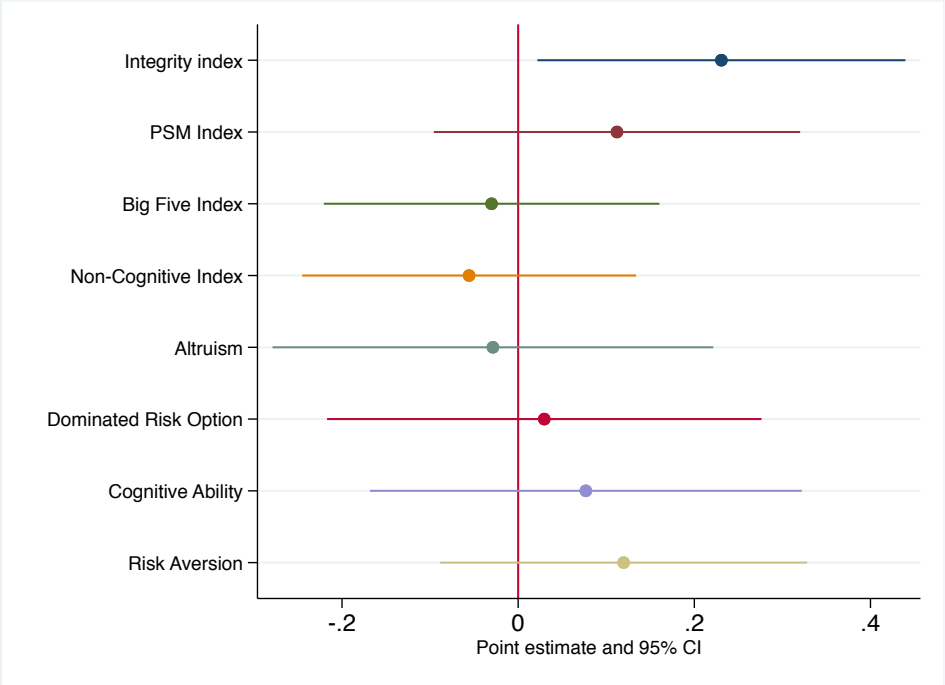
(g) Big Five Personality index



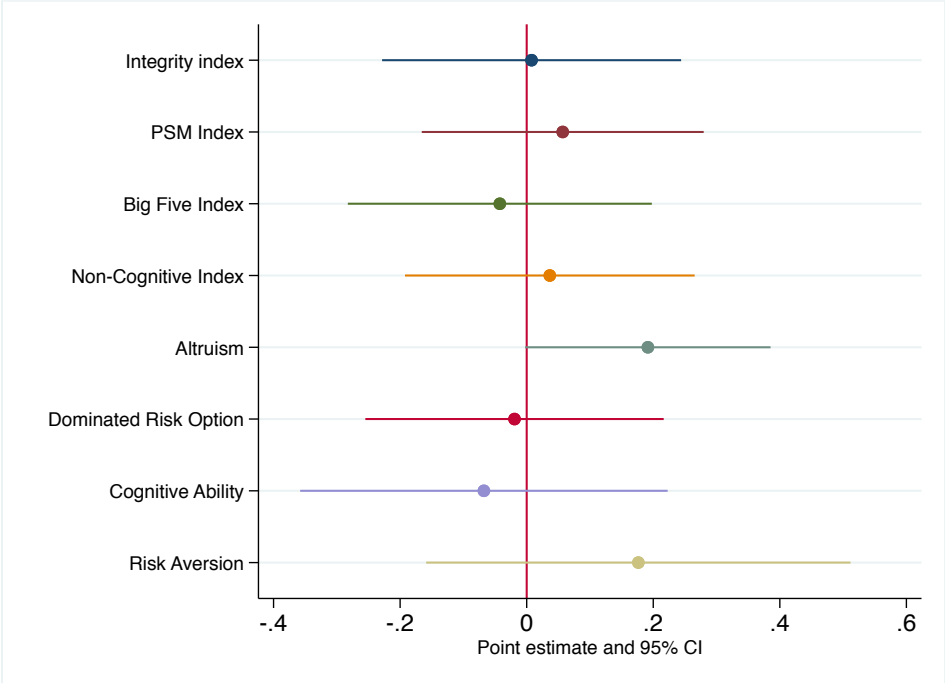
(h) PSM index

Figure 7: DLT Score vs. Selection Traits - Bureaucrats

Note: The graphs present scatter plots, at the District Level, between the residual of a regression of DLT Score on District poverty rates, and selection traits of interviewees.



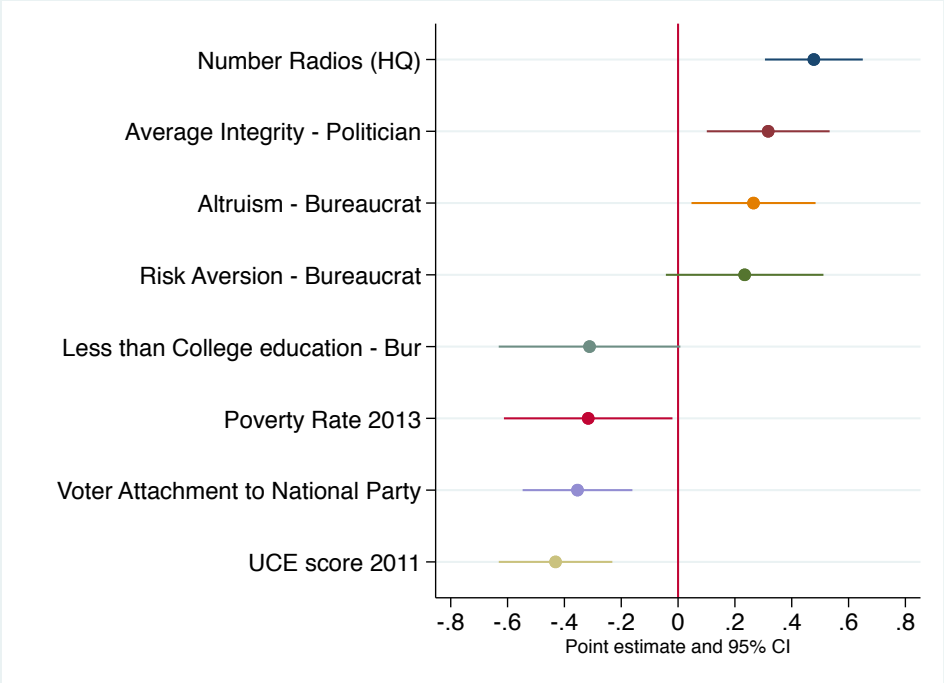
(a) Politicians' Traits



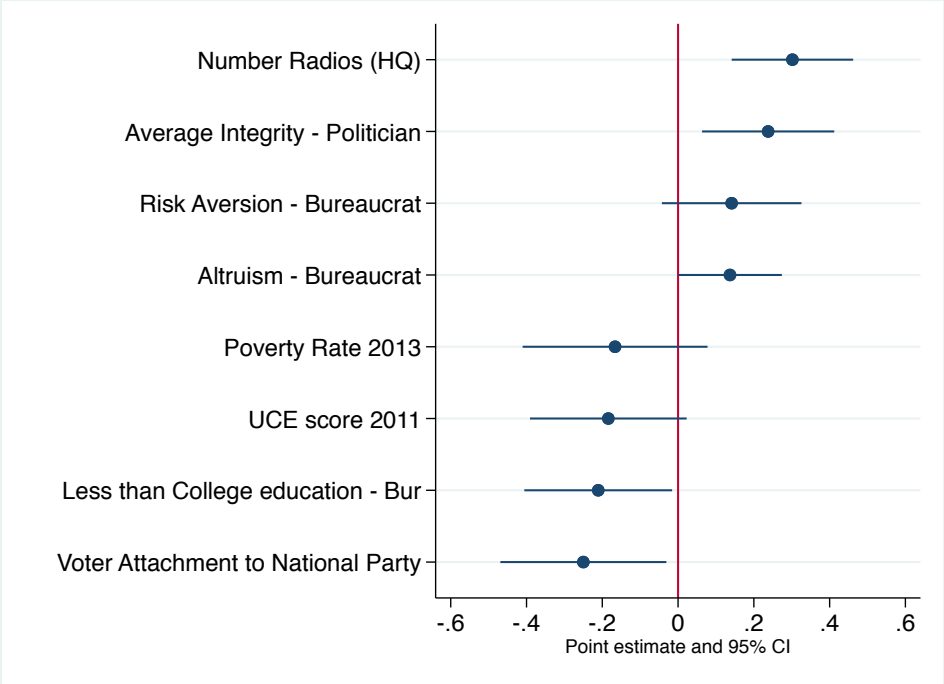
(b) Bureaucrats' Traits

Figure 8: DLT Score vs. Selection Traits

Note: These graphs report the point estimate and 95 percent CI for the coefficient on selection traits in regressions using District level DLT Score as dependent variable. Each coefficient refers to a separate regression with non-reported controls including regional dummies, log total population, poverty rate, share of urban population, number of radio stations' HQs, vote share of the presidential candidate of the NRM, herfindahl index for councillors' votes and average students' score on UCE. CI are constructed using robust standard errors.



