

Patronage or Merit?: Civil Service Boards in US Cities

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Abstract

The method by which bureaucrats are recruited for service has been shown to have important implications for public goods provision, corruption, and economic growth. Meritocratic recruitment has been associated with improved governance and with improved outcomes on all three of these dimensions. Yet, relatively few studies have examined the factors which drive governments to adopt merit-based recruitment systems. This paper undertakes just such an analysis. It argues that changes in the distribution of skills within the populace – and particularly the expansion of secondary and tertiary education – led to the adoption of civil service boards in US cities. This claim is tested using data on a panel of US cities having a population of more than 30,000 covering the years from 1909 to 1931. It is shown that variation in the distribution of skills – driven by the founding of colleges and universities – is associated with a greater probability of merit reforms. Given that the majority of these institutions of higher education were located in a given city for reasons plausibly exogenous to the municipal government's decision to adopt merit reforms, and given the subnational structure of the research design, there are strong reasons to believe that these associations reflect a causal relationship.

The manner by which governments appoint bureaucratic officials substantially affects the performance of the state, with important implications for social welfare. The widespread use of patronage, as opposed to more meritocratic forms of selection, has been associated with corruption and reduced economic growth (Evans and Rauch, 1999; Rauch and Evans, 2000). Rauch (1995) finds that city governments that adopt meritocratic recruitment are more likely to invest in slow-to-develop public goods, such as road and water systems. Krause, Lewis and Douglas (2006) find that the method of recruitment affects the accuracy of agency budget forecasts. Such observations drive the behavior of investors – groups such as the International Country Risk Guide (ICRG) weight bureaucratic quality, as measured largely by the adoption of meritocratic recruitment, in indexes of political risk for the investment community.¹ Indeed, the importance of recruitment methods have

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¹See https://www.prsgroup.com/ICRG_Methodology.aspx. Accessed November 8, 2011.

been emphasized by scholars since the writings of Weber, who stressed the importance of methods of recruitment to the functioning of the 'bureaucratic mechanism' (see, for instance, Gerth and Mills, 1970; Weber, 1978).

The question of when and why governments choose to forgo patronage, in favor of meritocratic forms of bureaucratic recruitment, therefore carries great substantive import. This paper speaks to that question. Following the theory advanced in Hollyer (2010), it will suggest that changes in the distribution of skills – particularly increases in the educational attainment of those largely excluded from the patronage mechanism – lead to the adoption of meritocratic systems. As the levels of skills of those marginalized by patronage rise, the opportunity costs the government faces from maintaining the patronage system – in terms of forgone bureaucratic efficiency – also increase. When these costs grow sufficiently large, the government will abandon patronage in favor of a meritocratic system more likely to draw skilled members of excluded groups into bureaucratic posts.

In this paper, I test these claims using data drawn from US cities during the early 20th century (1909-1931). These data exploit a rich variation in methods of recruitment at the subnational level, which persisted in the United States well into the 20th Century (Stahl, 1962).² Such data allow me to effectively control for a number of factors that vary strongly at the national level, but are largely constant across municipalities. They also allow me to exploit a plausibly exogenous shock to the distribution of skills in a given municipality – the founding of colleges and universities within city borders. These data therefore allow for a more precise identification of the causal relationship between changes in the distribution of education and the adoption of meritocratic recruitment standards than would cross-country analyses.

While a large literature explores the relationship between forms of bureaucratic recruitment and various measures of government performance; works examining governments' decision to adopt meritocratic reforms have been comparatively scant. The majority of these focus on recruitment in the US federal civil service (Carpenter, 2001; Johnson and Libecap, 1994; Lewis, 2008; Skowronek, 1982). While these studies are highly influential and informative, this focus comes with a number of drawbacks. Variation in recruitment methods to the US federal civil service is relatively limited. Studies focusing on the period leading up to and immediately following the Pendleton Act must primarily draw upon temporal variation in recruitment methods, with the attendant risk that coincident trends drive the association between explanatory variables and the adoption of reforms. For instance, it may well be that industrialization helped to drive the introduction of merit recruitment (Skowronek, 1982); but, it is possible that trends in industrialization over time produce a spurious correlation with merit recruitment. Studies that focus on a more modern period must rely on relatively limited variation in the dependent variable. For instance, studies may examine variation in

²At the state level, such variation persisted until roughly 1940, when regulations imposed the Social Security Administration required all states receiving Social Security funds to adopt civil service protections for employees in state welfare offices (Stahl, 1962).

the fraction of appointees brought in under presidential prerogative, as opposed to those advancing through the civil service, across agencies (Lewis, 2008). But, there is little opportunity to study wholesale patronage of a kind that has been gradually eliminated from the federal bureaucracy over the years following the promulgation of the Pendleton Act. One must also be concerned about the generalizability of any conclusions based on the experiences of the federal civil service. After all, the spoils system that existed during the period starting in the Jacksonian era and ending with Pendleton was largely unique among national governments.³

A handful of studies examine cross-national variation in methods of bureaucratic recruitment (Geddes, 1994; Hollyer, 2011; Mueller, 2009; Silberman, 1993). While these studies have stronger claims to generalizability than do studies focusing on the US federal government and exploit a great deal of variation in recruitment methods; they suffer heavily from the threat of omitted variable bias. Many factors which may impact government decisions regarding bureaucratic recruitment vary across countries, and adequately adjusting for these using various empirical strategies may prove difficult.

