

Patronage or Merit? The Choice of Bureaucratic Appointment Mechanisms*

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Abstract

The means by which governments select bureaucratic officials are likely to be closely associated with the performance of state bureaucracies. Merit-based recruitment may yield more productive officials than other methods of selection. Yet the choice of appointment mechanism has been subjected to scant theoretical scrutiny in comparative politics. In this paper, I examine this choice by constructing a theoretical model wherein officials may be appointed either through patronage or by merit. Patronage, I argue, is characterized by skilled and unskilled candidates bidding for offices by offering political services in exchange for posts. Patronage is costly insofar as it may exclude qualified candidates from office if these candidates lack the means to secure a post. Patronage is, therefore, less likely to be adopted when excluded candidates are highly skilled.

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Bureaucratic organization has usually come into power on the basis of a leveling of economic and social differences. This leveling has been at least relative, and has concerned the significance of social and economic differences for the assumption of administrative functions.

-Max Weber, *Economy & Society* 1978 (1922)¹

1 Introduction

Government policies are shaped by the nature of the state apparatus charged with their implementation. All governments must delegate authority to bureaucratic officials, whose numbers, competence, and incentives determine the mapping from government decisions into policy outcomes. The means by which bureaucrats are selected for state office are therefore likely to have an important effect on political processes.

Many studies stress the importance of the meritocratic selection of bureaucratic officials to state performance. In an early example, Weber distinguished between prebendal and bureaucratic organizations. In the former, offices are often purchased. In the latter, officials are selected through meritocratic examination (1978). Prebendal assignment of offices had deleterious consequences: “assignments of services and usufructs in kind ... tends to loosen the bureaucratic mechanism.”² More recently, the World Bank (1993) attributed the growth of the East Asian ‘Tigers’ to their high quality of governance. The strong performance of bureaucracies in these states resulted from the extremely competitive meritocratic nature of the recruitment of officials. Rauch & Evans (2000), in an empirical analysis of a cross-section of 35 developing and middle income countries, find merit-based recruitment to be an important determinant of bureaucratic performance and the control of corruption.

Despite the abundance of evidence linking bureaucratic recruitment to government performance, few studies in comparative politics have examined the choice of recruitment methods. In this paper, I analyze this choice. I suggest that governments face a tradeoff between the efficient provision of bureaucratic services and the collection of rents from patronage. Patronage involves the exchange of public offices for payments, which might be either monetary or in-kind. Both governments and bureaucrats benefit from patronage if bureaucrats are able to exploit their offices for personal gain. But, patronage requires that such bureaucrats be able to ‘pay’ for their position. The use of patronage may, therefore, exclude qualified

¹p. 983

²ibid. p. 967

candidates from office due to a lack of resources required for such payment.³ The greater the extent that skilled officials are so-excluded from office, the more likely a merit-based system of appointment is to be adopted.

This claim is distinct from others advanced in the literature on bureaucratic selection. Earlier studies have generally focused on two possible determinants of bureaucratic selection: democracy and income.

Findings regarding the effect of democracy are mixed. One line of argument suggests that democratic governments face incentives to select the most capable officials possible; while autocrats may not face similar incentives. Egorov & Sonin (2004) examine the effect of bureaucratic selection on the risk of a coup. Because highly competent bureaucrats are better able to remove the government than incompetent ones, autocrats face an incentive to select incompetent officials - particularly if these autocrats are relatively weak. Dixit (2008) reaches a related conclusion. In a model with altruistic and self-interested bureaucrats, he finds synergies between democratic governments and altruistic bureaucrats. Such synergies do not exist between such bureaucrats and autocratic governments.

Others argue, however, that democratic competition increases governments' demand for patronage. In a study of Latin American states, Geddes (1994) finds that governments are more likely to rely on patronage in highly competitive systems. Patronage affords the government an electoral advantage over competitor parties that is particularly valuable when competition is great. Similar claims have been advanced to explain patronage in the US (Lewis 2008) and East Asia (Evans 1995, Haggard 1990).

In light of these mixed findings, the model developed below is cautious in its treatment differences between democratic and autocratic governments. Rather than focusing on institutional differences, it allows for variation in the weight the government places on patronage rents relative to bureaucratic production. While institutional variation may affect these weights, the exact nature of this relationship is theoretically ambiguous.

An alternative argument holds economic development to be a driving force behind merit-based selection. Claims of this sort date to Weber, who noted the role of technological change in driving bureaucratization (1978). Besley & McLaren (1993) posit a different mechanism. They construct a model of both moral hazard and adverse selection - with both honest and

³However, it should be noted that provided patronage may select skilled officials *amongst the pool of candidates possessing the political and economic resources necessary to bid for office*. If the returns to skill in the bureaucracy are sufficiently high relative to those in the private sector, the government may use patronage as a mechanism by which to reveal an agent's private information regarding his skill. It is the credit constraint preventing open competition for office that make patronage costly, not an inherent tendency to select unskilled officials.

bribeable officials. Governments can deter bribery by paying an efficiency wage. They can accept a degree of bribery by paying market wages. Or, they can pay below market wages by allowing officials to supplement their income by accepting bribes. The third scenario is likely to prevail if governments have few resources - as is the case in many developing countries.

In this paper, I derive similar findings to Besley & McLaren through a slightly different mechanism. I find that as private sector wages rise, candidates are less willing to exchange bribes for offices. Highly-skilled candidates are particularly unlikely to make such exchanges as private sector incomes rise. Increasing private sector income therefore reduces the benefits from patronage, making merit-selection more likely.

The central hypothesis of the model below is that the merit system is most likely to be adopted when many highly-skilled candidates for office are excluded under patronage. A concrete operationalization of this claim would hold that merit-selection is most likely to be adopted when the poor - who are less likely to possess either the political or financial resources to purchase office under patronage - are highly educated. The model further suggests that merit is more likely to be adopted when private sector incomes and the private sector returns to skill are high.

2 Empirical Motivation

The theory advanced in this paper thus advances a new empirical claim: the greater the extent to which skilled candidates for office are excluded from the bureaucracy under patronage, the more likely merit-selection is to be introduced. It also bolsters existing claims regarding the relationship between economic development and the bureaucracy. Ideally, one would like at least preliminary empirical evidence in support of these claims. The relationship between merit-selection and democracy should also be subjected to empirical scrutiny. If democracy and income alone explain nearly all variation in bureaucratic appointment schemes, there is little need for the theory below.

The dataset Rauch & Evans (2000) constructed to test the effect of merit-selection on bureaucratic performance and corruption can be used for preliminary tests of the relationship between merit-selection, democracy, income, and education. These data cannot be considered definitive. They only cover a small cross-section of 35 developing and middle income countries and likely suffer from substantial measurement error. But, patterns evident in these data may prove suggestive.

