Public Job Allocation and Bureaucrats’ Performance: Evidence from Local Governance in Benin*

Lazare Kovo†
August 22, 2019

Abstract

Many civil service positions are associated with required formal qualifications yet there is little evidence that such qualifications are related to performance, particularly in developing country contexts where such requirements are often enforced loosely. More interestingly, findings are mixed and controversial. In this paper, I develop a structural model that I estimate using individual-level survey data combined with audit reports stemming from 45 Beninese Local Administrations to explore bureaucratic performance. I find that Skill-Position Matching (i.e. appointing or hiring the required qualification to the position is required) is what matters the most for individual bureaucrat to performance better. Findings are robust to a set of controls and survive a number of specifications. Moreover, I address potential bias from selection on unobservables, and using an exogenous variation in skill-position matching, I perform a placebo to establish the causal relationship between skill-position adequacy and performance. Overall, evidence supports the view that policies that enhance civil service regulation and offset local politicians’ power in both hiring and appointment decision are keys to improving bureaucratic performance.

Keywords: Local Governance, Skill-Position Matching, Performance, Favoritism.

JEL Classification Codes: D24, D73, H11, J24, M54

*I am grateful to Ian Heffernan for meaningful advice and comments on this project. I am particularly indebted to Leonard Wantchekon for the opportunity to be trained and introduced to the rigorous research arena. I am also grateful to Elder Todd for sharing bias estimation program. I thank Sam Aguey, Mensanh Agbaglah, Marcus Olapade, Rafael Ch, Pedro Vicente, Mattia Fracchia, Matilde Gracio, Andre Gueguehoun, Gaetan Nandong, Horace Guinafon and Caleb Dohou for helpful comments. Feedback from Sarah Pulinow, Cinthya Joseph and Corine Rosenberg are gratefully acknowledged. I thank ASE’s 2018-2019 Pre-Doctoral Fellows as well as research Seminar participants at ASE, Oxford Conference at GIMPA, WGAPF at NYU-AD, NOVAfrica 2019, CISEA 2019 for knowledgeable comments. I also thank IERPE for the data collection and the National Commission for the Local Finance for sharing administrative records as well as the Beninese municipal General Secretaries for their collaboration on the data collection. I am grateful to Euzebio De Santos from the Association of Beninese Municipalities for helpful comment on key features of Beninese local bureaucracy. All remaining errors are mine.

†Pre-doctoral Fellow, African School of Economics, lkovo@africanschoolofeconomics.com
1 Introduction

Many civil service positions are associated with required formal qualifications yet there is little evidence that such qualifications are related to performance, particularly in developing country contexts where such requirements are often enforced loosely. In the recent literature, monetary incentives, bureaucratic effectiveness, efficiency in the public job sector, management practices and civil service regulation are the most cited arguments for bureaucratic performance (Rasul and Rogger, 2016; Ferraz and Finan, 2009; Ujhelyi, 2014; Best et al, 2017; Evans and Rauch, 2000). Although, evidence emphasize the quality of bureaucrats should be hired or appointed as relevant for both agencies' and governmental administrations (Colonnelli et al, 2017; Dal Bo et al, 2013; David Lewis, 2007; Robinson and Verdier, 2014), there still is a lack of consensus around what really matters for individual bureaucrats to be effective, especially when, for instance, the mechanism for public job allocation or agents promotion within an administration is based on patron-client.

Notwithstanding the fact that incumbents have a preference for more educated bureaucrats given the importance of the job (Iyer and Mani, 20012; Labonne and Falchamps, 2017), there are still discrepancies between individuals' skills and positions requirements. For illustration, in a job where a bachelor in statistics is required, the incumbent may hire or appoint an individual with the same level of education or even more but with a completely different qualifications (e.g. a bachelor or master in geography, law or accounting).

It is therefore clear that the distortion generated would likely affect the productivity of potentials candidates, as they are mismatched based on their skills and the positions requirements. This is a serious issue that most of the developing countries experience when, despite civil service regulations, incumbents are still using their discretionary power to allocate jobs (Grindle, 2010; Evans and Rauch, 1999; De Sardan, 2008). Interestingly, meritocratic job allocation effect are mixed and controversial in some extent. Thus, it is necessary to dive deeper in the reflection by examining the matching channel almost overlooked, and not explicitely address in the literature related to bureaucratic performance.

This paper aims to start filling the gap by exploring keys components of bureaucratic performance and point out what really matters in job allocation for better effectiveness regardless of the mechanism that leads them to the office.

Specifically, I examine the extent to which skill-position matching (i.e. appointing or hiring the required qualification to the position is required) can be relevant for office heads’ performance irrespective of the process through which they are hired or appointed. To this end, I develop a structural model that I estimate further using an individual-level survey data collected near local office heads, and which I combined with administrative records, more accurately local governments audit reports stemming from 45 Beninese local administrations where clientelism and patronage heavily influence allocation of local public jobs (Wantchekon, 2003; Bierschenk and De Sardan, 2014).

Using an OLS estimation, I find that, on average, bureaucrats who are perfectly matched with their position perform better than those who are not. This is associated with a significant 3.36 point increase on matched office heads’ performance, and
represents for example 13.44 percent of the General Secretary’s contribution to the local administration’s performance, and 16.80 percent of that of the Finance Affairs’ manager. On the other hand, controlling for differences in individuals’ observables such as wages, years of education, years of experience, age, and bonus incentives does not significantly affect the findings.

However, the matching effect could result from a high effort exerted by politicians’ relatives or locally appointed bureaucrats who might likely do well to improve public goods provision on an anticipated reelection incentive which would probably help them securing their position\(^1\). Then, I take advantage of the wide range of observables and consider extending the set of control variables in order to deal with potential omission by accounting for the proportion of bureaucrats who share the same ethnic group with the mayor, are from the locality, as well as the proportion of those who were born there. I find a positive and significant point estimate which is robust to the inclusion of the proportion of bureaucrats who have local knowledge.

On the other hand, there is a contingent of highly educated among matched bureaucrats, and knowing the strong correlation between educational attainment and individuals’ performance, it is easier to attribute the effect to this proportion of eligible candidates, even though I control for office heads’ education level. Alternatively, one may be right in interpreting point estimates as a product of bureaucrats’ ability. Then, to isolate the matching effect and ascertain whether it is, in fact, causal, I undertake a number of checks.

First of all, I harmonize individuals’ attainment to eligible office heads, notably bureaucrats who fulfill the minimum educational requirement for an office manager, whether or not they are actually in a matched position. This helps us manage any omitted variable bias as it cancels out any unobservables related to education founders. Still, I find that, even controlling for all characteristics mentioned above, the skill-position adequacy leads to more effectiveness.

Subsequently, I account for individuals’ ability by including managers who have a past experience in such or similar position to their current one (i.e. the position in which there are at the time of the survey), and whether or not they are in a matched position. The intuition is that an individual who has experienced an office, even though he or she has not been the manager, would have acquired some skills that would likely make him or her more performant compared to someone who did not, and systematically boosts his performance. But then, controlling for such a covariate does not affect the matching effect which varies noticeably with respect to the specifications.

To make sure that I deal with unobservables, I use insight from Altondji, Taber and Elder (2005) to estimate the potential bias stemming from selection on unobservables. It allows us to establish the real effect of the matching on offices heads’ performance.