This paper contributes to this literature by examining variation at the subnational – specifically at the municipality – level. By so-doing, it exploits a rich variation in methods of bureaucratic recruitment that existed across US cities, lasting from the late-19th Century until the mid-20th (Rauch, 1995; Stahl, 1962). This variation occurs both temporally and cross-sectionally, helping to limit some of the threats to inference that afflict studies that focus on the US federal system alone. But, US cities are likely to be far more similar along a range of dimensions than are different countries in, for example, Latin America or Europe. By examining subnational data, this study is able to make stronger causal claims than studies relying on cross-national evidence.

Theory

Patronage is characterized by the exchange of bureaucratic posts for payment – whether monetary or in-kind – from job-seekers. Bureaucratic appointments in the United States, throughout much of the 19th century, were allocated on this basis. As Ruhil and Camões (2003, 28) note, “...party loyalty, as reflected through contributions to party coffers and services to the party, was the overriding criterion for securing public employment [for much of the 19th and early 20th centuries].” Those seeking bureaucratic appointments were often required to make *ex ante* payments to the incumbent party, in terms of in-kind services. And appointees were often required to contribute a portion of their salary to the appointing party, if they were to maintain their employment (Carpenter, 2001).

This method of selection is costly to the governing party insofar as those most able or willing to pay for office may not be those best qualified to serve. All governments desire an efficient and

³On the spoils system during the Jacksonian era through the reconstruction period, see Carpenter (2001); Johnson and Libecap (1994) and Skowronek (1982). For a discussion of the differences between the US spoils system and patronage in Western Europe, see Hollyer (2010).

skilled bureaucracy, whether because such an apparatus can efficiently provide the public services necessary to ensure the party's reelection, or because the party in power seeks to employ state for its own ends (which may involve rent extraction or repressive activities). In some instances, governments must trade off the value of the returns earned from patronage payments against the gains to having a highly skilled bureaucracy. In other instances, no such balancing is required. For example, patronage systems in Western Europe largely targeted the aristocracy, which – for a long period – was likely to be the only class sufficiently educated to carry out a number of bureaucratic tasks (Hollyer, 2011). The crucial factor determining the extent to which the gains from patronage come at a cost to competence is the distribution of skills in the population. If the distribution of skills is highly skewed in favor of those most willing and able to bid for patronage posts, then the patronage system will produce a relatively competent bureaucracy. If not, then the incumbent government faces opportunity costs – in terms of forgone bureaucratic efficiency – from maintaining a patronage system, and these costs will be rising to the extent that those excluded from patronage grow increasingly skilled.

In the US during this period, patronage predominantly favored those with low opportunity costs from government service – and was consequently concentrated among those from the lower classes. The returns to skill and education were such that few members of the educational or economic *élite* were willing to devote the time or effort necessary to outbid less educated or prosperous seekers after bureaucratic posts in the patronage market. The less well-off were more willing to devote the time necessary to provide in-kind services to party machines than were relatively prosperous citizens. This pattern dates to the Jacksonian era, when bureaucratic posts were deemed essentially clerical in nature, such that nearly any citizen could fulfill the required duties (Carpenter, 2001). As Carpenter (2001, 44) holds, “Jackson and his followers believed that any citizen could perform the brute and simple tasks of ‘Government’ as well as any other, and that there were few, in any, public gains to be had from seeking the best talent and intellect for administrative positions.” The functioning of this patronage mechanism is best known with respect to the relationship between urban political machines and recent immigrants to the US. For example, Ackerman (2005, 21) notes of Tammany Hall:

Tammany had cast its lot with workingmen and immigrants as early as the 1840s. ... It had placed Irishmen in high, visible posts ... These days, Tammany routinely arranged city jobs for poor men with families and supported Irish churches and charities. ... Any down-and-out New York greenhorn, speaking a strange tongue and without a dime, could find a sympathetic Tammany man down at a corner saloon or walking nearby streets. These ‘ward heelers’ – named for their worn-out shoes – became the immigrant’s closest link to power in the strange new world of America.