Rauch & Evans collected their data from 126 country experts. Each expert was asked to

complete a questionnaire on the composition, selection, and promotion criteria for the top 500 bureaucrats in a given country's economic agencies. Experts were asked to consider the 1970-2000 time period. A minimum of 3 respondents were surveyed for each country in the dataset. Below, I examine the raw data from the answer to their question 4: "Approximately what proportion of the higher officials in these [economic] agencies enter the civil service via a formal examination system? (1) less than 30%, (2) 30-60%, (3) 60-90%, (4) more than 90%?" Correlations between the answer to this question, levels of democracy, income, and education may cast some light on the claims advanced above.

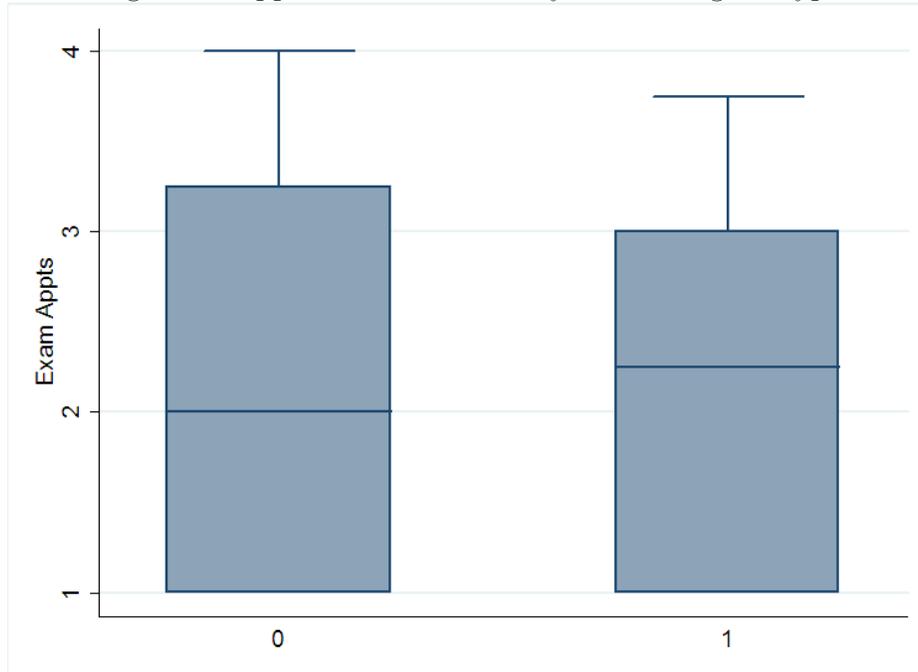
Contra regime-based accounts, there does not appear to be much evidence that methods of recruitment differ greatly between democratic and autocratic governments. Figure 1 displays a box-and-whiskers plot of the scores on Rauch & Evans' survey grouped according to a democracy/autocracy indicator. While autocracies appear to have a slightly higher average score; the variation in both groups is enormous and the difference is far from significant. Figure 2 contains a scatterplot, and lowess regression line,⁴ of the survey scores against Bueno de Mesquita et al.'s measure of the ratio of the size of the winning coalition to that of the selectorate. Again, no strong pattern emerges. Similar results hold if Polity2 scores are used in place of the $\frac{|W|}{|S|}$ measure.

Levels of economic development appear to be somewhat better predictors of bureaucratic recruitment method than political regime-type. Figure 3 depicts a scatterplot and lowess regression line of average scores on the Rauch & Evans survey against real GDP *per capita* at the beginning of the 1970-1990 period. A slight positive association between income and merit-recruitment is visible. This relationship is consistent with theories developed by Besley & McLaren and Weber, as well as with the theory developed below. And since the range of income in the 35 country sample is somewhat constrained - all countries in the sample are of middle income or less - it is likely that this graph underemphasizes the relationship between meritocratic selection and income. Nonetheless, the evidence presented in Figure 3 strongly suggests economic development does not, alone, account for meritocratic appointments to the bureaucracy. At any given level of income, there exists great heterogeneity across countries in the type of selection mechanisms employed.

I suggest that the distribution of skills in society may help predict the choice of appointment scheme. The greater the level of skills amongst the politically unconnected, the greater the opportunity costs (in terms of lost efficiency) of a patronage-based system. A concrete

⁴A lowess, or **locally weighted scatterplot smoothing estimator** is a non-parametric smoothing function. It uses a local polynomial to fit the data and reduces the weight placed on outlier observations (see Cameron & Trivedi 2005).

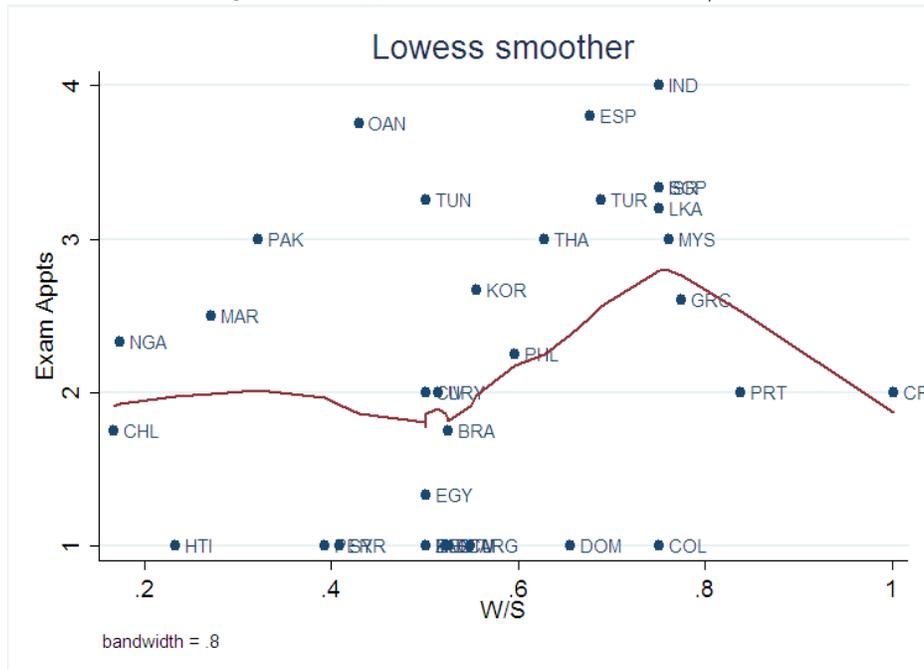
Figure 1: Appointment Scheme by ACLP Regime-type



Box and whiskers plot comparing values of expert evaluations of the percentage of exam-based appointments to ‘core economic agencies’ during the 1970-1990 period between democracies and autocracies. Scores based on the expert evaluations are on the y-axis. A score of 1 indicates that less than 30 percent of officials were appointed by exam. A score of 2 indicates that between 30 and 60 percent were so appointed. A score of 3 indicates between 60 and 90 percent. A score of 4 indicates 90+ percent. The expert evaluations are from Rauch & Evans (2000). Groups by regime-type are according to the ACLP (2000) definition of democracies and autocracies. Values of 0 denote democracies, values of 1 autocracies. Median values for the 1970-90 period are reported.