---

\(^1\)Holmstrom (1999) introduced the first model of careers concern in 1982. Basically, the model formulated that a person concern by future career may influence his or her own incentive to exert more effort.

Further, Tabellini and Persson (2002) took insight from Holmstrom model in the case of reelection incentives and exposed how an incumbent concerned with a future career might refrain from rent seeking and do good.
In addition, selection on unobservables must be as strong as three times larger as observables to explain away the matching effect.

Finally, I run some robustness checks including a Propensity Score Matching (PSM) estimation and a placebo test in order to ascertain the matching-performance causal relationship. Basically, both estimations actually confirm the effect identified so far. Moreover, I extend the analysis on incumbent relative’s bureaucrats and find that skill-position adequacy is positively linked to their performance.

This paper contributes to the large and growing literature on bureaucratic performance by documenting a relevant and overlooked piece of the puzzle. Through the findings, I add to the debate on civil servant selection (Della Vigna and Pope, 2017; Ashraf et al. 2014; Ashraf et al. 2014; Dal Bo et al, 2013) and participate in the rich literature on political oversight of the local bureaucracy and their related performance (Gulzar and Pasquale, 2017; Drugov, 2015; Iyer and Mani, 2012; Colonnelli et al, 2017).

Dasgupta and Kapur provide evidence that personnel and resource misallocation undermines local bureaucratic performance in India. Similar to Weaver (2016) who, in a case of hiring under corruption, provides evidence that hires can yield better outcome in terms of performance, I start to filling the gap in the literature about the lack of consensus over public sector workers’ performance by empirically documenting at the individual level, and probably for the first time, that when bureaucrats’ skills match the position in which they are working, they perform better compared to those who are not. Also, the paper bridges the gap from meritocratic performance to that of patronage or clientelism.

Overall, findings have a number of implications. Specifically there a need to rethink the debate about the institutional reform over local governance in developing countries (Olken, 2010; Finan and Ferraz, 2011), and civil servant (Ujhelyi, 2014). Ultimately, I suggest to offset the implication power of local politicians in the hiring process, and reform civil service regulation toward more skill-adequacy screening.

The remainder of the paper is organized as follows: section 2 presents the institutional environment of local bureaucracy in Benin, and the theoretical foundation. In section 3, I discuss the data, while section 4 presents the identification strategies, and section 5 discuss the main finding. In section 6, I establish the causal relationship before concluding in section 7.

2 Institutional Context and Theoretical Model

2.1 Institutional Background

Benin, like most of the West African Economic and Monetary Union (WAEMU) members, adopted the decentralization system around 1990s but this became effective in 2000 through "Loi N 97-028 du 15 Janvier 1999 Portant Organisation de l’Administration Territoriale de la République du Bénin" in its Article 7 alongside with Article 21 that institutionalized local collectivities (municipalities) endowed with a financial autonomy.
In total, Benin counts 77 communes (municipalities), each led by a local council elected through a regular electoral process held every five years. Once the council is validated by the Supreme Court, the mayor is in charge to appointing a General Secretary (SG) as the first employee of the local administration in term of hierarchy as stated by the same law in Article 25. His or her role is to oversee the work of the whole administration and to ensure its good governance, i.e. the good functioning of the entire local administration is managed by the SG.

Beside the SG, the mayor has the possibility to reshuffle his cabinet by hiring new managers or promoting some within the local administration as well as disciplining recidivist agents, which could lead to the firing of the latter. However, how this should be conducted, as of the time of this study, is left in the hands of the mayor. While ostensibly well-meaning, the law on decentralization does not go beyond the constraint of "Go forth and do well", leaving room for mayors to staff offices or allocate public jobs at their discretion.

In fact, a mayor who consider local development challenges of the community, and knowing that the quality of the local bureaucracy is sine qua non, for a healthy administration, should care about the type of individuals is been hired or appointed according to the position requirement. For instance, on the regular basis, the SG is supposed to be appointed among the category of service’s administrators.

However, through experiences that I have had in working in partnership with local government, I noticed that a non-negligible part of them across municipalities have not met the educational requirement. Similarly, the manager of financial affairs should be appointed among accounting administrators, but there also, some are not qualified for the job and are given the privilege to manage this office.

Later on, the law on decentralization completed this list of offices with others based on to the organizational chart of Beninese public administration. While some are compulsory, namely the Planning and local development office, the Infrastructure and Maintenance office, and the Public Procurement Office, others are left to the mayor consent relatively to the socio demographic structure and the needs of the local administration.

Many anecdotes highlight the mechanism through which politicians, enjoying the authority that the law conferred them, allocate public jobs\textsuperscript{2}, but evidence reveal that the use of clientelism is the most influencing channel in Benin (Wantchekon, 2003\textsuperscript{3}; Olivier de Sardan, 2008; Bierschenk and de Sardan, 2014).

At the local level, patron-client is most noticeable cause of the direct interaction between incumbents and citizens through interest groups and local development associations\textsuperscript{4} which are strongly linked to politicians. Therefore, the Beninese local

---

\textsuperscript{2}Olivier de Sardan, (2008) in a survey through West Africa Francophone countries including Benin reported many stylized fact about how clientelism and patronage work in these countries. For instance, he reported that in Niger, the coalition party in power have a quota in all administrations to staff with politically connected or relatives.

\textsuperscript{3}Wantchekon (2003) in a field experiment points out the way incumbents use public job sector allocation as a proof for elections promises in order to secure vote with interest groups (especially when men are involved).

\textsuperscript{4}For instance, in Benin, Students on Beninese campus are used to garther themselves by ethnic group and ask for patronnage for relative politician for financing their activities in their communities.
administration offers a good environment to study the importance of skill-position matching on the performance of local civil servants, especially office heads even though there is a pattern of clientelism.

The central government institutes a yearly control through Local Government Audits, which aim to screen the use of the public transfers, the quality of public goods provided with the funds and in general, the functioning of the local administration. In addition, auditors evaluate the quality of achieved task by office managers on the basis of what was expected according to the office’s attributions. This allow them to question the quality and performance of office heads and, if they (office heads) do not suit the job (i.e. whether there is skill-position adequacy or not), to suggest their replacement. Note that the Audit occurs randomly, as the timing of events is not notified to bureaucrats prior to the arriving of auditor.

At the end of each audit, auditors also compute a performance index of the local administration which reflects the aggregate individual performance of bureaucrats. This index follows a rigorous methodology harmonized across local administrations and takes into account all factors that should be regarded, such as the effectiveness of the local council, working conditions, and the availability and timing of transfers, which represent the main budget funding source in the majority of Beninese local administrations. Further, I use the performance index of the local administrations to generate the individuals’ performance index.

2.2 Theoretical Model

To have a clear understanding on how skill-position adequacy can affect performance, I develop a simple structural model to identify possible features of the main specification. The framework is adapted from Hsieh and Klenow (2009)\(^5\) model of resource misallocation on total factor productivity (TFP).

I develop a simple model where the local administration faces a distortion in form of mismatching in public job allocation which affect the overall productivity of the local bureaucracy, and thereby undermines its performance.