(a) Bivariate Regressions



(b) Multivariate Regression

Figure 9: Robust Correlates of Health Service Delivery - LASSO selection

Note: This graph reports the point estimate and 95 percent CI for the coefficient on the variable in the axis, in a bivariate regression using District level health outcomes as dependent variables. CI is constructed using robust standard errors. The variables used here are those previously selected in a LASSO model. All variables are standardized to have unit standard deviation.

Table 5: Correlates of Health Service Delivery

	(1)	(2)	(3)	(4)	(5)
Integrity Index - Average Politicians	0.317***	0.231**	0.219	0.218	0.163
	(0.108)	(0.104)	(0.137)	(0.137)	(0.145)
Integrity Index - Average Bureaucrats				0.024	0.232
				(0.167)	(0.169)
Poverty rate 2013		−2.316	−1.958	−1.959	−0.664
		(1.642)	(1.263)	(1.279)	(0.954)
Log Total Population		0.057	0.223	0.209	−0.248
		(0.250)	(0.273)	(0.300)	(0.334)
Urban population share		−1.157	−0.920	−0.940	−1.217
		(1.719)	(1.636)	(1.665)	(1.852)
Average Score UCE - 2011		−0.062	−0.106**	−0.106**	−0.105**
		(0.042)	(0.047)	(0.047)	(0.049)
Voter Attachment to National Party - 2011		−1.459	−2.054	−2.082	−3.123*
		(1.098)	(1.409)	(1.443)	(1.545)
Average Herfindahl index - Councilor		0.004	0.003	0.003	0.009
		(0.014)	(0.014)	(0.014)	(0.016)
Number of radios (HQ)		0.111**	0.117***	0.119***	0.139**
		(0.042)	(0.040)	(0.042)	(0.054)
PSM Index - Average Politicians			0.091	0.092	0.147
			(0.144)	(0.146)	(0.163)
Big Five Index - Average Politicians			0.222	0.240	0.579
			(0.319)	(0.361)	(0.372)
Non-Cognitive Index - Average Politicians			−0.327	−0.349	−0.684*
			(0.311)	(0.360)	(0.371)
Altruism - Average Politicians			0.085	0.085	0.048
			(0.146)	(0.147)	(0.138)
Choose dominated risk option - Average Politicians			0.030	0.025	−0.097
			(0.138)	(0.140)	(0.155)
Cognitive index - Average Politicians			0.069	0.079	0.104
			(0.165)	(0.175)	(0.162)
Risk Aversion - Average Politicians			−0.004	−0.002	0.051
			(0.115)	(0.118)	(0.151)
Asset Index - Average Politicians			−0.400**	−0.392**	−0.224
			(0.179)	(0.188)	(0.171)
PSM Index - Average Bureaucrats					−0.096
					(0.205)
Big Five Index - Average Bureaucrats					−0.509
					(0.412)
Non-Cognitive Index - Average Bureaucrats					0.499
					(0.383)
Altruism - Average Bureaucrats					0.120
					(0.129)
Choose dominated risk option - Average Bureaucrats					0.050
					(0.120)
Cognitive index - Average Bureaucrats					−0.096
					(0.180)
Risk Aversion - Average Bureaucrats					0.168
					(0.159)
Asset Index - Average Bureaucrats					0.182
					(0.375)
Constant	−0.000	3.935	6.461	6.651	3.216
	(0.110)	(3.842)	(4.297)	(4.736)	(12.840)
Observations	75	75	75	75	75
R-Squared	0.101	0.565	0.656	0.656	0.756
P-value (Integrity Bureaucrat == Integrity Politician)				0.408	0.767

Note: This table reports regressions using District's DLT Scores as dependent variables. Non-reported controls also include Region dummies. Robust standard errors reported in parentheses (* p<0.1, ** p<0.05, *** p <0.01)

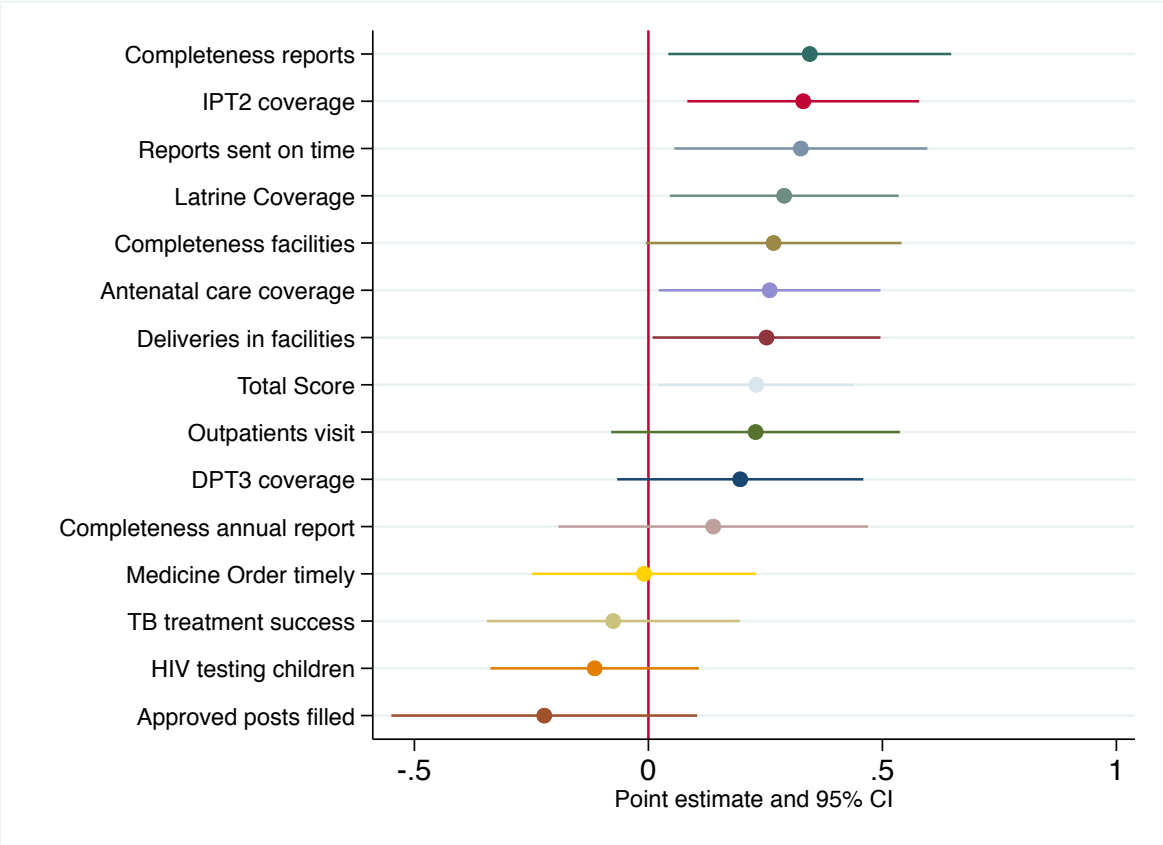


Figure 10: Politician Integrity and Health Outcomes

Note: This graph reports the point estimate and 95 percent CI for the coefficient on Average Politician Integrity in regressions using District level DLT Score as dependent variable. Non-reported controls include regional dummies, log total population, poverty rate, share of urban population, number of radio stations' HQs, vote share of the presidential candidate of the NRM, herfindahl index for councillors' votes and average students' score on UCE. CI are constructed using robust standard errors. CI is constructed using robust standard errors.