operationalization of this claim implies that the greater the level of education amongst the lower classes (who are less likely to be politically connected than the upper classes), the more likely merit-based systems are to be implemented. Figure 4 examines the evidence for this claim in the raw data by plotting scores on Rauch & Evans’ survey measures against the percentage of the population above age 25 that has completed secondary education, as compiled by Barro & Lee (1996). Since it seems safe to assume that the political elite in nearly all countries has at least a secondary level of education; variation in the Barro & Lee data will be driven by differences in the education levels amongst the less-connected. As can

Figure 2: Appointment Scheme vs W/S

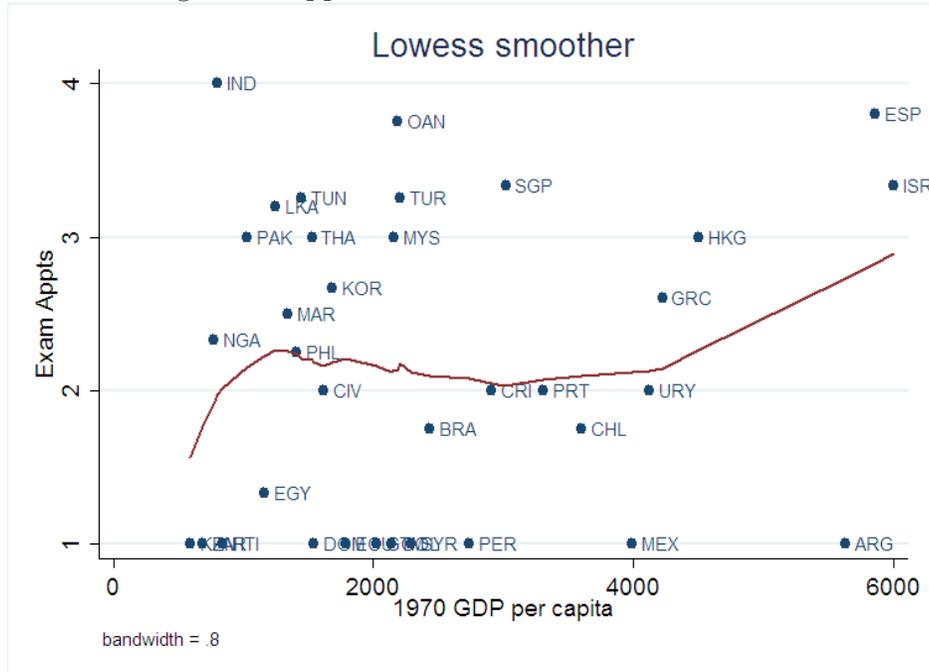


Lowess regression of expert evaluations of the percentage of exam-based appointments to ‘core economic agencies’ during the 1970-1990 period against the ratio of the winning coalition to the selectorate. Scores based on the expert evaluations are on the y-axis. A score of 1 indicates that less than 30 percent of officials were appointed by exam. A score of 2 indicates that between 30 and 60 percent were so appointed. A score of 3 indicates between 60 and 90 percent. A score of 4 indicates 90+ percent. The expert evaluations are from Rauch & Evans (2000). The W/S measure is from Bueno de Mesquita et al. (2003) and are averaged over the 1970-90 period.

be seen in Figure 4, a strong and positive association exists between education levels and the type of appointment system.

A corollary of the model developed below is that greater levels of corruption will be associated with the more frequent use of patronage. Higher levels of bureaucratic rent-seeking increase the value of offers made by candidates for office to the government under patronage. Under merit-selection, rent-seeking does not produce any such ancillary benefits. Empirically, one would therefore expect to see that highly corrupt governments frequently employ patronage. Figure 5 displays scatterplots and lowess regression lines of corruption indices against the Rauch & Evans data, which appear consistent with this claim.

Figure 3: Appointment Scheme vs 1970 Income

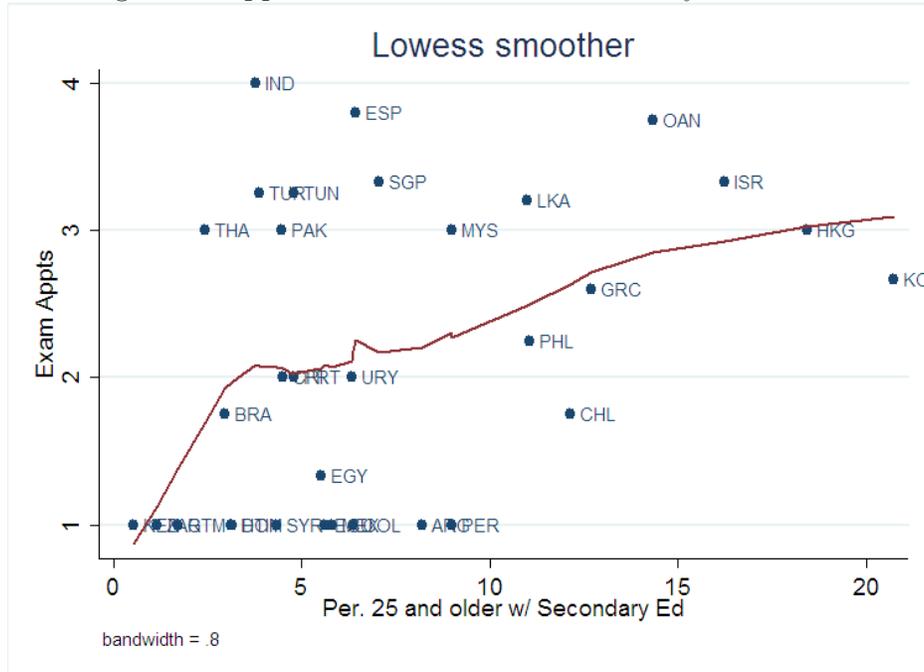


Lowess regression of expert evaluations of the percentage of exam-based appointments to ‘core economic agencies’ during the 1970-1990 period against GDP *per capita* in 1970. Scores based on the expert evaluations are on the y-axis. A score of 1 indicates that less than 30 percent of officials were appointed by exam. A score of 2 indicates that between 30 and 60 percent were so appointed. A score of 3 indicates between 60 and 90 percent. A score of 4 indicates 90+ percent. The expert evaluations are from Rauch & Evans (2000). GDP *per capita* is measured in real terms from Penn World Tables 5.6.

3 Theory

In this section, I further develop the theory alluded to in the introduction. Patronage, I argue, involves the exchange of offices for political services and resources. Merit-selection, by contrast, selects candidates according to their administrative skill - which is generally assessed through a competitive exam-based appointment system. The government’s problem when choosing which type of appointment scheme to implement lies in the fact that skilled candidates may not be able to deliver services or resources in exchange for office. And those candidates able to purchase office may lack skill. To the extent that the pools of skilled and influential candidates do not overlap, patronage will be costly.