Consider a world where the aggregate public service and goods \(Y\) is provided by a single agency, here a local administration, that uses as input the output - productivity - \(Y\) from all its offices at a given price \(P\) which represents the effort level exerted. To this end, they uses a Cobb-Douglas production technology given by:

\[
Y = \Pi_{a=1}^{A} Y_a^{\theta_a}
\]

(1)

where \(\sum_{a=1}^{A} \theta_a = 1\). We can then write the cost minimization as \(P_a Y_a = \theta_a P Y\) for all \(a\). Say \(P = 1\). Then, office output is a CES (constant elasticity substitution) aggregate of \(S_a\) services and goods provided:

\[
Y_a = \left(\sum_{i=1}^{S_a} Y_i^{\frac{\sigma-1}{\sigma}}\right)^{\frac{\sigma}{\sigma-1}}
\]

(2)

As a result, leaders of these associations become political activist during elections for future job career incentives and promises.

\(^5\) Actually, they sketched a structural model of the economy to estimate the distortion of input misallocation on output for the manufacture sector in China and India compared to US. In their setting, firms face two possible distortions - government restriction, and non access to credit markets. As a result, the marginal revenue product and labor input are inversely linked.
Note that each service and good is guaranteed by the management of a given bureaucrat, here the office head, and their provision followed a Cobb-Douglas production function given by:

\[ Y_{ia} = A_{ia}K_{ia}^{\alpha_a}L_{ia}^{\beta_a} \]  

(3)

where \( \alpha_a + \beta_a = 1 \) (constant returns to scale). Also, I assume that capital and labor are allowed to differ across administration but not across offices within and administration. Moreover, office \( i \) face distortion when there a misallocation in tune with the position requirement and the bureaucrat’s skill, as defined by qualifications.

Therefore, including the price for inputs and outputs, and inputs and output distortions, local administrations maximize the subsequent profit function which represents its aggregate performance:

\[ \pi_{ia} = (1 - \tau_{yia})P_{ia}Y_{ia} - (1 + \tau_{lia})wL_{ia} - (1 + \tau_{kia})rK_{ia} \]  

(4)

where \( \tau_{yia} \), \( \tau_{lia} \) and \( \tau_{kia} \) are respectively distortions on production, and labor and capital. Given the maximization problem, the first order condition with respect to capital and labor yields input ratio values derived then by algebra:

\[ \frac{rK_{ia}}{wL_{ia}} = \frac{\alpha_a}{\beta_a}(1 + \tau_{lia}) \]  

(5)

It appears clearly that ratios of input value depends neither on the price, nor the output distortion, but rather on the inputs distortion including capital and labor. Then, to get a sense of the specificity, assume there is no distortion on capital, and this is true in reality as all local administration benefit funds, everything else equal, in the form of transfers from central government, and rearranging equation (5) leads to:

\[ \frac{rK_{ia}}{wL_{ia}} = \frac{\alpha_a}{\beta_a}(1 + \tau_{lia}) \]  

(6)

where \( rK_{ia}/wL_{ia} \) is the input productivity, while \( \alpha_a/\beta_a \) is the factors of production ratio, and \( 1 + \tau_{lia} \) is the labor distortion. Thus, the equation measures how an increase in the labor distortion generates factor misallocations that affect total factor productivity.

This equation provides an interesting setting for the identification. It shows that when offices face position misallocation, it lowers their productivity, and thereby, the real level of services and goods they would have provided. Ultimately, removing the labor distortion would likely increase office head’s productivity. Thus, taking the logarithm of equation (6) leads to:

\[ \ln\left(\frac{rK_{ia}}{wL_{ia}}\right) = \ln\left(\frac{\alpha_a}{\beta_a}\right) + \ln(1 + \tau_{lia}) \]  

(7)

Subsequently, I can write the following regression which will be estimated:

\[ Performance_{ia} = \mu_a + \beta \text{Matching}_{ia} + Z'_{im} \lambda + \varepsilon_{ia} \]  

(8)

We can therefore related equation (8) to the equation (6), as the latter actually structures resource allocation on total productivity in the local administration. Indeed, \( Performance_{ia} \) stands for the office heads input productivity, and \( \mu_a \) and \( \text{Matching}_{ia} \) represent local administrations factors of production \( \ln(\alpha_a/\beta_a) \) and the efficient way of labor resource allocation \( 1 - \ln(1 + \tau_{lia}) \) respectively.
3 Data

For the purposes of this paper, I use an individual-level survey data that is combined with administrative records. In this section, I detail the data collection procedure, describe the bureaucrats’ performance measure as well as the skill-position matching variable, and finally present some descriptive statistics that emphasize the state of local bureaucrats’ appointment in Benin.

3.1 Data collection

The primary data source used in this paper is survey data collected through the Institute for Empirical Research in Political Economy (IERPE). The survey was conducted in 2018 and covers 45 Beninese municipalities. In each municipality, I prioritize bureaucrats in the five most important positions in the local administration who are involved in the management of funds stemming from the central government via the National Commission of Local Finance (Conafil).

Bureaucrats were asked to fill out a survey with questions related to their professional career and their individual characteristics. Amongst other questions, they were asked their years of education, experience (past and current in years), skills, wages, whether they have bonus incentives, the main attributes of their office, their age, marital status, family size, etc. Out of 225 respondents expected, only seven did not send back their filled form which corresponds to a 96.88 percent responses rate. In addition, I extended the data collection to the rest of office holders which allows me to have a full sample of 322 bureaucrats.

We combine this data with local administrations’ Audit Reports (published by Conafil) from 45 municipalities. Reports contain detailed information on office heads, the educational attainment, the years of experience in the office, number of qualified agents in the office and managers’ additional qualification (in term of qualified training) as well as achieved activities by bureaucrats. These details allow for further checks the accuracy of some relevant information collected with individuals (managers).

On the other hand, Auditors establish the overall performance index of the local administration. Actually, the administrations’ performance index follows a rating methodology of management and completed activities and projects based on direct observations and a wide range of various indicators taking into account the political process and the local public good provision.

3.2 Bureaucrats’ Performance Index

Bureaucrats’ individual performance index are generated from the overall performance of the local administration. As emphasized above (section 2), local administration performance is an aggregation of its office head’s outcome based on the management of resources and the quality of local public goods provided.

---

6National Commission for Local Finance is a governmental agency through which the central government deals with Beninese local administrations for funds (direct and indirect transfers for financing their development plan).
Indeed, to compute the overall performance of the whole administration, the Ministry of Decentralization through Conafil agency, has established a unique procedure manual which serve as a guide for auditors to compute the performance index at the end of the audit. Actually, the procedure manual provide an exhaustive list of indicators should be taken into account for the index, and those indicators are basically classified in four categories from the general conditions required for office heads to perform well to the quality of public goods provided, including the frame of public procurement and local resources management. Each category is assigned some credits given the relevance of its components, and the sum of credits from all categories yields 100.

An example is that of the category of public procurement and public contracts issuance with 30 credits, which has two indicators including the structure of the public procurement agency, and the issuance frame of public contracts. While the first indicator is credited with 10 points, the second one is with 20 points. Then, taking all the credits allocated to each indicator depends on the compliance to the procurement procedure, the type of contracts, the way they have been issued, the timing and the quality of tasks achieved, and the availability of supporting documents, their quality, and some others considerations. Similarly, the others are credited and noted according to their indicators, and their respective components. Ultimately, the performance of a given administration is generated by the sum of the credits from all the four categories.