Table 6: Dependent variable - PCA of health components

	(1)	(2)	(3)	(4)	(5)
Integrity Index - Average Politicians	0.130	0.276**	0.352**	0.354**	0.292**
	(0.111)	(0.106)	(0.152)	(0.153)	(0.140)
Integrity Index - Average Bureaucrats				-0.109	0.121
				(0.180)	(0.190)
Poverty rate 2013		1.487	1.977	1.985	3.373***
		(1.666)	(1.462)	(1.442)	(1.121)
Log Total Population		0.066	0.184	0.249	-0.225
		(0.271)	(0.263)	(0.282)	(0.354)
Urban population share		0.406	0.791	0.883	0.686
		(1.510)	(1.518)	(1.556)	(1.850)
Average Score UCE - 2011		-0.098**	-0.104**	-0.104**	-0.128*
		(0.038)	(0.049)	(0.046)	(0.071)
Voter Attachment to National Party - 2011		-0.738	-1.417	-1.292	-2.379
		(0.973)	(1.318)	(1.400)	(1.593)
Average Herfindahl index - Councilor		0.023*	0.023	0.021	0.022
		(0.012)	(0.015)	(0.014)	(0.018)
Number of radios (HQ)		0.152***	0.165***	0.159***	0.176***
		(0.045)	(0.044)	(0.044)	(0.056)
PSM Index - Average Politicians			-0.014	-0.018	0.136
			(0.153)	(0.156)	(0.176)
Big Five Index - Average Politicians			0.128	0.045	0.426
			(0.308)	(0.337)	(0.312)
Non-Cognitive Index - Average Politicians			-0.204	-0.106	-0.538
			(0.315)	(0.350)	(0.354)
Altruism - Average Politicians			0.041	0.040	-0.049
			(0.153)	(0.157)	(0.125)
Choose dominated risk option - Average Politicians			-0.123	-0.100	-0.161
			(0.137)	(0.137)	(0.156)
Cognitive index - Average Politicians			0.147	0.101	0.207
			(0.122)	(0.138)	(0.128)
Risk Aversion - Average Politicians			0.105	0.096	0.171
			(0.103)	(0.102)	(0.146)
Asset Index - Average Politicians			-0.271	-0.305*	-0.178
			(0.162)	(0.179)	(0.186)
PSM Index - Average Bureaucrats					-0.228
					(0.215)
Big Five Index - Average Bureaucrats					-0.600
					(0.531)
Non-Cognitive Index - Average Bureaucrats					0.599
					(0.447)
Altruism - Average Bureaucrats					0.025
					(0.099)
Choose dominated risk option - Average Bureaucrats					0.008
					(0.104)
Cognitive index - Average Bureaucrats					-0.248
					(0.171)
Risk Aversion - Average Bureaucrats					0.210
					(0.195)
Asset Index - Average Bureaucrats					0.044
					(0.309)
Constant	-0.000	3.404	3.682	2.816	9.928
	(0.115)	(3.833)	(3.891)	(4.160)	(10.610)
Observations	75	75	75	75	75
R-Squared	0.017	0.520	0.634	0.638	0.745
P-value (Integrity Bureaucrat == Integrity Politician)				0.080	0.495

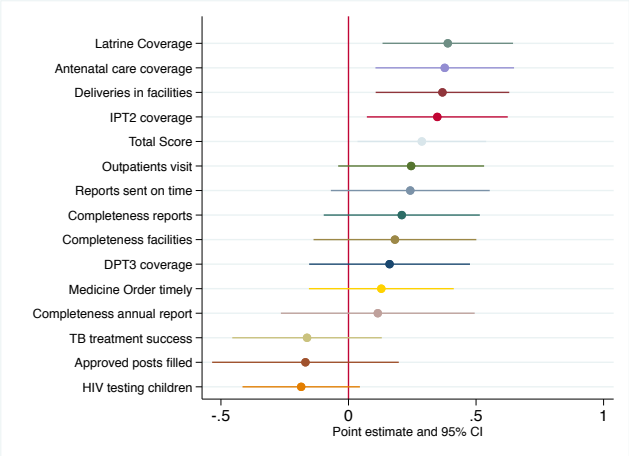
Note: This table reports regressions using the first component of a PCA of health outcomes as dependent variables. Non-reported controls also include Region dummies. Robust standard errors reported in parentheses (* p<0.1, ** p<0.05, *** p <0.01)

Table 7: Integrity and Health Outcomes - by type of politician

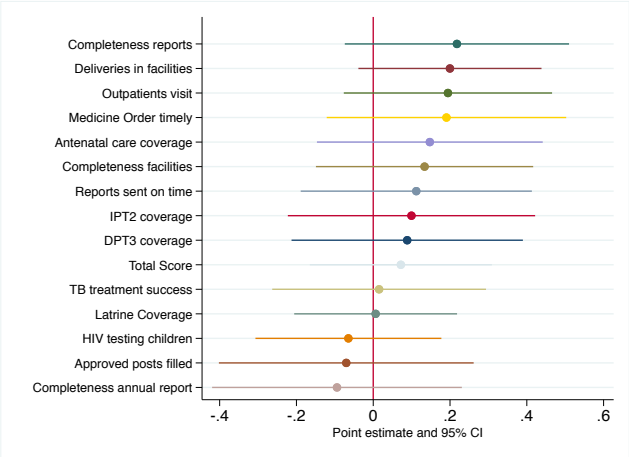
	(1)	(2)	(3)	(4)	(5)
Integrity Index - Average Politicians	0.231**				
	(0.031)				
Integrity Index - Average Councillors		0.180			0.276**
		(0.111)			(0.025)
Integrity Index - Average Chairperson			0.068		−0.017
			(0.523)		(0.905)
Integrity Index - Average Chair Contenders				0.136	0.090
				(0.196)	(0.454)
Observations	75	75	72	67	65
R-Squared	0.565	0.555	0.566	0.555	0.614

Note: This table reports regressions using District level health outcomes as dependent variables. Non-reported controls include regional dummies, log total population, poverty rate, share of urban population, number of radio stations' HQs, vote share of the presidential candidate of the NRM, herfindahl index for councillors' votes and average students' score on UCE. CI are constructed using robust standard errors.

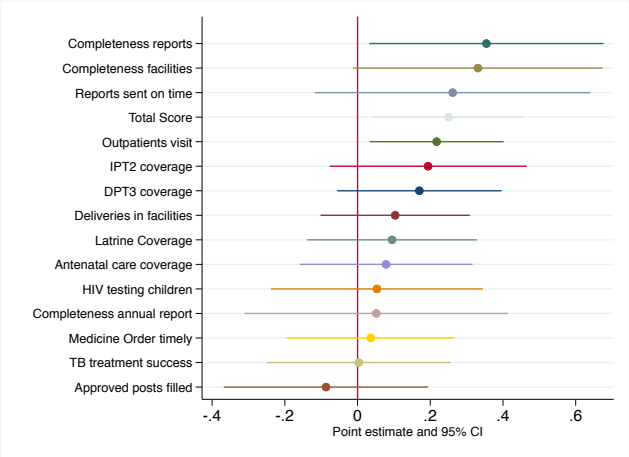
* p < 0.1, ** p < 0.05, *** p < 0.01. Standard errors in parentheses.



(a) Councillors' Integrity



(b) Chairperson Integrity



(c) Chair Contenders Integrity

Figure 11: Health outcomes vs. Integrity by politician's type

Note: These graphs report point estimates and 95 percent CI for the coefficient on Average Politician Integrity in regressions using District level DLT Score as dependent variable. Non-reported controls include regional dummies, log total population, poverty rate, share of urban population, number of radio stations' HQs, vote share of the presidential candidate of the NRM, herfindahl index for councillors' votes and average students' score on UCE. CI are constructed using robust standard errors. CI is constructed using robust standard errors.

Table 8: Robustness - Other determinants of productivity

	(1)	(2)	(3)	(4)	(5)
Integrity Index - Average Politicians	0.240**	0.230**	0.231**	0.239**	0.216*
	(0.103)	(0.106)	(0.107)	(0.106)	(0.109)
Management Perception Index - Avg. Bureaucrats	0.133			0.141	
	(0.119)			(0.117)	
Ethnic Herfindahl (All)		0.0322			
		(0.117)			
Ethnic Herfindahl (Bureaucrat)			0.0248	0.00377	
			(0.145)	(0.136)	
Ethnic Herfindahl (Politician)			0.00696	0.0431	
			(0.128)	(0.126)	
Integrity Index - Average CAO/RDC					0.00433
					(0.0930)
Integrity Index - Average Health Bur.					0.0921
					(0.0890)
Poverty rate 2013	-2.045	-2.280	-2.298	-2.024	-2.251
	(1.450)	(1.581)	(1.611)	(1.470)	(1.583)
Log Total Population	0.0485	0.0503	0.0508	0.0459	0.0705
	(0.249)	(0.250)	(0.251)	(0.247)	(0.252)
Urban population share	-1.368	-1.160	-1.169	-1.386	-1.339
	(1.708)	(1.729)	(1.750)	(1.756)	(1.735)
Average Score UCE - 2011	-0.0615	-0.0617	-0.0620	-0.0618	-0.0699
	(0.0401)	(0.0428)	(0.0429)	(0.0411)	(0.0418)
Voter Attachment to National Party - 2011	-1.473	-1.483	-1.502	-1.462	-1.610
	(1.095)	(1.107)	(1.168)	(1.160)	(1.123)
Average Herfindahl index - Councilor	0.00499	0.00522	0.00526	0.00636	0.00563
	(0.0135)	(0.0147)	(0.0149)	(0.0146)	(0.0144)
Number of radios (HQ)	0.118***	0.111**	0.111**	0.119***	0.110**
	(0.0410)	(0.0428)	(0.0430)	(0.0421)	(0.0427)
Observations	75	75	75	75	74
R^2	0.578	0.565	0.565	0.579	0.572

Note: This table presents regressions using districts' health outcomes as dependent variable and individual traits and districts' characteristics as explanatory variables. Unreported controls include regional dummies.