Figure 4: Appointment Scheme vs Secondary Ed. Levels

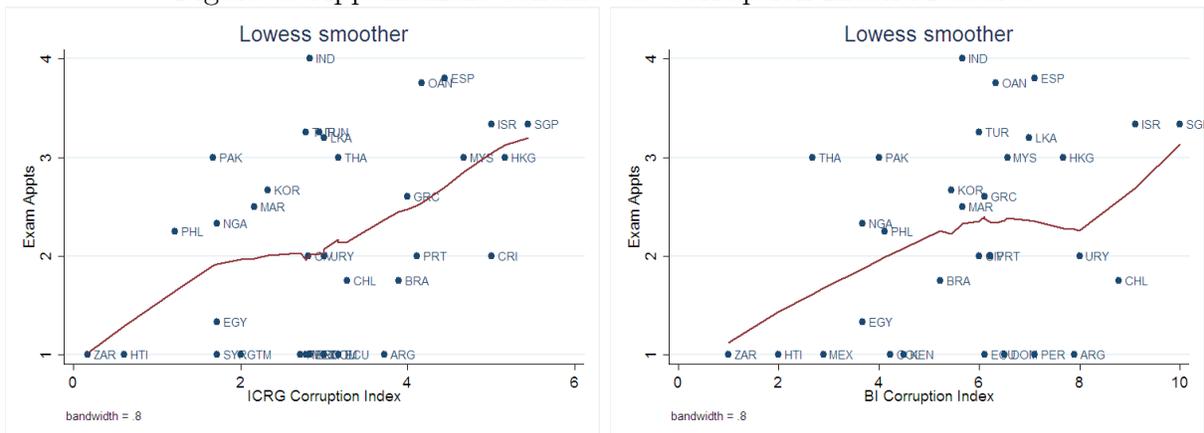


Lowess regression of expert evaluations of the percentage of exam-based appointments to ‘core economic agencies’ during the 1970-1990 period against percentage of the population aged 25 and above that has completed a secondary education. Scores based on the expert evaluations are on the y-axis. A score of 1 indicates that less than 30 percent of officials were appointed by exam. A score of 2 indicates that between 30 and 60 percent were so appointed. A score of 3 indicates between 60 and 90 percent. A score of 4 indicates 90+ percent. The expert evaluations are from Rauch & Evans (2000). The secondary education measures are from Barro & Lee (1996) and are averaged over the 1970-90 period.

Critical to this argument is the assumption that, under patronage, candidates competitively bid for office in a process akin to an auction. This action-like process is a reduced form representation of the exchange of office for goods and services. It deliberately obscures many aspects of this exchange to focus on the effects of one general property of patronage - its exchange-based nature. I provide greater justification for this assumption below.

In section 3.1, I further develop the informal intuitions underlying this analysis. Section 3.2 formalizes these intuitions and generates the comparative static predictions discussed in the introduction. Section 4 concludes.

Figure 5: Appointment Scheme vs. Corruption Index Measures



Lowess regression of expert evaluation of the percentage of exam-based appointments to ‘core economic agencies’ during the 1970-1990 period against International Country Risk Guide (ICRG) and Business International (BI) corruption indices. Scores based on the expert evaluations are on the y-axis. A score of 1 indicates that less than 30 percent of officials were appointed by exam. A score of 2 indicates that between 30 and 60 percent were so appointed. A score of 3 indicates between 60 and 90 percent. A score of 4 indicates 90+ percent. The expert evaluations are from Rauch & Evans (2000). The ICRG and BI indices are also from Rauch & Evans. Declining scores represent greater corruption.

3.1 Informal Argument

In section 1, I claim that the choice between patronage and merit-based appointment systems involves a tradeoff between political rents and bureaucratic skill. A meritocracy helps to ensure the latter, by helping to guarantee that those who attain office are minimally qualified for their posts. Competitive examinations and educational and experiential requirements for office help to screen candidates based on their abilities. Both quantitative and qualitative empirical studies suggest that the merit-system tends to produce competent bureaucracies (see for instance Evans 1995, Geddes 1994, Haggard 1990, Johnson 1982, World Bank 1993, Rauch & Evans 2000).

Ceteris partibus, governments desire the most productive bureaucratic apparatus possible. This desire may be induced by the goal of remaining in office. Governments may need to ensure a certain level of public goods provision to avoid removal, whether by election or through other methods. Or it may stem from the desire to use the state apparatus for

personal ends. In either event, the government must gain some benefit from patronage if it is to abandon a merit-system that helps to ensure a productive bureaucracy.⁵

The exact nature of the advantages conferred by a patronage system may vary. The government may offer candidates their posts in exchange for money. Weber (1978) notes that “The purchase of office as a regular institution has existed [in Europe]... well into the nineteenth century.”⁶ Offices might also be offered in exchange for political support. Carpenter (2001) finds that under the ‘spoils system’ in the nineteenth century US, bureaucrats were required to retain active membership in the appointing government’s political party and to make regular monetary donations to that party. Lewis (2008) notes that modern US presidential appointments are often offered as rewards for services rendered during a political campaign.

Whether the government benefits from material goods or political services; *the exchange-based nature of the patronage relationship is the same*. This exchange may be captured by the following reduced form description: candidates competitively make costly offers to secure their posts in an auction-like process. The assumption that bids for office are costly seems uncontroversial. If bids are monetary, the cost to candidates is clear. If, on the other hand, patronage bids involve the exchange of political services for office; candidates must pay an opportunity cost as they devote time and energy to serving the political ends of the government. Lewis (2008) notes of patronage appointees in the American system, “They have worked on the campaign, for a state party, a member of Congress, or interest group. They want a job that will give them a rewarding work experience and advance their career prospects ... *It was the promise of such a job that perhaps motivated them to work for for the campaign in the first place.*”⁷

It is somewhat more controversial to assume that bids for office are competitive and offices are awarded to the highest bidder in an auction-like process. Clearly this assumption is quite stark and very reduced form. It sweeps aside a great deal of variation in the form of patronage to focus on the general phenomenon of exchanging offices for goods and services. It assumes a pure form of patronage, in which factors other than the bids placed for offices

⁵Alternatively, there might be some jointness in the production of political services and in official activities (Reid & Kurth 1988, Reid & Kurth 1989). It may be cheaper to have postmen distribute political flyers in the course of their official duties than to hire separate groups to perform both political and official tasks. If this is the case, the government may choose to appoint party loyalists to official posts rather than relying on merit selection. However, efficiencies generated by performing both official and political tasks seem likely pertain only to a small subset of bureaucratic positions.