Given this overall performance across municipalities, for each individual, I use a harmonized weighting procedure across local administrations to establish a unique and individual performance index as the share of their respective contribution to the performance of the local administration in terms of the quality and timing of tasks achievement and that of the public service provided. Thus, all bureaucrats individual performance are generated using the following formula:

\[
\text{perform}_i = \frac{\text{performance}_m \times (\text{office} - \text{weight}/100)}{100}
\]

3.3 Skill-Position Matching

To match bureaucrats and positions, information from Beninese Ministry in charge of Labor and bureaucrats career management is used. The information describes the requirements for an individual to perform a specific job. Among other, there is the educational attainment and, in particular, the specific skills needed to suit the office. We combine this information with the main attributes of each office to check the adequacy. In fact, bureaucrats were asked to mention the main activities that they are used to conduct according to the attributes of the office they are leading.

Following this step, I generate a dummy variable that takes a value of 1 for individuals that have the educational level and the skill required to suit the position, and 0 otherwise. As an example, for the Planning and Local Development office head, one of the most important position in the local administration, the Labor Ministry classification requires at least a bachelor degree and specifically in Planning, Statistic, Local Development or associated field such as Economics or Project Management. Then I

\[\text{More details about the computation of performance index of Local administrations can be found following this link http://conafil.org/index.php/2013-07-14-23-40-46/2016-04-18-16-38-20 (page 79 of the attached document).}\]
code 1 if the bureaucrat meets the requirements, and 0 otherwise. In so doing, I find that 55.28 percent (Table 1, Panel A) of bureaucrats have been adequately appointed in their position with a total mismatching of 44.72 percent at the time of the survey.

3.4 Description of the Data

At first glance of the data, it is apparent that more than 80 percent of office holders are eligible to fill the positions, i.e. most of individuals in the sample, more accurately, 81.42 percent (Table 1, Panel A) meet the education level criteria. This will further constitutes a sub-sample of eligible office holders for robustness checks.

On the other hand, when the analysis is deepened, I notice that among bureaucrats who fulfil the education level, around 70 percent (Table 1, Panel C) are local appointees and 86.34 percent were born in the municipality with 69.40 percent sharing the same ethnicity with the Mayor. These observations are very important as they might drive performance in such a way that controlling for them would help to isolate their effect.

Despite the politicization and favoritism in the Beninese bureaucracy, I am able to identify the proportion of individuals who are used to engaging in local development association and have a good knowledge of their community.

Actually, a survey of the literature reveals that local knowledge of the community is a non-negligible factor that could explain local bureaucratic performance and the
quality of public goods provided (Acemoglu et al, 2014). Therefore, I construct the variable local knowledge which is a dummy taking the value 1 if manager $i$ in municipality $m$ completed at least the primary school in the locality or have been member of a local development association such as students association for the development of the community.

As seen in Table 1 and Panel C, more than 65 percent of office heads have knowledge of their community and represent 65.65 percent of eligible bureaucrats. Moreover, it is notable to emphasize that 65 percent (Table 1, Panel B) of less educated managers (non-eligible) attend a training, and among the trained, 48.71 percent attended before being appointed as an office heads. All these variables will be used as control in the identification strategies cause of their relevance in the literature and their high frequency in the sample. Later on, I utilize the proportion of individuals with local knowledge for robustness check cause of the close collaboration between those bureaucrats and politicians during electoral campaign. Details on the data used in this study is provided in the summary table (Table 1).

4 Estimating the effect of Skill-Position Matching on Performance

4.1 Main Identification Strategy

To estimate the causal effect of Skill-Position-Matching on bureaucratic performance, the ideal context would be to randomly assign offices among bureaucrats and then compare both matched and unmatched bureaucrats. For obvious reasons, implementing such an experiment is not feasible. Looking at the balanced table (Table 2) between matched and unmatched bureaucrats based on observables, it appears clear that I am not comparing two balanced groups in all regard as their difference in mean are significant for some relevant variables that determine performance. For instance, Panel A of the same table shows that matched and unmatched bureaucrats are different on characteristics such as wages, years of education, years of experience in the office.

The literature highlighted these variables as keys driver of bureaucratic performance (Evans and Rauch, 2000; Sturman, 2003; Finan and Ferraz, 2009). Given the importance of these variables, I include them in all regressions. Also, as seen in Panel A and B of Table 2, matched bureaucrats are significantly more likely to be men. Gender quota is very important as it tends to make men more performant because of the competitive pressure imposed by women (Besley et al, 2017). Therefore, not accounting for gender could bias results. The same is true directly appointed managers. In fact, the proportion of matched direct appointees is significantly higher. One might expect direct hires being more performant because of the competitive hiring setting.

Notwithstanding the observed differences taken into account, there might be other sources of bias. One and important of them is the matching confounding factors such as the motivation leading to bureaucratic appointment as it does not occur randomly and is controlled by the Mayor who retains sufficient power to hire and appoint. Subsequently, I fix all administrations’ differences related to their functioning and specificities across municipalities. Given that, the individual-level of observations allow us to assure the quasi-randomness of the Skill-Position-Matching, and thereby makes us more confident in explaining its effect on performance as causal.
Table 2: Balance Table between Matched and Unmatched Office Heads

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Mean/SE</th>
<th>(2) Mean/SE</th>
<th>T-test Difference (1)-(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucrats performance</td>
<td>6.954 (0.460)</td>
<td>9.780 (0.405)</td>
<td>-2.826***</td>
</tr>
<tr>
<td><strong>Panel A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage</td>
<td>1.11e+05 (2670.121)</td>
<td>1.38e+05 (2896.908)</td>
<td>-2.77e+04***</td>
</tr>
<tr>
<td>Years of Education</td>
<td>14.139 (0.240)</td>
<td>16.882 (0.062)</td>
<td>-2.743***</td>
</tr>
<tr>
<td>Years of Experience</td>
<td>5.264 (0.258)</td>
<td>4.438 (0.253)</td>
<td>0.826**</td>
</tr>
<tr>
<td>Age</td>
<td>39.340 (0.627)</td>
<td>38.685 (0.471)</td>
<td>0.655</td>
</tr>
<tr>
<td>Proportion of Men</td>
<td>0.757 (0.036)</td>
<td>0.882 (0.024)</td>
<td>-0.125***</td>
</tr>
<tr>
<td>Proportion of Married</td>
<td>0.840 (0.031)</td>
<td>0.871 (0.025)</td>
<td>-0.031</td>
</tr>
<tr>
<td>Family Size</td>
<td>5.521 (0.208)</td>
<td>5.174 (0.156)</td>
<td>0.347</td>
</tr>
<tr>
<td><strong>Panel B</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bureaucrats with bonus incentive</td>
<td>0.569 (0.041)</td>
<td>0.562 (0.037)</td>
<td>0.008</td>
</tr>
<tr>
<td>Office Size</td>
<td>3.035 (0.160)</td>
<td>3.258 (0.182)</td>
<td>-0.224</td>
</tr>
<tr>
<td>Bureaucrats who attended a training</td>
<td>0.576 (0.041)</td>
<td>0.607 (0.037)</td>
<td>-0.030</td>
</tr>
<tr>
<td>Trained before being appointed</td>
<td>0.264 (0.037)</td>
<td>0.298 (0.034)</td>
<td>-0.034</td>
</tr>
<tr>
<td>Direct Appointees</td>
<td>0.215 (0.034)</td>
<td>0.354 (0.036)</td>
<td>-0.139***</td>
</tr>
<tr>
<td><strong>Panel C</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of Bureaucrats from the Mayor ethnic group</td>
<td>0.528 (0.042)</td>
<td>0.607 (0.037)</td>
<td>-0.079</td>
</tr>
<tr>
<td>Bureaucrats mastering the Community</td>
<td>0.653 (0.040)</td>
<td>0.663 (0.036)</td>
<td>-0.010</td>
</tr>
<tr>
<td>Proportion of Bureaucrats born in the Municipality</td>
<td>0.597 (0.041)</td>
<td>0.646 (0.036)</td>
<td>-0.049</td>
</tr>
<tr>
<td>Local Bureaucrats</td>
<td>0.694 (0.039)</td>
<td>0.742 (0.033)</td>
<td>-0.047</td>
</tr>
<tr>
<td>N</td>
<td>144</td>
<td>178</td>
<td></td>
</tr>
</tbody>
</table>