	Means by Group			Difference in Means (t-test)		
	(1)	(2)	(3)	(4)	(5)	(6)
	Chair mean/sd	Contender mean/sd	Councillor mean/sd	Chair v. Contender diff.	Councillor v. Chair diff.	Councillor v. Contender diff.
Integrity	-0.19	0.02	-0.29	-0.20	-0.10	-0.31***
	(1.07)	(1.03)	(1.03)			
PSM	0.17	0.17	-0.05	-0.00	-0.22	-0.22***
	(1.26)	(0.99)	(0.92)			
Big Five	0.19	0.15	0.03	0.04	-0.16	-0.12
	(1.03)	(0.98)	(1.04)			
Other Non-Cognitive Traits	-0.01	-0.10	-0.28	0.09	-0.27**	-0.18**
	(0.98)	(0.90)	(1.01)			
Non-Cognitive	0.13	0.06	-0.11	0.07	-0.24**	-0.17**
	(1.00)	(0.97)	(1.03)			
Cognitive	5.63	5.41	5.12	0.22	-0.51***	-0.29***
	(1.14)	(1.25)	(1.11)			
Choose dominated risk option	0.10	0.13	0.13	-0.03	0.04	0.01
	(0.30)	(0.33)	(0.34)			
Altruism	0.34	0.32	0.32	0.01	-0.02	-0.00
	(0.22)	(0.23)	(0.20)			
Risk-aversion (1-5)	3.92	3.65	4.01	0.27	0.09	0.36**
	(1.44)	(1.54)	(1.36)			
Asset index - total	2.60	2.26	1.30	0.34***	-1.30***	-0.96***
	(0.76)	(0.96)	(1.02)			
Less than Secondary	0.02	0.04	0.30	-0.01	0.28***	0.26***
	(0.16)	(0.19)	(0.46)			
Less than College	0.16	0.24	0.33	-0.08	0.17***	0.09**
	(0.37)	(0.43)	(0.47)			
Complete College	0.51	0.50	0.34	0.01	-0.17***	-0.16***
	(0.50)	(0.50)	(0.47)			
Masters/PhD	0.30	0.23	0.03	0.08	-0.27***	-0.19***
	(0.46)	(0.42)	(0.18)			
Observations	82	181	504	263	586	685

Table 9: Selection Traits by Type of Politician

Note: This table compares average characteristics of elected Chairperson and Mayors; contenders for Chairperson/Mayor; and elected Councillors . Column (1) reports the average characteristic for all elected Chairperson/Mayors; column (2) does the same for non-elected Chairperson/Mayors; and column (3) for elected Councillors. Columns (4) presents the difference in average trait between Chairpersons and Contender; column (5) between Chairperson and Councillors; and column (6) between Councillors and Contenders. The starts in columns (4)-(6) represent level of p-values in a t-test of equality of means (* p<0.1), ** p<0.05, *** p<0.01)

Table 10: Correlates of Politicians' Integrity

	(1) All	(2) Chaiperson	(3) Contenders	(4) Councillors
Voter Attachment to National Party - 2011	0.304	2.720*	-1.341	0.290
	(0.498)	(1.468)	(1.218)	(0.584)
Average Herfindahl index - Councilor	-0.017**	-0.047**	-0.002	-0.014*
	(0.007)	(0.019)	(0.018)	(0.008)
Herfindahl index - Chairperson	-0.003	0.005	0.004	-0.005
	(0.004)	(0.012)	(0.012)	(0.005)
Number of radios (HQ)	0.008	-0.106*	0.076*	-0.007
	(0.020)	(0.056)	(0.041)	(0.025)
Poverty rate 2013	-0.638	-1.047	0.112	-0.723
	(0.473)	(1.158)	(1.433)	(0.548)
Log Total Population	-0.016	-0.065	-0.054	-0.024
	(0.096)	(0.287)	(0.294)	(0.110)
Urban population share	-1.614**	0.736	-2.489	-1.377*
	(0.706)	(2.035)	(1.742)	(0.833)
Average Score UCE - 2011	0.010	0.062	-0.011	0.017
	(0.020)	(0.049)	(0.050)	(0.024)
District Age 10-19 years	-0.203	-0.642	0.072	-0.250
	(0.159)	(0.405)	(0.319)	(0.201)
District Age <= 10 years	-0.022	-1.064**	0.333	0.032
	(0.135)	(0.408)	(0.297)	(0.168)
Female	-0.038	1.271**	0.437	-0.028
	(0.086)	(0.519)	(0.336)	(0.093)
Age in years	0.012***	0.004	0.010	0.014***
	(0.004)	(0.014)	(0.009)	(0.005)
Household members	-0.010	-0.003	-0.004	-0.021*
	(0.008)	(0.017)	(0.015)	(0.012)
Less than College	0.041	-0.963	0.018	0.024
	(0.107)	(0.713)	(0.430)	(0.117)
Complete College	0.064	-1.259*	0.119	0.107
	(0.119)	(0.634)	(0.389)	(0.134)
Masters/PhD	0.329**	-0.970	0.366	0.166
	(0.162)	(0.701)	(0.447)	(0.257)
Asset index - total	0.010	0.230	-0.040	0.006
	(0.042)	(0.189)	(0.106)	(0.050)
Constant	-0.020	-1.462	1.680	-0.320
	(1.545)	(4.015)	(3.967)	(1.877)
Observations	768	82	181	503
R-Squared	0.142	0.510	0.173	0.152

Note: This table reports regressions using the Integrity Index as explanatory variable, with the sample restricted to politicians. Column (1) includes all politicians, while columns (2) - (4) restrict the sample to Chairpersons, non-elected Contenders and Councillors, respectively..

Table 11: Correlates of Politicians' Integrity - Selection Traits

	Coefficient	Std error	Unadjusted p-value	Lower 95% CI	Upper 95% CI	Adjusted p-value
Public Sector Motivation						
Attraction to Policy Making	0.14	0.07	0.05	0.00	0.28	0.49
Commitment to Public Interest	0.70	0.10	0.00	0.49	0.90	0.00
Social Justice	0.38	0.10	0.00	0.20	0.57	0.00
Civic Duty	0.24	0.10	0.02	0.05	0.44	0.20
Compassion	0.56	0.08	0.00	0.40	0.71	0.00
Self-Sacrifice	0.46	0.08	0.00	0.30	0.62	0.00
PSM	0.30	0.04	0.00	0.22	0.37	0.00
Non-Cognitive						
Extraversion	0.31	0.08	0.00	0.16	0.46	0.00
Conscientiousness	0.50	0.09	0.00	0.32	0.68	0.00
Openness	0.17	0.08	0.03	0.02	0.32	0.35
Emotional Stability	0.05	0.08	0.59	-0.12	0.21	1.00
Agreeableness	0.08	0.07	0.31	-0.07	0.22	0.96
Big Five	0.16	0.04	0.00	0.09	0.23	0.00
Grit	0.13	0.08	0.10	-0.03	0.28	0.70
Decision making	0.46	0.08	0.00	0.30	0.62	0.00
Hostile Bias	0.06	0.07	0.44	-0.09	0.20	0.99
Non-Cognitive	0.19	0.04	0.00	0.12	0.27	0.00
Altruism	0.10	0.18	0.58	-0.25	0.45	1.00
Choose dominated risk option	-0.05	0.11	0.62	-0.27	0.16	1.00
Cognitive	0.01	0.03	0.73	-0.05	0.07	1.00
Risk-aversion (1-5)	0.01	0.03	0.82	-0.05	0.06	1.00
Asset index - total	0.06	0.03	0.07	-0.00	0.12	0.58
Female	-0.12	0.08	0.15	-0.27	0.04	0.79
Age in years	0.01	0.00	0.00	0.00	0.02	0.04
Held political office before	0.04	0.08	0.60	-0.12	0.20	1.00
Complete College	0.03	0.08	0.75	-0.13	0.18	1.00
Masters/PhD	0.35	0.11	0.00	0.13	0.57	0.03