⁶p. 966. See also Ertman (1997) and Fischer & Lundgreen (1975) on this practice

⁷p. 63. Emphasis added.

are not taken into consideration.⁸

But, the stark reduced form nature of this assumption is precisely what makes it attractive.⁹ The assumption that offices are put out to auction is analogous to claiming that governments seek to maximize the bids they are offered through patronage. While this claim is particularly strong; it serves to dichotomize what is - in reality - a continuum running from merit-based appointments to 'pure' patronage. The binary choice between 'pure' merit and 'pure' patronage is more amenable to theoretical analysis than is the choice of a point on a continuum. And so long as governments place some value on the bids generated through the patronage exchange, the results from my theory follow. Moreover, the depiction of patronage as the auctioning of offices to the highest bidder is - at times - descriptively accurate.¹⁰

If candidates bid for offices under patronage, the value of these bids will be determined by two parameters: (1) the willingness and (2) the ability of candidates to pay. In regards to (1), rational forward-looking candidates will base bids for office on the expected returns thereof. These returns come in two forms: official salaries and rent-seeking opportunities. Candidates will be willing to bid up to the amount by which the sum of these two sources of income exceed that which they could earn should they remain in the private sector.

Opportunities for rent-seeking¹¹ are likely to be particularly important to patronage. Since the government must pay bureaucrats' official wages, it is unclear why it would use patronage as a means of rewarding supporters - rather than direct transfers - in the absence of rent-seeking opportunities. If, on the other hand, the government sits on a large pool of rents, it is logical for it to auction access to these rents off through a patronage process. This exchange is well-summarized by Mobutu Sesse Seko of Zaire, "Everything is for sale, everything is bought in our country. In this traffic, holding any slice of public power constitutes a veritable exchange instrument, convertible into illicit acquisition of money or other goods."¹²

Patronage will not, however, necessarily result in the selection of under-qualified candidates for office. If highly-skilled bureaucrats are more productive than less skilled ones

⁸In a discussion the factors necessary for entrance into the Tudor bureaucracy, Fischer & Lundgreen (1975) note "They [aristocrats and professionals] needed patronage and favor too. On the other hand, patronage and favor alone - except under James I - were not enough either; among those who enjoyed it, the abler ones had the better chance to rise.

⁹For instance, Grossman & Helpman (1994) similarly reduce the complex process of government negotiations with special interest groups to an auction-based model.

¹⁰See for instance: "Illinois Governor Charged with Bribery; He Tried to Sell Obama's Senate Seat, FBI Says," *The Washington Times*. December 10, 2008. (Conery 2008)

¹¹Rent-seeking here is meant generally as the pursuit of activities personally beneficial to the bureaucrat other than her official duties. These activities might be licit or illicit. The defining characteristic for rent-seeking in this model is that it diverts limited energy away from official duties.

¹²As cited in Evans (1995), p. 46

in their official duties, and equally or more productive in the collection of rents, then such skilled candidates may be willing to outbid less qualified ones through the patronage process. Patronage will result in the selection of less-skilled candidates only if one of two conditions hold. First, it may be that the returns to skill in the private sector are particularly high. Because highly skilled candidates face a greater opportunity cost from serving in office, they may bid less than unskilled candidates under a patronage system. Second, some highly skilled candidates may lack the necessary resources to bid for office. If the highly-skilled lack adequate political connections or financial capital, they may be excluded for office even if they would be willing to outbid less-skilled competitors.¹³

Patronage is costly, therefore, to the extent that it excludes qualified candidates from attaining office. The greater the extent of this exclusion, the greater the opportunity cost of patronage relative to a merit-based scheme. This claim produces two empirically testable propositions. First, the greater the extent to which highly-skilled candidates lack the resources necessary for patronage exchange, the more likely is a merit-based system to be adopted. Since the poor are likely to lack both financial resources (by definition) and political connections, a concrete operationalization of this claim holds that the higher education levels amongst the poor, the more likely a merit-based scheme is to be adopted.¹⁴ Second, the higher the returns to skill in the private sector, the more likely a merit-based system is to be adopted. High private sector returns to skill reduce the willingness of highly-qualified candidates to bid for office under a patronage scheme. As a result, under-qualified officials are more likely to be selected and the cost of patronage will rise.

Below, I construct a simple model in which these claims are formalized.

¹³This assumes that no credit market exists for patronage payments. The absence of an effective credit market when patronage involves the exchange of political favors and services seems quite reasonable. More generally, one would expect a candidate's anticipated skill-level to be (to an extent) his private information. Any potential lender offering candidates credit with which to pursue patronage would suffer from an adverse selection problem. Both skilled and unskilled candidates may seek access to funds. Since candidates excluded under patronage are, by definition, lacking resources to use as collateral, any such lender would face great difficulty in addressing this problem. A credit market failure seems likely to result. A similar argument can explain why government's would demand some *ex ante* payment for office, rather than making all patronage payments *ex post*.

¹⁴See Figure 4 for some evidence in support of this claim.

3.2 Model

3.2.1 Game Form

I construct a model consisting of two sets of players. N candidates for bureaucratic office may choose to pursue B government posts. A government G chooses the method of their selection: patronage or merit ($\sigma \in \{p, m\}$). It also chooses the wage contract under which bureaucrats will be employed.

The structure of the game is as follows: (1) The government G chooses the type of appointment system $\sigma \in \{p, m\}$ and the reward per unit of official production γ given to bureaucrats. (2) Candidate choose whether to seek government office. If a patronage system is in place ($\sigma = p$), they offer competitive bids for their posts. (3) Bureaucrats are selected and produce so as to maximize their returns under the wage contract offered.

3.2.2 Bureaucrat Behavior

Since this is an extensive form game, it must be solved by backwards induction. I therefore first analyze the behavior of bureaucrats in office.

Bureaucrats are endowed with a single unit of effort, which is divided between the completion of official duties (e_g) and rent-seeking activities ($e_r = 1 - e_g$).¹⁵ The completion of official duties results in the production of official goods and services according to the production function $\alpha_b G(e_g)$; while rent-seeking produces rents according to the production function $R(e_r)$. $G(\cdot)$ and $R(\cdot)$ are both assumed to satisfy the Inada conditions.¹⁶ $\alpha_b \in \{1, a\}$ is a productivity parameter for bureaucrat $b \in B$. $\alpha_b = 1$ if a bureaucrat is low-skilled and $\alpha_b = a > 1$ if she is high-skilled. This implies that high-skilled bureaucrats produce more official goods and services per unit of effort than do low-skilled.¹⁷

Bureaucrats are rewarded for official activities on a per unit of production basis. Each bureaucrat earns wages equal to $\gamma \alpha_b G(e_g)$, where γ is a choice variable for the government.

¹⁵I ignore the possibility that bureaucrats might also desire leisure. This amounts to treating the marginal cost of effort as zero. None of the qualitative results of the model would be changed should bureaucrats have the option of devoting some of their effort to leisure. The model would, however, become more cluttered by notation.