F-test of joint significance (F-stat): 10.485***
F-test, number of observations: 322

Notes: The value displayed for t-tests are the differences in the means across the groups. The value displayed for F-tests are the F-statistics. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.
In addition, the quality of the data, its originality and the relevance of the wide range of variables that are observed gives us the advantage to overcome most of the endogeneity issues mentioned above. I then control for both individuals’ and office’s characteristics (Table 1, Panel A and B) as they are keys for individual performance.

For these reasons, relying on the structural model that is developed, I quantify the effect of Skill-Position-Matching on individual bureaucrat’ performance using the following linear model:

\[ \text{Perf}_{ia} = \beta \text{Matching}_{ia} + X'_{ia} \lambda + W'_{ia} \delta + \mu_a + \varepsilon_{ia} \]  

(10)

where \( \text{Perf}_{ia} \) represents individual bureaucrat \( i \) performance in an administration \( a; \text{Matching}_{ia} \) is a dummy taking the value 1 if bureaucrat’s skills are in adequacy with the position attributions. On the other hand, \( X'_{ia} \) and \( W'_{ia} \) stand respectively for individual’s bureaucrat and office’s characteristics such as wages, years of education, experience at the current position, bonus incentives, qualified training, office size, age, gender, etc. \( \mu_a \) is the administration’s fix effect and \( \varepsilon_{ia} \) represents unobservables which are related to individual’s performance.

Even though I controlled for most relevant covariates in the main specification, this might be insufficient and may require to go beyond. Indeed, sharing the same ethnicity with the mayor, or being originally from the locality, or born in the locality are individual characteristics that could influence the matching at the individual level, as a Mayor would likely be tempted to promote a relative or a local bureaucrat. Subsequently, it can be an argument for office heads to do well in order, for instance, to improve service delivery in the community. Also, ethnic heterogeneity is positively correlated with bureaucratic organization (Rasul and Rogger, 2015). Thus not accounting for ethnicity could lead to omitted variable bias. In addition, I control for political connection as potential source affecting both matching and performance and public goods provision (Acemoglu et al, 2014) based on the proportion of managers who belong to developing association, and captured in the variable "Local Knowledge."

Therefore, I consider estimating an extended equation as follows:

\[ \text{Perf}_{ia} = \beta \text{Matching}_{ia} + X'_{ia} \lambda + W'_{ia} \delta + S'_{ia} \rho + \mu_a + \varepsilon_{ia} \]  

(11)

where \( S'_{ia} \) represents others characteristics such as individual from the Mayor’s ethnic group, place of birth, local knowledge, etc. The remaining are the same as in the previous equation.

4.2 Accounting for Bureaucrats’ Eligibility

Before being eligible for the matching, managers should ultimately undergo a first screening about the educational attainment without which they should not be considered qualified. That is, matched bureaucrats meet at least the education level requirement, and that the matching effect could be attributed to the contingent of educated in the treatment, given the strong relationship between education level and performance. This is very important to care about and address accordingly as it is a plausible source of bias because of potential confounding related to individuals education attainment.
Thus, to rule out this channel, I restrict the data to managers who merely fulfill at least the education requirement for being matched, whether or not they are actually in a matched position. This helps controlling for any omitted variable, in particular educational confounders as well as the heterogeneity between individuals. Matching is therefore as good as random.

In this respect, I reestimate both equations (10) and (11) on the restricted sample to only eligible bureaucrats.

4.3 Accounting for Bureaucrats’ Ability

The most plausible alternative explanation to the finding is that it could be a matter of bureaucrats’ ability. That is, more able office heads are likely to perform well, as it constitutes the core of individuals’ smartness in performing a task (Iyer and Mani, 2012). Therefore, to explain away this hypothesis even though we did not observe directly ability, I take advantage of the unicity of the data.

Bureaucrats were asked “Whether or not they have been, in a recent past, in such or similar position to their current one before being appointed as office head?” The intuition is that a bureaucrat who has already served in a position similar to that observed at the time of the survey would probably be able to perform more than their counterpart who has never been in, whether or not, they are in a matched position.

Ultimately, if skill-position adequacy effect was driven by individuals’ ability, then, controlling for that would therefore cancel out the significance of the estimated effect. Subsequently, I consider taking into account office head’s ability in order to explain away this potential channel that might interfere.

5 Empirical Results and Discussion

5.1 Effect of Skill-Position Adequacy on Managers’ performance

The main identification strategy is estimated in three steps. First of all, I begin with including only the administration fixed effect. Then, I control for differences in observables between matched and unmatched offices heads, and finally, I account for others individuals and offices characteristics.

In so doing, for the full sample, I find that bureaucrats who are perfectly adequate for their position perform better compared to individuals who are not, and this is associated with an average of 3.36 points increase in their performance (column 2 of Table 3). The estimated effect represents 13.44 percent of the General Secretary’s performance and 16.80 percent of that of the Finance Affairs’ manager. While it represents 22.40 percent of Infrastructure office holder’s, the point estimate is a 67.2 percent of the local public procurement office head. This is very high and shows how much they can ameliorate local administrations.

However, including different observables in the regression drops the coefficient to 2.00 but remains highly significant. As shown in column 3 of Table 1, the point dropping is due to the control of individuals’ characteristics, which are actually the main determinants of bureaucrats’ performance. Furthermore, controlling for additional individuals’ and office’s characteristics as reported in column 5 of Table 3 adjusts the point estimate at an average of 2.14 point increase.
Table 3: Matching Effect: controlling for individuals’ and office’s characteristics

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>skill adequacy</td>
<td>9.780***</td>
<td>3.360***</td>
<td>2.003***</td>
<td>3.310***</td>
<td>2.141***</td>
</tr>
<tr>
<td></td>
<td>(0.404)</td>
<td>(0.701)</td>
<td>(0.771)</td>
<td>(0.665)</td>
<td>(0.739)</td>
</tr>
<tr>
<td>Administration FE</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Bureaucrats’ Control</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Office’s Control</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Observations</td>
<td>322</td>
<td>322</td>
<td>322</td>
<td>322</td>
<td>322</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.508</td>
<td>0.722</td>
<td>0.755</td>
<td>0.752</td>
<td>0.783</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Afterwards, following the conceptual framework, I extended the range of control set to some important variables by estimating equation (11). While column 1 of Table 4 reports the previous estimates of equation (10), column 2 through 4 present the matching coefficient to the progressive inclusion of the extended control. As we can see, the point estimates vary between an average of 2.14 and 2.28 points increase.