Note: This table reports univariate regressions using politicians' integrity as dependent variables. Columns (1) through (5) report report the results of the bivariate regressions for each of the selection traits as explanatory variables of integrity. Column (6) presents p-values adjusted for multiple hypothesis testing (using Holland's method)

Table 12: Correlates of Politicians' Integrity - Selection Traits

	(1) Integrity	
Public Sector Motivation		
Attraction to Policy Making	0.009	(0.067)
Commitment to Public Interest	0.339***	(0.127)
Social Justice	0.016	(0.096)
Civic Duty	−0.209*	(0.108)
Compassion	0.244***	(0.082)
Self-Sacrifice	0.149	(0.092)
Non-Cognitive Measures		
Extraversion	0.213***	(0.082)
Conscientiousness	0.241**	(0.097)
Openness	−0.138	(0.090)
Emotional Stability	−0.050	(0.091)
Agreeableness	−0.037	(0.079)
Grit	−0.028	(0.077)
Decision making	0.135	(0.092)
Hostile Bias	0.010	(0.069)
Other Measures		
Altruism	0.100	(0.175)
Choose dominated risk option	−0.028	(0.104)
Cognitive	−0.014	(0.034)
Asset index - total	0.002	(0.039)
Female	−0.083	(0.081)
Age in years	0.008**	(0.004)
Held political office before	−0.078	(0.078)
Complete College	−0.062	(0.085)
Masters/PhD	0.157	(0.130)
Constant	−4.964***	(0.748)
Observations	768	
R-Squared	0.329	

Note: This table reports regressions using politicians' integrity as dependent variables. Non-reported controls also include District dummies.

* p < 0.1, ** p < 0.05, *** p < 0.01. Standard errors in parentheses.

9 Annexes

9.1 Survey Data - Construction of Individual Selection Variables

Public Sector Motivation (PSM) – In order to measure bureaucrats' and politicians' motivation to serve in the public sector, we use Perry's Public Sector Motivation Index (Perry, 1996). Annex I presents the version used in the survey in Uganda: it is composed of 36 questions measuring motivation in six different dimensions – Attraction to Policy Making, Commitment to Public Interest, Social Justice, Civic Duty, Compassion and Self-Sacrifice. As discussed by Perry (1996), each dimension captures distinct motivations to serve identified previously in the public administration literature. Interviewees are asked how much they agree with each of the questions on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). We follow the established methodology in the personnel economics literature, as in Dal Bo, Finan and Rossi (2013) and Callen et al. (2016): we first recode all questions so that higher values are associated with normatively positive answers (i.e. higher agreement with "I think there are many public causes which are worth defending" but disagreement with "I hardly think of the welfare of people I do not know personally"), and then create an index for each dimension by taking simple averages of its answers. Finally, we create an aggregate PSM Index for each individual by taking an average of the z-scores of each of the six dimensions.

Behavioral and Personality Traits – The module used to assess behavioral and personality traits is the same as the one used in the World Bank STEP (Skills Towards Employability and Productivity) surveys . Annex II presents the 25 questions used to measure eight distinct dimensions of personality. Taken together, the five first dimensions – Openness, Conscientiousness, Extraversion, Agreeableness and Emotional Stability – are usually referred to as the Big Five Inventory (BFI), which have been shown to approximate the main dimensions used to describe personalities (John and Srivastava, 1999). Whereas the BFI concerns very broad personality traits, the module also collects data on three other more specific dimensions of behavior – Grit, Decision-Making and Hostility Bias. Interviewees

are asked to rate each question from 1 (Almost never) to 4 (Almost always). Aggregation is similar to the PSM methodology described above: we code variables such that higher values indicate positive traits and obtain dimension-specific indices by averaging over questions. The Big Five Index is obtained as the average of z-scores in each of the five dimensions, whereas the Non-Cognitive Index is an average of the z-scores for the eight dimensions in the module.

Integrity – We use the Moral Disengagement Measure, developed by Moore et al. (2012), to measure integrity values. Taken together, the eight questions presented in Annex III have been shown to be correlated with unethical behavior in lab experiments. Individuals are asked to rate their agreement with the statement on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). We recode the variables such that higher values are disagreement with unethical behavior, then proceed to take a simple average of the eight questions and normalize it to obtain the Integrity Index.

Risk Aversion - Risk preference is one of the fundamental parameters to understand individuals' dynamic decisions (savings, consumption, investments in human capital, etc…). We measure risk preferences by using a common risk game: individuals are given the possibility of choosing, in a hypothetical game, between a certain gain of UGX 1 million and a gamble with 50/50 probability with expected value higher than UGX 1 million. If the individual chooses the certain prize the game ends; if they choose the gamble, they are given another bet between the same certain prize and a lottery with lower expected value. The game can last up to 4 rounds, giving us five levels of risk-aversion (See Annex IV for details). In order to screen if individuals understand the game, an initial question is asked giving the interviewee the decision between a certain prize of UGX 1 million and a 50/50 bet between UGX 1 million and UGX 2 million. Choosing the previous is clearly dominated by the latter, so individuals who choose that even after given a chance to reconsider are marked as choosing a dominated risk option. We follow Dal Bo, Finan and Rossi (2013) in using that choice as another measure of cognitive ability.

Cognitive Ability – The survey uses a digit span test to proxy for cognitive / memory ability. We use a similar module to Weaver (2016), I which the interviewer reads out a string of digits, starting with three, and the respondent has two chances to repeat them right. If they can't, the test ends; if they do remember, they are given a longer string; the game goes on until the longest string with 12 digits. We code how many digits the individual could remember, given two chances. As discussed above, we also use mistakes in choosing the dominated option in the risk game as a measure of cognitive ability.

Altruism – We measure altruism by the percentage of money shared in a hypothetical game in which the individual is given UGX 50,000 and has to decide how much to keep for themselves and how much to share with an anonymous person who received no money.

9.2 Reliability of selection traits

Here we briefly discuss the reliability of our three composite indices of selection traits: Public Sector Motivation, Integrity and Non-Cognitive ability. Below we report the number of items, Cronbach's alpha[37] and the average inter-item covariance for each one of our composite indices. For Public Sector motivation, we report results for each of the six individual dimensions and for the overall PSM index; for Non-Cognitive ability, we separately report results for each of the Big Five Index dimensions and the overall Big Five Index; as well as for the remaining three dimensions of Grit, Decision-Making and Hostile Bias, and the overall Non-Cognitive Index comprised of the eight dimensions above.

For Public Sector Motivation, Cronbach's alpha for each component varies from 0.2 to

[37] Cronbach's alpha is a measure of reliability used for psychometric tests. It is formally defined as

$$\alpha = \frac{K\bar{c}}{\bar{v} + (K-1)\bar{c}}$$

, where K is the number of items; $\bar{c}$ is the average variance of items and $\bar{v}$ is the average covariance between all components. Cronbach's alpha ranges from zero to one, and by construction if tends to one as the number of items increase.

0.6, and average inter-item covariance from 0.5 to 0.12. The overall PSM index, however, shows higher Cronbach's alpha of 0.76.

The Integrity index, comprised of eight items, has an alpha of 0.61 and average inter-item covariance of 0.14.

Each of the Big Five components show rather low alphas, between 0.2 and 0.4. These results, however, are consistent with those found by Pierre et al. (2014) using the same instrument in different low-income countries. It should be noted that we use a simplified Big Five Instrument, with only 15 questions instead of the usual 44-question instrument. The overall Big Five Index presents moderate reliability (alpha = 0.57). Finally, the overall Non-Cognitive Index shows higher reliability with alpha = 0.68.