¹⁶i.e. $G'(e_g) > 0 \forall e_g \in (0, \infty)$, $G''(e_g) < 0 \forall e_g \in (0, \infty)$, $G'(0) = \infty$, $G'(\infty) = 0$, $G(0) = 0$. $R(\cdot)$ satisfies identical properties.

¹⁷It is not assumed that highly-skilled bureaucrats are more productive at rent-seeking than less skilled ones. All qualitative results of the model would hold were skill to increase productivity in both official duties and in rent-seeking, so long as the increase in rent-seeking productivity is less than that for official duties. The assumption that the productivity boost from skill is greater for official activities seems reasonable if skill denotes features like education levels. It may be less so if skill were capturing a property like innate business acumen.

Bureaucrats are similarly rewarded for rent-seeking. Returns to rent seeking are given by $\rho R(e_r)$, where ρ is taken as exogenous. Note that bureaucrats' wages are not given by marginal products. Since it does not seem reasonable to speak of a free labor market in bureaucratic production, it does not seem reasonable to assume that wage rates are equivalent to those under a competitive market.

Bureaucrats are assumed to maximize their total return in office. Their utility function is therefore given by:

$$U_b(\gamma; \alpha) = \gamma \alpha_b G(e_g) + \rho R(e_r) \quad (1)$$

They attempt to maximize this function subject to the constraint that $e_g + e_r = 1$.

It follows from this maximization that

$$\gamma \alpha G'(e_g) = \rho R'(1 - e_g) \quad (2)$$

The level of effort devoted to bureaucratic service is increasing (and the level of effort devoted to rent-seeking is falling) in the official wage rate γ . Moreover, highly-skilled bureaucrats will devote greater effort to their official duties than less skilled ones. Let e_g^h denote the solution to this maximization problem for high-skilled bureaucrats. Let e_g^l denote the solution for all low-skilled bureaucrats. $e_g^h > e_g^l$ for all wage rates $\gamma \in (0, \infty)$.

3.2.3 Bidding for Office

Under patronage, the government puts an exogenously given number of bureaucratic posts B out to bid. N candidates compete for these posts. Each candidate enjoys a benefit from office equal to

$$\begin{aligned} & \gamma \alpha G(e_g^h) + \rho R(1 - e_g^h) - \theta y \\ & \text{for high-skilled candidates and} \\ & \gamma G(e_g^l) + \rho R(1 - e_g^l) - y \end{aligned} \quad (3)$$

for low-skilled.

$\theta \in (1, \infty)$ is an exogenously given parameter measuring the returns to skill in the private sector. I assume throughout that the returns to rent-seeking are sufficient ($\rho > \frac{\theta y}{R(1)}$) to ensure that candidates of all types would be willing to serve in office for any level of γ .

Offices are awarded to those displaying a greater willingness to pay. This is equivalent to assuming that winning candidates place bids that exceed those of the losing candidates by an infinitely small ϵ . High-skilled candidates will be willing to outbid low-skilled if and only if

$$\theta \leq \frac{\gamma[aG(e_g^h) - G(e_g^l)] + \rho[R(1 - e_g^h) - R(1 - e_g^l)]}{y} - 1 \quad (4)$$

I define the level of θ such that the relation in 4 holds at equality as $\bar{\theta}$.

Lemma 1. *There exists a unique level of γ such that high and low-skilled candidates are willing to bid the same amount for office. If γ rises above this level, high-skilled candidates outbid low-skilled. If γ falls below it, low-skilled outbid high-skilled.*

Proof: If $\gamma = 0$, $e_g^h = 0$ and $e_g^l = 0$. Therefore, $\frac{\gamma[aG(e_g^h) - G(e_g^l)] + \rho[R(1 - e_g^h) - R(1 - e_g^l)]}{y} - 1 = -1$ when $\gamma = 0$, which is strictly less than $\theta > 1$. $(\frac{\partial}{\partial \gamma})\{\gamma[aG(e_g^h) - G(e_g^l)] + \rho[R(1 - e_g^h) - R(1 - e_g^l)]\} = aG(e_g^h) - G(e_g^l) + \gamma[aG'(e_g^h)(\frac{\partial e_g^h}{\partial \gamma}) - G'(e_g^l)(\frac{\partial e_g^l}{\partial \gamma})] + \rho[R'(1 - e_g^h)(\frac{\partial (1 - e_g^h)}{\partial \gamma}) - R'(1 - e_g^l)(\frac{\partial (1 - e_g^l)}{\partial \gamma})]$. But, from equation 2, $\rho R'(1 - e_g) = \gamma \alpha G'(e_g)$. Therefore $(\frac{\partial}{\partial \gamma})\{\gamma[aG(e_g^h) - G(e_g^l)] + \rho[R(1 - e_g^h) - R(1 - e_g^l)]\} = aG(e_g^h) - G(e_g^l)$ which is greater than zero for all $\gamma \in (0, \infty)$. Therefore, the right-hand side of the relationship rises monotonically in γ . Moreover, the right-hand side goes to ∞ as $\gamma \rightarrow \infty$ if $y < \infty$. Therefore, there exists a level of $\gamma \leq \infty$ such that the inequality holds.

The value of bids for office is determined by both the willingness and the ability of candidates to pay. Some portion of candidates are assumed to possess resources with which they might bid for office,¹⁸ while others do not. For simplicity, I assume that a pool of candidates of size ω possesses such resources; while the remaining $N - \omega$ candidates possess no resources. To ensure that the government can fully staff the bureaucracy under patronage, I assume that $\omega \geq B$. And I denote the value of a member of ω 's resources as w .

Candidates competitively bid for offices, such that each winning candidate is willing to bid up to the reservation price of the losing candidates. It therefore follows that each candidate c is willing to make offers $o_c(\gamma; \theta)$ to the government of a value given by the following equation:

¹⁸These resources might be in terms of either financial resources, political influence, or some combination of the two.

$$o_c(\gamma; \theta) = \begin{cases} \gamma a G(e_g^h) + \rho R(1 - e_g^h) - \theta y & \text{if } \theta > \bar{\theta} \text{ \& } c \in \omega \\ \gamma G(e_g^l) + \rho R(1 - e_g^l) - y & \text{if } \theta < \bar{\theta} \text{ \& } c \in \omega \\ 0 & \text{otherwise} \end{cases} \quad (5)$$

so long as $o_i(\gamma; \theta) \leq w$. Under patronage, therefore, the government collects political rents equal to

$$O(\gamma; \theta; \sigma = p) = \min\{Bo_c(\gamma; \theta); Bw\} \quad (6)$$

where B denotes the (exogenously given) number of bureaucrats employed in the civil service.