The difference in estimated coefficients does not have a significant impact on outcome of individuals, as it represents accurately 0.56 percent of the SG’s performance which is negligible and thereby indicates that observed individual and office characteristics are enough to handle the matching effect. At this stage, although I take into account a wide range of observables, no conclusion can be inferred from this analysis on the causality of the matching effect. We then need to go further and get rid of the potential biases driven by unobservables.

5.2 Matching effect on Eligible

To assess the causal effect of interest, I now restrain the data to individuals who merely fulfil the educational level required, whether or not they are actually in a matched position. Table 5 reports estimates of various specifications.

Knowing the impact of years of education on performance, we would expect after leveling individuals’ education that the matching effect, at least, drops off significantly. However, after controlling for observables, I estimate an average of 2.10 point increase in performance for eligible managers in a matched position (column 3 of Table 5) as in the main specification where established effect was a 2.14 point increase, which are almost the same. Also, the estimation of the extended equation gives a very similar coefficient (2.33 point estimate, column 5 of Table 5) to that obtained with the same specification on full sample (2.28 point estimate).

These results are the signal that the identification strategies deals with unobservables and that the matching effect is not driven by the education level differences of office heads. Indeed, that is predictable as individuals who are in adequacy with their position, ceteris paribus, do not need time to learn in office or in any case, very few time to adjust, because of their background and skills they would developed during their academic career, and which would actually suit the offices attributes. Unlike
Table 4: Matching Effect: Controlling for others characteristics

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>OLS</th>
<th>OLS</th>
<th>OLS</th>
<th>OLS</th>
<th>OLS</th>
<th>OLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>skill adequacy</td>
<td>2.141*** (0.739)</td>
<td>2.149*** (0.740)</td>
<td>2.166*** (0.738)</td>
<td>2.141*** (0.740)</td>
<td>2.252*** (0.748)</td>
<td>2.283*** (0.750)</td>
</tr>
<tr>
<td>ethnicity</td>
<td>-0.419 (0.773)</td>
<td>-0.503 (0.863)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>place</td>
<td>0.387 (0.721)</td>
<td>0.224 (0.908)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>orig</td>
<td>0.00364 (0.784)</td>
<td>-0.521 (1.053)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>local knowledge</td>
<td>1.109 (0.787)</td>
<td>1.313 (0.866)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Administration FE | YES | YES | YES | YES | YES | YES |
Bureaucrats’ Control | YES | YES | YES | YES | YES | YES |
Office’s Control | YES | YES | YES | YES | YES | YES |
Observations | 322 | 322 | 322 | 322 | 322 | 322 |
R-squared | 0.783 | 0.783 | 0.783 | 0.783 | 0.784 | 0.785 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

matched bureaucrats, in the same condition, individuals who have been mismatched may need more time and even some additional training before being able to improve and yield perhaps a similar outcome.

As detailed in the data section, 73.61 percent of unmatched office heads attended qualified training after being appointed. This is very high, time consuming and money wasting in terms of funds raised for the training. All these combined with the electoral cycle alongside with bureaucratic turnover would only worsen local administration performance (i.e. new incumbents bring in their staff and this continues over and over), which the skill-position matching can, indeed, resolve in an environment of clientelism.

5.3 Explaining Away Bureaucrat’s Ability

As exposed in the identification strategy section, I take care to account for individuals ability. Even though ability does not guarantee matching, it heavily determines and fosters performance. Therefore, we can be more confident on the matching effect by taking into account office head’s ability.

In Table 6 are reported estimated coefficients. For comparison reasons, columns 1 through 5 show the variation in the matching effect on managers’ performance from the baseline regression to that extended, and to the inclusion of bureaucrats’ ability. Considering both the full sample and eligible subsample, point estimates reveal that the observed increase on matched performance is not, so far, driven by individual
Table 5: Matching Effect on Performance: Accounting for Bureaucrats’ Eligibility

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>OLS</td>
<td>OLS</td>
<td>OLS</td>
<td>OLS</td>
</tr>
<tr>
<td>skill_adequacy</td>
<td>2.954***</td>
<td>1.698**</td>
<td>2.105***</td>
<td>2.220***</td>
<td>2.330***</td>
</tr>
<tr>
<td></td>
<td>(0.865)</td>
<td>(0.843)</td>
<td>(0.784)</td>
<td>(0.782)</td>
<td>(0.788)</td>
</tr>
<tr>
<td>ethnicity</td>
<td>-0.371</td>
<td>-0.431</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.979)</td>
<td>(0.981)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>place</td>
<td>1.587</td>
<td>0.931</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.043)</td>
<td>(1.136)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>orig</td>
<td>-0.461</td>
<td>-0.733</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.171)</td>
<td>(1.162)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>local_knowledge</td>
<td>1.791*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.986)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Administration FE YES YES YES YES YES
Bureaucrats’ Control NO YES YES YES YES
Office’s Control NO NO YES YES YES
Observations 262 262 262 262 262
R-squared 0.737 0.774 0.810 0.812 0.814

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

ability, otherwise, the matching coefficient would have vanished or at least dropped off considerably. Though my point estimates decrease while accounting for bureaucrats’ ability, the difference in average with all the specifications are quasi irrelevant as the coefficients are very close to one another.

For instance, a simple comparison of estimates shows that, considering the full sample, on average there is almost no difference between the baseline regression (2.1 point estimates) and the extended one to the inclusion to ability (∼ 2.0). The same remark can be made with respect to the eligible bureaucrats. These results are very interesting, as they are indication of how well selection on unobservables is being handled with a full blown attack on endogeneity.

6 Assessing Bias from Unobservables and Robustness Cheks

6.1 Addressing Selection on unobservables

Notwithstanding the evidence suggesting that the skill-position adequacy effect is consistent and the specifications dealing with endogeneity based on observables, the point estimates contain an amount of bias explained by selection on unobservables. In order to estimate this bias and provide the real effect of the matching on office heads performance, I conduct a sensitivity analysis proposed by Altondji, Elder and Taber (2005).
This strategy examines the sensitivity of the estimated effect to the correlation between the unobserved covariates that determine both skill-position adequacy and individuals’ performance. Subsequently, to gauge the accuracy of the point estimate, the methodology employs selection on observables to estimate the bias arising from unobservables, and how much stronger it has to be relative to observables in order to totally cancel out the matching effect.

**A- Short Recall on the Foundation**

Consider rewriting the main specification as follow:

\[
\text{Perf}_{ia} = \beta \text{Match}_{ia} + FS'_{ia} \Delta \tag{12}
\]

where \( \text{Match}_{ia} \) is the usual indicator for whether bureaucrat \( i \) is appointed in a matched position to his skills, \( \beta \) is the causal effect of matching on performance and \( FS'_{ia} \) represents the full set of covariates, both observables and unobservables that explain office heads performance, and \( \Delta \) is the \( FS' \)'s causal effect.