Table A1: Reliability of Selection Traits

	Number of items	Cronbach's alpha	Avg interitem covar.
Attraction to Policy Making	4	0.198	0.056
Commitment to Public Interest	7	0.426	0.057
Social Justice	5	0.319	0.049
Civic Duty	7	0.549	0.080
Compassion	7	0.441	0.089
Self Sacrifice	6	0.613	0.115
PSM Index	36	0.765	0.056
Integrity Index	8	0.608	0.143
Extraversion	3	0.257	0.060
Conscientiousness	3	0.278	0.044
Openness	3	0.246	0.053
Emotional Stability	3	0.197	0.036
Agreeableness	3	0.437	0.114
Big Five	15	0.576	0.042
Grit	3	0.280	0.067
Decision Making	4	0.591	0.120
Hostile Bias	2	0.216	0.070
Non Cognitive	24	0.680	0.042

9.3 District Level Administrative Data

Uganda Certificate of Education (UCE) scores: we use data for 2011-2013 on average total scores and division allocation of students at the end of lower secondary school. Students take exams in six mandatory subjects and may choose four additional ones . Note that

lower scores mean better performance (observed scores go from 8 to 72), and divisions are broader categories of performance. In 2013, almost 300,000 students sat for the UCE exams.

District League Table (DLT): The District League Tables (DLT) are published in the Annual Health Sector Performance Report by the Ministry of Health and comprise both quality of care and management indicators. Data from local facilities is compiled using the Health Management Information System (HMIS) and aggregated at the District level. We use the 14 indicators for performance and the total score for the FY 2014/2015 (See below for details).

		Weight	Explanation
Coverage and quality care	DPT3 Coverage (%)	15	Diphtheria-tetanus-pertussis (DTP3) immunization coverage
	Deliveries in gov't and PNFP facilities (%)	15	Share of infants delivered in government or Private Non for Profit facilities
	OPD Per Capita	10	Number of outpatients department (OPD) visits per capita
	HIV testing in children born to HIV+ women (%)	10	-
	Latrine coverage in households (%)	10	-
	IPT2 (%)	5	Share of pregnant women who completed Intermittent preventive therapy (IPT) against Malaria
	ANC 4 (%)	5	Proportion of pregnant women receiving 4 or more antenatal care visits
	TB TSR (%)	5	Tuberculosis Treatment Success Rate
Management	Approved posts filled (%)	10	-
	% Monthly reports sent on time	3	-
	% Completeness monthly reports	2	-
	% Completeness facility reporting	3	-
	Completeness of the annual report (%)	2	-
	Medicine orders submitted timely (%)	5	-

Figure 12: DLT Score - Components' weights and description

2011 local and presidential elections: we use data from the 2011 elections, compiled by the Uganda Electoral Commission. For Directly Elected Councilors, we compute all the results at the electoral area level and then obtain the district-level average across all areas. The Herfindahl Index is most commonly used as measure of firm competition in a given

market, but has been widely used to measure political competition . The Herfindahl Index is obtained, at the electoral area level, by the sum of the squares of candidates' votes. Higher values are associated with a less competitive environment (the index ranges from 1/N to 1, where N is the number of candidates).

Poverty Rates: Poverty rates are estimates for 2013, using the national poverty line (which ranges from US 0.88 to US 1.04 2005 PPP per capita depending on the region) (World Bank, 2016b). These are small areas estimates produced by the World Bank, using data from the 2013 UNHS and 2014 Census data. For details on methodology see for example Ebers, Lanjow and Lanjow (2002).

9.4 Questionnaire I - Integrity

1. It is okay to spread rumors to defend those you care about.
2. Taking something without the owner's permission is okay as long as you're just borrowing it.
3. Considering the ways people often misrepresent themselves, it's not a sin to exaggerate your own credentials a bit.
4. People shouldn't be held accountable for doing questionable things when they are just doing what an authority figure told them to do.
5. People can't be blamed for doing things that are technically wrong if all their friends are doing it.
6. Taking personal credit for ideas that were not your own is no big deal.
7. Some people have to be treated roughly because they lack feelings that can be hurt.
8. People who get mistreated have usually done something to bring it on themselves, or they are mistreated for a reason.

9.5 Questionnaire II - Public Sector Motivation

Attraction to Policy Making

1. Politics is a dirty word.
2. I respect those public officials who can turn a good idea into a law.
3. Ethical behavior of public officials is as important as their skills.
4. The culture of "something for something" in public policy work does not attract me.

Commitment to Public Interest

5. People can talk about the public interest, but what really concerns them is their own interest
6. It is not easy for me to become strongly interested in what happens in my community
7. I contribute to my community in a selfless manner
8. Meaningful public service is very important to me
9. I would like to see public officials do what is best for the community even if this might hurt my interests
10. The duty of an officer to the public must always come before his loyalty to his superiors
11. I consider public service my civic duty.

Social Justice

12. I think there are many public causes which are worth defending
13. I do not think that government can do much to make society fair
14. If a group does not share in the prosperity of our society, then we all lose
15. I am willing to use every bit of my energy to make the world a more fair place
16. I am not afraid to defend the rights of others, even if it means that I will be mocked

Civic Duty

17. When public officials take the oath of public office, I think they accept obligations not expected from other citizens
18. I am willing to go far in order to fulfill my obligations to my country

19. Public service is one of the highest forms of citizenship
20. I think we all have a moral commitment to civic affairs, no matter how busy we are
21. I have an obligation to care for the less wealthy
22. For me, the phrase "duty, honor and country", encourages deep emotions
23. It is my responsibility to help solve problems between people

Compassion

24. I am not often touched by the plight of the underprivileged
25. Most social programs are too vital to eliminate
26. To me, patriotism includes concern for the welfare of others
27. I hardly think of the welfare of people I do not know personally
28. Every day I am reminded of how often we depend on one another
29. I have little compassion for people in need who are not willing to take the first step to help themselves
30. There are not many public programs that I wholeheartedly support

Self-Sacrifice

31. To make a difference in society means more to me than personal achievements
32. I believe in putting duty before self
33. Doing well financially is definitely more important to me than doing good deeds
34. To serve my fellow citizens would provide me with a good feeling even if no one paid me for doing so
35. I think people should give back to society more than society gives to them
36. I'm one of those rare people who would risk personal loss to help someone else

9.6 Questionnaire III - Behavior and Personality Traits

Big Five Index

Extraversion

1. Are you talkative?
2. Do you like to keep your opinions to yourself? That is, do you prefer to keep quiet when you have an opinion?
3. Are you outgoing and sociable, for example, do you make friends very easily?

Conscientiousness

4. When doing a task, are you very careful?
5. Do you prefer relaxation more than hard work?
6. Do you work very well and quickly?

Opennes

7. Do you come up with ideas other people haven't thought of before?
8. Are you very interested in learning new things?
9. Do you enjoy beautiful things, like nature, art and music?

Emotional Stability

10. Are you relaxed during stressful situations?
11. Do you tend to worry?
12. Do you get nervous easily?

Agreeableness

13. Do you forgive other people easily?
14. Are you very polite to other people?
15. Are you generous to other people with your time or money?

Other Personality Traits

Grit

16. Do you finish whatever you begin?
17. Do you work very hard? For example, do you keep working when others stop to take a break?
18. Do you enjoy working on things that take a very long time (at least several months) to complete?

Decision Making

19. Do you think about how the things you do will affect you in the future?

20. Do you think carefully before you make an important decision?
21. Do you ask for help when you don't understand something?
22. Do you think about how the things you do will affect others?

Hostility Bias

23. Do people take advantage of you?
24. Are people mean or not nice to you?

9.7 Questionnaire IV - Risk Aversion Measurement

This annex describes the exact language used in the Risk Aversion module and how they are used to construct both the Risk Aversion variable and the indicator that individual chooses a dominated option in the risk game.

I am now going to ask you a series of questions based on the following scenario: Imagine you can choose between two bags. Once you have chosen one of the bags, you will put your hand inside the bag and without looking you will pick a ball which will show the amount of money you have won.

Chooses dominated Risk Option: if individual chooses Bag No.1 in both questions below, it's flagged as choosing dominated risk option.

1. Now supposing Bag 1 has one ball that is worth UGX 1 million and Bag 2 has two balls: one is worth UGX 1 million and the other ball is worth UGX 2 million. Which one of these two bags do you choose; Bag 1 or Bag 2?

2. Are you sure? You are going to pick only one ball from the bag you chose. Now if Bag 1 has two balls each worth UGX 1 million. If you choose Bag 1 you will win UGX 1 million. If you choose Bag 2 you will win at least UGX 1 million or UGX 2 million depending on your luck. Which one of these two bags do you choose; Bag 1 or Bag 2?