Under the merit-system, it is assumed that the high-skilled candidates are selected for office. These candidates need make no offer for their position. The government therefore enjoys rents equal to

$$O(\gamma; \theta; \sigma = m) = 0 \quad (7)$$

I assume some portion s^w of those possessing resources are skilled, such that $s^w\omega \leq B$. The remaining portion of this pool $(1 - s^w)\omega$ is unskilled. For simplicity, I assume $(1 - s^w)\omega > B$. Similarly, a portion s^p of those lacking resources are skilled. Under patronage, therefore, if wages are sufficiently high (i.e. $\theta \leq \bar{\theta}$) the government will hire $s^w\omega$ skilled bureaucrats and $B - s^w\omega$ unskilled ones. If wages are not sufficiently high ($\theta > \bar{\theta}$), all bureaucrats will be unskilled. Under the merit system, $\min\{(s^w - s^p)\omega + s^pN, B\}$ skilled bureaucrats will be hired.

3.2.4 Government Utility

The government derives utility from the production of bureaucratic services, from the provision of rents, and from budget surpluses. This last assumption may be thought of as representing the opportunity cost of expenditures on the bureaucracy. The government might prefer to use these funds elsewhere - for direct transfers to citizens or capital investment - or it might simply prefer to expropriate these funds for itself.

I denote the total production, summed over each bureaucrat $b \in B$ as $\Gamma(\gamma; \sigma) = \sum \alpha_b G(e_g^b)$. Notation here is abused such that e_g^b denotes the optimal level of effort exerted by bureaucrat b given her skill level. Note that the assumption that the number of bureaucratic posts

to be filled (weakly) exceeds the number of skilled resource-rich candidates implies that $\Gamma(\gamma; \sigma = m) \geq \Gamma(\gamma; \sigma = p)$ for any given level of γ .

The total wage expenditures of the government will be given by $\gamma\Gamma(\gamma; \sigma)$. Therefore, total budget surpluses will be given by the expression $T - \gamma\Gamma(\gamma; \sigma)$, where T denotes the total (exogenously given) tax revenue of the government.

I represent the utility function of the government $U_G(\gamma; \sigma)$ as the following quasi-linear function:

$$U_G(\gamma; \sigma) = \lambda_G V(\Gamma(\gamma; \sigma)) + \lambda_O V(O(\gamma; \theta; \sigma)) + \lambda_T V(T - \gamma\Gamma(\gamma; \sigma)) \quad (8)$$

where $V(\cdot)$ is monotonically increasing, differentiable, and strictly concave and $V(0) = 0$. The exogenously given values of λ_G , λ_O , λ_T denote, respectively, the relative weight placed on bureaucratic services, patronage offers, and budget surpluses.

3.2.5 Equilibrium Conditions

The government maximizes equation 8 with respect to γ, σ , subject to a balance budget constraint $\gamma\Gamma(\gamma; \sigma) \leq T$. For simplicity, I assume that $\lambda_T > 0$ and $V'(0) = \infty$, such that this constraint will never hold at equality.

For any value of $\sigma \in \{p, m\}$, the government therefore maximizes its utility choosing a wage level γ such that the following holds:

$$\lambda_G V'(\Gamma(\gamma; \sigma)) + \lambda_O V'(O(\gamma; \theta; \sigma)) = -V'(T - \gamma\Gamma(\gamma; \sigma)) \quad (9)$$

where $V'(\cdot)$ denotes the first derivative with respect to γ . I denote the level of γ that solves equation 9 when patronage is adopted ($\sigma = p$) as γ_p^* . I similarly denote the level of γ that solves 9 when $\sigma = m$ as γ_m^* .¹⁹

It therefore follows that, in equilibrium, the government will chose wage levels and an appointment scheme subject to the behavior of officials in office. If patronage is selected, candidates will bid for office according to their returns thereof. And bureaucrats in office will divide their effort between rent-seeking and official duties as determined by the value of γ . It therefore follows that governments will select the appointment system that will maximize their utility (equation 8) when the wage rates under the patronage and merit-appointment systems would be, respectively, γ_p^* , γ_m^* . More formally:

¹⁹Note that when $\sigma = m$ equation 9 reduces to $\lambda_G V'(\Gamma(\gamma; \sigma)) = -\lambda_T V'(T - \gamma\Gamma(\gamma; \sigma))$ as patronage bids are unchanging in γ and equal to 0 when merit-promotion is adopted.

Lemma 2. *The government will adopt a merit system ($\sigma = m$) if its utility evaluated at $\sigma = m, \gamma = \gamma_m^*$ exceeds that from adopting a patronage system, i.e. $U_G(\gamma = \gamma_m^*; \sigma = m) \geq U_G(\gamma = \gamma_p^*; \sigma = p)$. This inequality will hold if and only if $\lambda_G[V(\Gamma(\gamma_m^*, \sigma = m)) - V(\Gamma(\gamma_p^*; \sigma = p))] + \lambda_T[V(T - \gamma_m^*\Gamma(\gamma_m^*; \sigma = m)) - V(T - \gamma_p^*\Gamma(\gamma_p^*; \sigma = p))] \geq \lambda_O V(O(\gamma_p^*; \theta; \sigma = p))$*

Proof: *It follows from equations 8 and 9 that the government will chose $\sigma = m$ if and only if $U_G(\gamma = \gamma_m^*; \sigma = m) \geq U_G(\gamma = \gamma_p^*; \sigma = p)$. Substituting the values of rents under patronage and merit-based systems from equations 6 and 7 into the government's utility function produces the inequality above.*

3.2.6 Comparative Statics

To derive comparative static solutions, I first note the following: If the responsiveness of bureaucratic production $\Gamma(\gamma; \sigma)$ to the wage rate for bureaucratic services γ increases, then the equilibrium level of bureaucratic production will rise. I state this claim formally in Lemma 3:

Lemma 3. *If the responsiveness of bureaucratic production to changes in the wage rate for official services rises (i.e. if $\frac{\partial \Gamma(\gamma; \sigma)}{\partial \gamma}$ increases), then the equilibrium level of bureaucratic production $\{\Gamma(\gamma_m^*; \sigma = m); \Gamma(\gamma_p^*; \sigma = p)\}$ will rise.*

Proof: *Assume not. Then the equilibrium level of bureaucratic production at most remains the same after an increase in $\frac{\partial \Gamma(\gamma; \sigma)}{\partial \gamma}$. But if total production remains constant, then the equilibrium wage rate $\{\gamma_m^*, \gamma_p^*\}$ must have declined. Therefore, the right-hand side of equation 9 has strictly decreased (by the concavity of $V(T - \gamma\Gamma(\gamma; \sigma))$); while the left-hand side has weakly increased. (The right-hand side of 9 may increase if $\sigma = p$ as $O(\gamma; \theta; \sigma)$ is weakly increasing in γ and will remain constant if $\sigma = m$). But then equation 9 cannot hold at equality, violating the claim that this is an equilibrium.*

The main claim of this paper is that as the skill level of those excluded by patronage rises, merit-selection grows increasingly likely to be adopted. Similarly, if the share of highly-skilled amongst those participating the patronage process declines, merit-selection is more likely to be adopted. In terms of the formal argument above, as s^p - the proportion of the resourceless who are highly-skilled - rises, the range of parameter values for which merit-selection is adopted (weakly) increases. Or, as s^w - the proportion of highly-skilled amongst those possessing resources - rises, the range of parameter values for which merit-selection is adopted (weakly) declines. I formalize this claim in the following proposition:

Proposition 1. *The range of parameter values for which $\sigma = m$ is weakly increasing in s^p and weakly decreasing in s^w .*

Proof: *As s^p increases, the proportion of highly-skilled bureaucrats selected under merit-appointment $\min\{(s^w - s^p)\omega + s^p N; B\}$ is weakly increasing. Equation 2 implies that the change in any individual bureaucrat's b 's production level in response to a change in γ will be greater if she is high-skilled than if she is low. This implies that increasing s^p increases $\frac{\partial \Gamma(\gamma; \sigma=m)}{\partial \gamma}$. Then, by Lemma 3, the equilibrium level of bureaucratic production under merit-selection is weakly increasing in s^p . By equation 9 this implies that the government's utility under $\sigma = m$ weakly increases as s^p rises. s^p has no impact on production under patronage however, and therefore leaves government utility under $\sigma = p$ unchanged. Therefore, under Lemma 2, increasing s^p increases the range of parameters under which merit-selection is adopted. Conversely, decreasing s^w leads to a strict decline in the proportion of skilled bureaucrats selected under patronage. However, a decline in s^w only causes a weak decline in the proportion of skilled bureaucrats selected by merit (i.e. a decline from s^w to $s_1^w < s^w$ has no effect under merit-selection if $(s_1^w - s^p)\omega + s^p N \geq B$). Therefore, by Lemmas 1 and 2, the range of values for which a merit-system is adopted is weakly declining in s^w .*

I also claimed in section 2 that the probability the merit-system is adopted rises as income levels rise. In the model, an increase in income levels is equivalent to an increase in private sector income y . An increase in the value of y will increase the range of parameter values for which a merit-system is adopted.

Proposition 2. *An increase in the value of y leads to a widening of the range of parameter values for which the government will choose $\sigma = m$.*

Proof: *By equation 4 and Lemma 1, an increase in the value of y increases the threshold above which γ_p^* must pass if highly-skilled candidates successfully bid for office under patronage. If γ_p^* is below this threshold, only low-skilled candidates attain office. Therefore, by Lemmas 1 and 3, the range of values for which merit-selection is adopted is increasing in y .*

A similar finding exists regarding the private sector returns to skill θ . As the returns to skill in the private sector rise, merit-selection is more likely to be adopted. Formally, as θ increases, the range of parameter values for which the merit-system is adopted increases.

Proposition 3. *An increase in the value of θ widens the range of parameter values for which the government chooses $\sigma = m$.*

Proof: *This claim follows directly from equation 4 and Lemma 1. The proof is otherwise identical to that in Proposition 2.*

The parameters λ_G , λ_O , λ_T might be thought of as a reduced form measure of the properties of the political system. When political pressures force the government to provide high levels of bureaucratic goods and services; λ_G is high relative to λ_O , λ_T . Conversely, when the government derives particular political benefits from patronage rents, λ_O is relatively high.²⁰ The comparative static effects of changes in these parameter values is mixed. An increase in the weight placed on patronage rents λ_O causes an unambiguous increase in the range of parameter values for which patronage is adopted. An increase in the weight placed on bureaucratic production λ_G may increase or decrease the range of values for which merit-selection is adopted, depending on other parameter values. An increase in λ_T has similarly ambiguous effects.

Proposition 4. *An increase in the weight the government places on patronage rents λ_O increase the range of parameter values for which patronage is adopted $\sigma = p$.*

Proof: *An increase in λ_O leads to an increase in $U_G(\gamma_p^*; \sigma = p)$; while leaving $U_G(\gamma_m^*; \sigma = m)$ unaffected. By Lemma 2, this increases the range of parameter values for which $\sigma = p$ in equilibrium.*

4 Conclusion

In this paper, I advance a theoretical model explaining a government's choice of the method by which to appoint bureaucrats. The model develops a reduced form representation of the exchange relationship underlying the patronage system. Since patronage requires some form of payment in exchange for office, it inevitably excludes some - potentially well-qualified - candidates from bureaucratic posts. The more qualified these officials, the more costly is patronage.

The model further advances claims regarding the effect of economic variables on bureaucratic selection. The higher the level of private wages and the greater the returns to skill in the private sector, the more likely merit-selection is to be adopted.

²⁰The values of these parameters cannot simply be equated with democracy and autocracy, however. As was noted in section 1, great debate exists as to which political systems produce the greatest demand for patronage and which produce the greatest demand for bureaucratic services. Based on the evidence of Besley & Kudamatsu (2007), Jones & Olken (2005), and Przeworski et al. (2000) on the high degree of variance in economic outcomes between autocratic regimes and rules, one might be tempted to conclude that we should expect higher variance in these parameters across autocracies than across democracies. But we should be cautious about our expectations about the difference in mean parameter values between democratic and autocratic governments.

These findings are consistent with anecdotal evidence regarding the adoption of the merit system in 18th Century Prussia and 19th Century England. Prussia first adopted a system of examinations for judicial appointees in 1755 under Frederick II. According to Mueller, “There can be no doubt that Frederick II would have liked to fill all vacancies ... with nobles if he could have found qualified men.”²¹ But, since the nobility devoted the education of its sons nearly exclusively to warfare and looked down upon university training, such skilled members of the aristocracy could not readily be found. Thus, by 1770 Prussia established a Civil Service system and set of merit exams for all higher civil service positions, and made university training prerequisite in 1808 (Mueller 1984).

In England, the patronage system persisted for a longer time, restricting office to members of the aristocratic classes. Indeed, the middle classes greatly resented the system which had the effect of “shut[ting them] out of the material rewards of power.”²² However, this system of appointment proved less costly for the English than for the Prussians, as the English gentry was deeply involved in higher education from the late 16th Century onwards (Mueller 1984). Indeed, England only adopted a competitive exam-based system of appointments for the domestic civil service in 1870, “the effect [of which] ... was to open fresh avenues of employment to the professional class and to those outside it who had sufficient academic ability and determination to thrust their way in.”²³

The predictions regarding income and the distribution of skills also receive support in recent existing cross-country data. Yet these data are no doubt subject to measurement error. And observations are so few that we can only realistically look at raw correlations between variables of interest.

There is therefore substantial room for further empirical work in this area. More reliable cross-country data would allow for clearer tests of the hypotheses advanced in this paper, as well as those developed in competing accounts. Greater historical data, dating from the rise of the civil service in nineteenth century Europe would be particularly useful. Within-country data may also be useful for testing some of the hypotheses advanced here. Variation in appointment strategies across regional or local governments might prove an excellent avenue for further study.

²¹Mueller (1984) p. 71

²²Reader (1966) p. 73

²³Reader (1966) p. 86

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