Since we did not observe all the potential variables related to performance, I then split the full set into two distinct set which encompass respectively observables and unobservables. Hence the following equation:

\[
\text{Perf}_{ia} = \beta^{*} \text{Match}_{ia} + Ob'_{ia} \Delta_{a} + Unob'_{ia} \nu \tag{13}
\]
where $\text{Ob}'_{\alpha}$ represents the set of individuals’ observables characteristics that affect their performance in the extent of $\Delta_o$; these are wage, years of education, experience, bonus incentive, office size, training, etc. and in $\text{Unob}'_{\alpha}$ is included any other covariate not accounted in $\text{Ob}'_{\alpha}$, for instance, bureaucrats’ motivation and so on amounted to $\nu$ with $\beta^*$, the real effect of matching.

The goal is to estimate $\nu$ and thereafter determine how strong it has to be in order to cancel out the entire effect of $\beta^*$ condition on the selection on observables. To this end, Altonji, Taber and Elder (2005) set up two conditions which are simplified here:

1. $\beta^* = \nu$
2. $\nu = 0$

The first condition refers to the idea that selection on observables and unobservables affects the matching in the same way, i.e. covariates (years of education, experience, wages, age, etc.) and motivation and that any other unobservable have the same relationship with the matching. Hence, I can write the following relationship:

\[
\frac{E(\text{Unob}'\nu|M = 1) - E(\text{Unob}'\nu|M = 0)}{\text{Var}(\text{Unob}'\nu)} = \frac{E(\text{Ob}'\Delta_o|M = 1) - E(\text{Ob}'\Delta_o|M = 0)}{\text{Var}(\text{Ob}'\Delta_o)}
\]

(14)

For simplification reason, $M$ stands for the treatment variable of interest which is the skill-position matching (see Altonji et al. 2005 for more details on condition 1) Condition 2 is that of OLS, i.e. the treatment (Matching) is exogenous to the selection on unobservables explaining performance. To have a sense of the first condition, the following assumptions are important and sufficient as well, as they present an overview of all the conditions leading to $\beta^* = \nu$

1. observables are chosen randomly from the full set of covariates that affect individuals’ performance
2. both observables and unobservables are large and any of them does not dominate the distribution of the skill-position matching or that of the performance
3. the relationship between observables (wages, education level, experience, etc.) and unobservables (motivation, etc.) follows a rule weaker than the OLS assumption which is $\text{Cov}(X, \epsilon) = 0$.

Therefore, following Altonji et al. (2005), I rewrite (5) in a more generalized form:

\[
\frac{\text{Cov}(\text{Unob}'\nu, \text{Match})}{\text{Var}(\text{Unob}'\nu)} = \frac{\text{Cov}(\text{Ob}'\Delta_o, \text{Match})}{\text{Var}(\text{Ob}'\Delta_o)}
\]

(15)

where the bias from OLS regression is:

\[
\frac{\text{Cov}(\text{Unob}'\nu, \tilde{M})}{\text{Var}(\tilde{M})}
\]

(16)

with $\tilde{M}$ the residuals from the regression of the matching on Observables. Therefore, I derive the estimation of this bias following the formula stressed below:

\[
\frac{\text{Cov}(\text{Unob}'\nu, M)}{\text{Var}(M)} = \frac{\text{Cov}(\text{Unob}'\nu, M)}{\text{Var}(\text{Unob}'\nu)} \frac{\text{Var}(\text{Ob}'\Delta_o)}{\text{Cov}(\text{Ob}'\Delta_o, M) \text{Var}(\text{Unob}'\nu)} \frac{\text{Var}(\text{Ob}'\Delta_o)}{\text{Var}(\text{Ob}'\Delta_o)} \frac{\text{Var}(M)}{\text{Var}(M)}
\]

(17)
From the equality, it can infer from Condition (1) that the product of the first two terms at the right hand side is equal to one. Subsequently, the bias is reduced to:

\[
\frac{\text{Cov}(Unob', M)}{\text{Var}(M)} = \frac{\text{Cov}(Ob', \Delta_o, M)}{\text{Var}(Ob')} \frac{\text{Var}(Unob')}{{\text{Var}(\tilde{M})}}
\]

(18)

Actually, the first term of (18) is easily recognizable as it represents the point estimate of the OLS regression of the Matching on observables which is multiplied by the variance ratio of unobservables to the residuals from (18). Yet, more details can be found in Altondji, Elder and Taber (2005) for inferences and proofs.

Hence, to have an idea on how as strong as the selection on observable has to be to explain away the entire effect of the matching, consider the ratio of the matching point estimate (\(\beta\)) to the estimated bias arising from unobservables. That is:

\[
\frac{\beta}{\frac{\text{Cov}(Unob', M)}{\text{Var}(M)}} = \frac{\text{Cov}(Ob', \Delta_o, M)}{\text{Var}(Ob')} \frac{\text{Var}(Unob')}{\text{Var}(\tilde{M})}
\]

(19)

B- Estimation of the bias from unobservables

Using the full sample, and based on the condition that the part of individuals’ performance that is related to both observables and unobservables have the same relationship on skill-position adequacy, the estimates show that the bias from unobservables is almost six fold the matching effect itself. That indicates how confounded my estimates are with the full sample even with all observed covariates. Roughly speaking, it is in some extent a proof for the level of heterogeneity among individuals surveyed, as, some are eligible for the job while some are not.

Thus, using the specification that leveled the bureaucrats according to the eligibility reduces the estimated bias (Table 7, column 2). Getting rid of ineligible improves then the matching effect, as it isolates education attainment confounders. Yet, that is not sufficient to establish the matching effect relying only on this specification.

However, accounting for office heads’ ability, I have not only dealt with heterogeneity but also with potential and relevant source of omitted variable bias due to the strong correlation between ability and performance. As we can see in Table 7, column 3, the estimated bias arising from unobservables drops off significantly even bellow the unit (0.63) alongside with 1.92 point estimates. Subtracting then the estimated bias from the point estimates yields 1.92, the real matching effect on office heads performance, and represents an improvement of 5.16 percent of the SG’s contribution to the effectiveness of the local administration. That accounts for 12.9 percent; 8.6 percent, and 6.45 percent improvement of the Planning, Infrastructure, and Accountancy office heads’ performance respectively.

Moreover, selection on unobservables needs to be as much as three times larger than the selection on observables in order to explain away the established matching effect. Given that, it is less likely that the skill-position matching effect is driven solely by selection on unobservables, and that we can rely on the relationship as potential sources of bias are carefully wave away in a large extent.
<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full Sample</td>
<td>Eligible</td>
<td>Accounting for Ability</td>
</tr>
<tr>
<td>skill_adequacy</td>
<td>2.283***</td>
<td>2.330***</td>
<td>1.920**</td>
</tr>
<tr>
<td></td>
<td>(0.750)</td>
<td>(0.788)</td>
<td>(0.794)</td>
</tr>
<tr>
<td>Bias from Unobservables</td>
<td>12.95</td>
<td>4.10</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>(5.53)</td>
<td>(2.56)</td>
<td>(2.31)</td>
</tr>
<tr>
<td>Administration FE</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Bureaucrats’ Control</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Office’s Control</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Other Control</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Observations</td>
<td>322</td>
<td>262</td>
<td>140</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.785</td>
<td>0.814</td>
<td>0.892</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6.2 Robustness checks

In this section, I run a number of robustness checks including a Propensity Score Matching (PSM) estimation, and a placebo test to ascertain whether or not skill-position adequacy effect is causal.