Risk-Aversion

The questions below are asked in sequence, whenever Bag 1 is chosen the game end. Choices are coded as follow:

- If Bag 1 is chosen in first question: Very High Risk Aversion;
- If Bag 1 is chosen in second question: High Risk Aversion;

- If Bag 1 is chosen in third question: Medium Risk Aversion;
- If Bag 1 is chosen in fourth question: Low Risk Aversion;
- If Bag 2 is chosen in fourth question: Very Low Risk Aversion;

1. Now, imagine you can choose between the following two bags: Bag No. 1 guarantees that you will win UGX 1 million. Bag No. 2 has a ball that is worth UGX 800,000 and another ball that is worth UGX 2 million. Which one of these two bags do you choose; Bag 1 or Bag 2?

2. And if now you could choose between: Bag No. 1, which again guarantees that you will win UGX 1 million or Bag No. 2 which has a ball that is worth UGX 600,000 and another ball that is worth UGX 2 million. Which one of these two bags do you choose; Bag 1 or Bag 2?

3. Now, suppose you can choose between: Bag No. 1, which guarantees UGX 1 million or Bag No. 2, which now has a ball that is worth UGX 400,000 and another ball that is worth UGX 2 million. Which one of these two bags do you choose; Bag 1 or Bag 2?

4. Now, suppose you can choose between: Bag No. 1, which guarantees UGX 1 million; or Bag No. 2, which has a ball that is worth UGX 200,000 and another ball that is worth UGX 2 million. Which one of these two bags do you choose; Bag 1 or Bag 2?

9.8 Surveyed Districts

1. ADJUMANI
2. AGAGO
3. ALEBTONG
4. AMOLATAR
5. AMUDAT
6. APAC
7. ARUA
8. BUDAKA
9. BUDUDA
10. BUGIRI
11. BUIKWE
12. BUKEDEA
13. BUKOMANSIMBI
14. BULAMBULI
15. BUNDIBUGYO
16. BUSHENYI
17. BUSIA
18. BUTALEJA
19. BUVUMA
20. BUYENDE
21. DOKOLO
22. GOMBA
23. GULU
24. HOIMA
25. IGANGA
26. ISINGIRO
27. KAABONG
28. KABALE
29. KABAROLE
30. KABERAMAIDO
31. KALIRO
32. KALUNGU
33. KAMULI
34. KAMWENGE
35. KANUNGU
36. KAPCHORWA
37. KASESE
38. KIRYANDONGO
39. KITGUM
40. KOBOKO
41. KWEEN
42. KYANKWANZI
43. LIRA
44. LUUKA
45. LWENGO
46. LYANTONDE
47. MANAFWA
48. MASAKA
49. MAYUGE
50. MBALE
51. MBARARA
52. MITYANA
53. MOYO
54. MPIGI
55. MUBENDE
56. MUKONO
57. NAKASONGOLA
58. NAMAYINGO
59. NAMUTUMBA
60. NEBBI
61. NGORA
62. NWOYA
63. OTUKE
64. OYAM
65. PADER
66. RAKAI
67. RUBIRIZI
68. RUKUNGIRI
69. SERERE
70. SHEEMA
71. SOROTI
72. SSEMBABULE
73. WAKISO
74. YUMBE
75. ZOMBO

10 Annex Tables

Table A2: Descriptive Statistics - Demographics

	Mean	SD	p25	p50	p75	N
Individual characteristics						
Female	0.24	0.42	0.00	0.00	0.00	2126
Age in years	46.01	8.43	40.00	46.00	51.00	2126
Born in district where works	0.53	0.50	0.00	1.00	1.00	2126
Household characteristics						
Household members	8.49	4.15	6.00	8.00	10.00	2125
Owns a car (percentage)	0.57	0.49	0.00	1.00	1.00	2122
Owns a TV (percentage)	0.86	0.35	1.00	1.00	1.00	2119
Owns a computer (percentage)	0.65	0.48	0.00	1.00	1.00	2120
Owns a DVD (percentage)	0.78	0.41	1.00	1.00	1.00	2119
Owns a fridge (percentage)	0.61	0.49	0.00	1.00	1.00	2119
Owns a gas stove (percentage)	0.34	0.47	0.00	0.00	1.00	2118
Asset index - total	2.05	1.00	1.62	2.15	2.69	2123
Individual education						
Less than Secondary	0.08	0.27	0.00	0.00	0.00	2125
Less than College	0.13	0.33	0.00	0.00	0.00	2125
Complete College	0.44	0.50	0.00	0.00	1.00	2125
Masters/PhD	0.35	0.48	0.00	0.00	1.00	2125

Note: All figures in this table refer to a pooled sample of bureaucrats and politicians.

Table A3: Descriptive Statistics - Selection Traits

	Mean	SD	p25	p50	p75	N
Integrity measures						
OK to spread rumors	0.07	0.26	0.00	0.00	0.00	2124
OK to borrow without permission	0.03	0.17	0.00	0.00	0.00	2124
Not a sin to exaggerate credentials	0.14	0.35	0.00	0.00	0.00	2124
Follow authorities orders	0.17	0.38	0.00	0.00	0.00	2124
No blame if group does the same	0.06	0.24	0.00	0.00	0.00	2124
OK to take credit for others' ideas	0.21	0.41	0.00	0.00	0.00	2124
Some people lack feelings to be hurt	0.12	0.32	0.00	0.00	0.00	2124
People are mistreated for a reason	0.33	0.47	0.00	0.00	1.00	2124
Integrity Index	0.00	1.00	-0.61	-0.10	0.68	2124
Non cognitive measures						
Extraversion	2.95	0.48	2.67	3.00	3.33	2126
Conscientiousness	3.30	0.40	3.00	3.33	3.67	2126
Openness	3.11	0.46	2.67	3.00	3.33	2126
Emotional Stability	2.87	0.43	2.67	3.00	3.00	2126
Agreeableness	2.99	0.51	2.67	3.00	3.33	2126
Big five index (mean of z-scores)	-0.00	1.00	-0.69	-0.00	0.64	2126
Grit	2.71	0.49	2.33	2.67	3.00	2126
Decision making	3.21	0.45	3.00	3.25	3.50	2126
Hostile Bias	3.00	0.57	2.50	3.00	3.50	2126
Other Non-Cognitive Index (Grit,Decision,Hostile)	-0.00	1.00	-0.65	-0.00	0.69	2126
Non-Cognitive index (Big Five + Others)	-0.00	1.00	-0.72	-0.01	0.68	2126
Cognitive and risk profile measures						
Altruism - percentage shared	0.30	0.22	0.10	0.30	0.40	2125
Choose dominated risk option	0.11	0.31	0.00	0.00	0.00	2126
Risk-aversion (1-5)	3.79	1.48	3.00	4.00	5.00	1869
Cognitive ability - Number of digits remembered	5.42	1.18	5.00	5.00	6.00	2126
Public Sector Motivation						
Attraction to Policy Making	3.51	0.48	3.25	3.50	3.75	2126
Commitment to Public Interest	4.08	0.37	3.86	4.00	4.29	2126
Social Justice	4.08	0.39	3.80	4.00	4.40	2126
Civic Duty	4.07	0.38	3.86	4.00	4.29	2126
Compassion	3.72	0.45	3.43	3.71	4.00	2126
Self-Sacrifice	4.08	0.45	3.86	4.00	4.29	2126
PSM Index	0.00	1.00	-0.64	-0.10	0.63	2126

Note: All figures in this table refer to a pooled sample of bureaucrats and politicians.

Table A4: Selection Traits - Politicians vs. Bureaucrats

	(1) Integrity	(2) PSM	(3) Big Five	(4) Other Non-Cogn.	(5) Non-Cognitive
Politician	-0.151**	0.239***	0.242***	-0.196***	0.0827
	(0.0602)	(0.0618)	(0.0607)	(0.0596)	(0.0610)
Constant	-0.719	-2.974***	-0.618	-1.434***	-1.094
	(0.711)	(0.499)	(1.154)	(0.433)	(0.977)
Observations	2123	2125	2125	2125	2125
R^2	0.137	0.108	0.093	0.129	0.101

Note: This table reports regressions with selection traits as dependent variables and a dummy for politicians as explanatory variable, using the entire sample of bureaucrats and politicians. Other controls include gender, age, household size, whether individual was born in the same district where he works, own and father's education, and district dummies. The coefficients from this Table are presented in Figure 2

Table A5: Selection Traits - Politicians vs. Bureaucrats

	(1) Cognitive	(2) Dominated	(3) Altruism	(4) Risk-Aversion	(5) Asset index
Politician	-0.0401	0.0262	0.0388***	0.141	-0.0438
	(0.0688)	(0.0194)	(0.0132)	(0.0922)	(0.0533)
Constant	3.997***	0.0856	0.261**	2.294**	0.234
	(0.451)	(0.126)	(0.113)	(1.031)	(0.645)
Observations	2125	2125	2124	1869	2122
R^2	0.132	0.076	0.064	0.097	0.323

Note: This table reports regressions with selection traits as dependent variables and a dummy for politicians as explanatory variable, using the entire sample of bureaucrats and politicians. Other controls include gender, age, household size, whether individual was born in the same district where he works, own and father's education, and district dummies. The coefficients from this Table are presented in Figure 2

Table A6: Differences in profile - Politicians

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Integrity Index - Average Politicians	0.231**							
	(0.104)							
PSM Index - Average Politicians		0.112						
		(0.104)						
Big Five Index - Average Politicians			-0.030					
			(0.095)					
Non-Cognitive Index - Average Politicians				-0.056				
				(0.095)				
Altruism - Average Politicians					-0.029			
					(0.125)			
Choose dominated risk option - Average Politicians						0.030		
						(0.123)		
Cognitive index - Average Politicians							0.077	
							(0.122)	
Risk Aversion - Average Politicians								0.120
								(0.104)
Observations	75	75	75	75	75	75	75	75
R-Squared	0.565	0.546	0.538	0.539	0.537	0.537	0.540	0.546

Note: This tables reports results from regressions having District DLT score as dependent variable and each of politicians' average selection traits plus a series of controls as explanatory variables. Non-reported controls include regional dummies, poverty rate, log of total population, share of urban population, UCE scores in 2011, vote share for NRM in 2011, Herfindahl index for councillors' votes in 2011 and number of radio HQ in District. The coefficients on this table are presented in Figure 8 .

Table A7: Differences in profile - Bureaucrats

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Integrity Index - Average Bureaucrats	0.008							
	(0.118)							
PSM Index - Average Bureaucrats		0.057						
		(0.111)						
Big Five Index - Average Bureaucrats			-0.042					
			(0.120)					
Non-Cognitive Index - Average Bureaucrats				0.037				
				(0.114)				
Altruism - Average Bureaucrats					0.192*			
					(0.097)			
Choose dominated risk option - Average Bureaucrats						-0.019		
						(0.118)		
Cognitive index - Average Bureaucrats							-0.068	
							(0.145)	
Risk Aversion - Average Bureaucrats								0.176
								(0.167)
Observations	75	75	75	75	75	75	75	75
R-Squared	0.537	0.539	0.538	0.538	0.564	0.537	0.539	0.554

Note: This tables reports results from regressions having District DLT score as dependent variable and each of bureaucrats' average selection traits plus a series of controls as explanatory variables. Non-reported controls include regional dummies, poverty rate, log of total population, share of urban population, UCE scores in 2011, vote share for NRM in 2011, Herfindahl index for councillors' votes in 2011 and number of radio HQ in District. The coefficients on this table are presented in Figure 8.

Table A8: LASSO selection - regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Number Radios (HQ)	0.478***								0.302***
	(0.0864)								(0.0803)
Integrity - Politician		0.317***							0.238***
		(0.108)							(0.0874)
Risk Aversion - Bureaucrat			0.234*						0.141
			(0.139)						(0.0923)
Altruism - Bureaucrat				0.266**					0.137**
				(0.110)					(0.0685)
PSM - Politician									
Less than College education - Bureaucrat					-0.312*				-0.211**
					(0.160)				(0.0977)
Poverty Rate 2013						-0.316**			-0.166
						(0.149)			(0.122)
Voter Attachment to National Party							-0.354***		-0.250**
							(0.0969)		(0.110)
Average UCE Score (2011)								-0.431***	-0.184*
								(0.100)	(0.104)
Constant	-0.296**	-1.34e-09	-5.46e-10	-1.98e-09	0.212	0.451**	1.559***	6.948***	4.262***
	(0.130)	(0.110)	(0.113)	(0.112)	(0.131)	(0.214)	(0.427)	(1.618)	(1.539)
Observations	75	75	75	75	75	75	75	75	75
R^2	0.228	0.101	0.055	0.070	0.097	0.100	0.125	0.186	0.575

Note: This table presents regressions using districts' health outcomes as dependent variable and individual traits and districts' characteristics chosen by the LASSO method as explanatory variables. Columns (1) - (9) present the results from bivariate regressions (equivalent to Figure 9a), while column (10) presents the multivariate model (equivalent to Figure 9b)

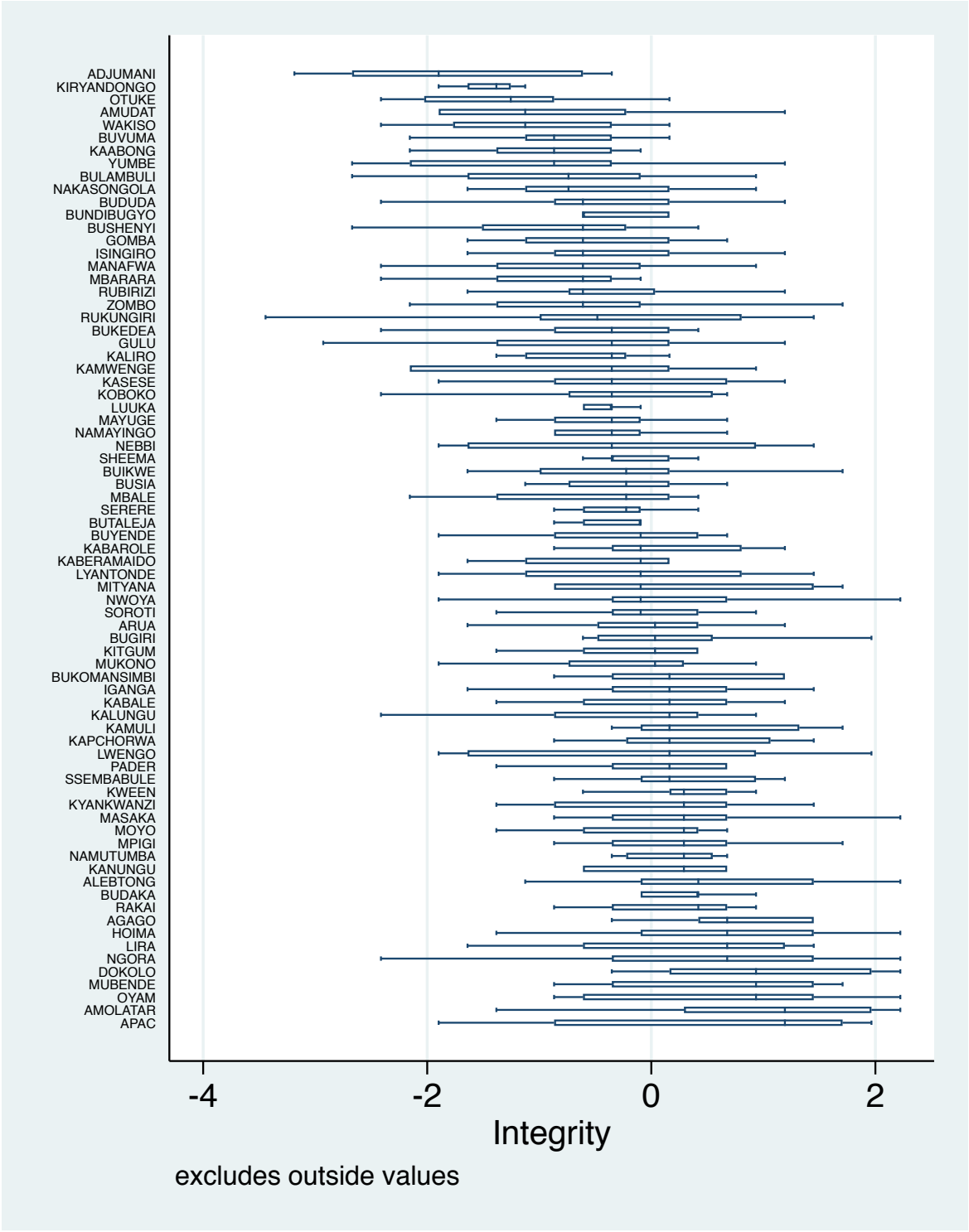


Figure 13: Distribution of Politicians' Integrity within Districts

Note: This graph reports box-plots of politicians' Integrity Index for each of the 75 Districts in the sample, ordered from lowest to highest median Integrity. The vertical trade within the box represents the median value while the box covers the 25th to 75th percentile. The right whiskers mark the smallest value above Z, where Z is given by 75th percentile + 1.25 *IQR (interquartile range). The left whiskers is equivalent.