C- Establishing Matching-Performance causal relationship

Even though the law on decentralization gives some indication on the minimum level of education a bureaucrat should have before being eligible for some jobs in local administrations in Benin, it has not been clear on the specificities of the position, and overall qualification bureaucrat candidates should have to suit positions. Among others, there are the officer of the general secretary, the real estate and land manager, civil state officer, to cite just a few. In fact, if the matching effect was not causal, then, we would still have a positive and significant effect estimating the base line regression on the sample of bureaucrats at mentioned positions. In other words, matching would not matter anymore for individuals in these positions. Subsequently, we should expect a null effect of matching on office heads’ performance with such a regression.

Then, taking advantage of this variation in the sample, I determine whether the matching-performance relationship I have established is really causal.

Ultimately, running each of the specifications used earlier, I find no variation in office head’s performance between matched and unmatched, as all coefficients estimated are statistically non-significant (Table 8, Column 1 through 4). It means that skill-position adequacy matters, and constitutes the starting point of further perspective on bureaucratic performance. In others words, in a piece-meal cases, I distinguish the key component of meritocracy from its mixed effect on performance.
Table 8: Establishing the causal relationship (Placebo)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>skill_adequacy</td>
<td>2.175</td>
<td>1.720</td>
<td>2.043</td>
<td>2.043</td>
<td>2.351</td>
</tr>
<tr>
<td></td>
<td>(2.138)</td>
<td>(1.644)</td>
<td>(1.717)</td>
<td>(1.717)</td>
<td>(1.682)</td>
</tr>
<tr>
<td>place</td>
<td>0.390</td>
<td>0.390</td>
<td>0.500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.247)</td>
<td>(2.247)</td>
<td>(2.255)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>local_knowledge</td>
<td>4.618**</td>
<td>4.618**</td>
<td>4.365**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.971)</td>
<td>(1.971)</td>
<td>(1.965)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>past_experience</td>
<td>1.369</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.498)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration FE</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Bureaucrats’ Control</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Office’s Control</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Observations</td>
<td>125</td>
<td>125</td>
<td>125</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.735</td>
<td>0.817</td>
<td>0.829</td>
<td>0.829</td>
<td>0.831</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Afterward, I perform a Propensity Score Matching (PSM) in order to estimate the average treatment effect of skill-position adequacy on bureaucrats’ performance. This confirms definitively that the effect I estimated is actually causal.

D- Extention of the matching effect on Incumbents Relatives

As mentioned in the literature, bureaucratic performance is sensitive to the process leading individuals to office. In other words, regarding the clientelist versus qualified bureaucrats, performance can be ranked from poor to good (David Lewis, 2007; Best et al, 2017; Colonnelli et al, 2018). Therefore, it would be interesting to extend findings.

I identify a subsample of bureaucrats ethnically tied to the incumbent, and on this, I test the matching effect. Actually, ethnicity is a strong signal for patronage-client in Benin. Indeed, most of the time, seniors bureaucrats always work for the advancement and promotion of juniors who share the same ethnic group with them. Interestingly, new hires from the same region, and same ethnic group as public job sector’s officials after a public recruitment process are very common, even at the national level. Worse, at the local level, relatives are privileged, and the first served, there is effectively no transparency during the process.

Considering then the subsample of bureaucrats from the same region and ethnic group as the incumbent, I find that, on average, matched office heads perform better than their counterparts (Table 9, column 1 through 4) provided they are both incumbents relatives. This is an interesting result to the extent that it empirically starts to bridge the gap in the literature on bureaucratic performance upon clientelism or patronage in public job allocation, which up to now remains mostly theoretical.
### Table 9: Matching Effect on Incumbents Relatives

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>skill_adequacy</td>
<td>3.610***</td>
<td>2.337*</td>
<td>2.625**</td>
<td>2.383*</td>
</tr>
<tr>
<td></td>
<td>(1.292)</td>
<td>(1.239)</td>
<td>(1.296)</td>
<td>(1.341)</td>
</tr>
<tr>
<td>place</td>
<td>-0.191</td>
<td>-0.0946</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.452)</td>
<td>(1.461)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>local_knowledge</td>
<td>1.797</td>
<td>2.182</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.390)</td>
<td>(1.429)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>past_experience</td>
<td>1.432</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.083)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration FE</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Bureaucrats’ Control</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Office’s Control</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Observations</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.739</td>
<td>0.828</td>
<td>0.830</td>
<td>0.833</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

### Conclusion

In summary, this paper extends the literature in political economy that tries to have a clear picture of the determinants of bureaucratic performance, especially even in an environment of favoritism in the appointment. Both theoretical and empirical works in this field have focused on the education attainment and monetary incentives as key drivers of the effectiveness the bureaucratic performance and thereby the quality of public good provision, in particular at the local level. However, findings are mixed, and controversial on the key components.

Then, using a combined individual-level survey data with audits reports stemming from 45 Beninese local administrations which present a good feature for favoritism hiring and appointment, I established that skill-position matching can be optimal for governmental administrations in terms of individual bureaucrat’s performance.

To assess the causal link, I undertook a number of exercises through different specifications. First, I controlled for important determinants of performance such as individuals’ wages, education level, years of experience in the current position, bonus incentive, office size and qualified training and other additional characteristics such as ethnicity. Second, I accounted for education level gap between matched and unmatched bureaucrats by considering only eligible bureaucrats (i.e. those who fulfilled the educational level requirement) and examining whether or not they are in a matched position.

Finally, I took into account individuals’ ability by considering those who have had already worked in such or similar position to their current one. The matching effect survived once again.
Convinced that the effect might still be biased, I went a step further in order to deal with unobservables and endogeneity, and establish the causal relationship. Thus, I estimated the potential bias arising from selection on unobservables, which has to be as much as three times larger than observables to be able to eliminate the matching effect entirely. Then, I performed a PSM estimation, and average treatment effect upheld the matching effect. Afterward, I used an exogenous variation in the appointment requirement to establish the causal effect of skill-position adequacy on performance.

Moreover, I extended these findings to the particular case of patron-client based appointment. Yet, I found a positive and significant effect of matching on incumbents’ relatives office heads’ performance.

Overall, findings show evidence that skill-position matching is actually a key component for individual bureaucrats to do well and make the local bureaucracy effective even in a favoritism setting of appointment. However, the nature of the data did not allow to study the dynamic of the matching when, for instance, we care about the electoral cycle. In addition, it would be interesting to look at the selection process at the incumbent level, which I believe might explain the variation in the proportion of matched bureaucrats across municipalities. Ultimately, the next and natural step would be to assess the mechanisms of these variations in our local administrations.
References


[18] Grindle, M. S. Constructing, deconstructing, and reconstructing career civil service systems in Latin America.