The tendency of the patronage system to target those with the lowest reservation costs in the US naturally led to a loss of skills from the bureaucracy. Politicians were trading off the gains from

patronage – in terms of in-kind and monetary payments from appointees – against a loss of skills, and made the determination that patronage rents were more valuable than a skilled bureaucracy. Segments of society with higher levels of education were unwilling to bid the same amounts for office as the economically disadvantaged, because their private sector returns were too lucrative. Two factors allowed this situation to persist: (1) The gap in the educational background of the average patronage appointee and those unwilling to enter the patronage process was relatively small. The lower end of the skills distribution in the United States was relatively highly skilled by 19th century standards. In large part, this was due to extensive primary schooling provided at the local level. Mariscal and Sokoloff (2000, 161) find that “by the middle of the nineteenth century ... nearly 90 percent of white adults [in the United States] were literate.” This stands in stark contrast to Europe, where restrictions on the vote ensured that only the elite were targeted for patronage, and a limited educational opportunities implied that only the elite was highly skilled (Hollyer, 2011). (2) The returns to skill in the bureaucracy were relatively low. The majority of positions were of a ‘clerical’ nature such that few requirements other than literacy were necessary to fulfill bureaucratic tasks.⁴

These two parameters, which sustained the patronage system in the US throughout much of the 19th century, began to shift late in that period. First, technological innovations and – at the national level – the expansion of the area under the government’s control, led to increasing demand for what Carpenter (2001) terms ‘mezzo level’ managers. Relatively highly-skilled middle-managers were required to oversee expanding postal systems linked together by rail and agriculture departments seeking to promote new innovations in farming methods (Carpenter, 2001, chapters 3 and 6). At the municipal level, such officials would be required to oversee relatively complex infrastructure projects involving roads, sewage, electrification, etc. (on the association between civil service reforms and infrastructure development, see Rauch, 1995). In short, the returns to skill within the bureaucracy increased over time, owing in large part to technological changes.

The close of the 19th and dawn of the 20th centuries also saw a large expansion in secondary and tertiary education in the United States.⁵ The Morrill Acts of 1860 and 1890 led to the founding of many land-grant universities, which – in many instances – would form the backbone of public university systems. A similar expansion took place in the number of private institutions of tertiary education. In my sample of colleges and universities from 316 municipalities, fully 50 percent of institutions in the sample were founded or moved to their current location between 1861 and 1908. The period between 1910 and 1940 is often referred to as the ‘second transformation’ of American education, owing to the very rapid expansion of secondary enrollment (Goldin and Katz, 1997). The expansion of tertiary and secondary education served to increase the variance of the skills dis-

⁴This perception of bureaucratic office is particularly common during the Jacksonian era. See Johnson and Libecap (1994), Skowronek (1982), and Silberman (1993) for discussions.

⁵This period is, not coincidentally, also associated with the rise of professional associations, see Skowronek (1982, 42-45).

tribution – the gap between the most highly and least highly-skilled widened. Consequently, the opportunity cost faced by municipal governments from maintaining a patronage system that primarily attracted the less-skilled increased. As the gap between the highly- and less-skilled widened, the benefits – in terms of bureaucratic productivity – from adopting a merit system grew.

Evidence that changes in the distribution of skills played this role can be gleaned from qualitative accounts of merit reforms. Carpenter (2001) notes the important role played by land-grant universities and their relationship with the USDA – particularly after the passage of the Pendleton Act. These universities would train many of the eventual recruits into the USDA's ranks and interacted with the Department closely to develop new methods in agriculture. The availability of a pool of trained agricultural scientists increased the costs the federal government faced from relying on patronage to fill posts in the Agriculture Department.

The language of reformers is suffused with appeals to increase bureaucratic productivity by adopting the merit principle. For instance, Skowronek (1982, 50) notes that “The most widely held interest in central administrative reform in the post-Civil War era was expressed in the idea of retrenchment ... [which], broadly construed, meant ... imposing a strict regimen of economy and efficiency on the administrative apparatus.” Reid and Kurth (1988, 258) note that patronage was susceptible to “high manning costs” and note that these costs are likely to be a particular vulnerability when “the electorate wants what is efficiently provided through general exchanges” (i.e., efficient provision of public goods). Johnson and Libecap (1994, 19-20) find that “[o]ver half of the membership of civil service reform associations came from business groups,” which had “developed a keen sense of the limitations of the spoils system in providing dependable services.” In short, the increasing abilities of those in the upper tail of the skills distribution, coupled with technological changes in the scope and activities of bureaucracy, ensured that the levels of efficiency sacrificed due to the reliance on patronage were rising, and that the electoral consequences of this lost efficiency for politicians were becoming increasingly severe. Eventually, these costs came to outweigh the benefits of patronage, leading to the adoption of meritocratic recruitment methods.

This theory therefore advances the claim that expansion in the provision of secondary and tertiary education led to a decline in the appeal of patronage. This claim produces a testable hypothesis: A greater density of institutions of higher education will be associated with a higher probability of adopting merit reforms across US municipalities.

This relationship is also likely to be conditional on the nature of the political system. Where political systems are relatively uncompetitive, access to the patronage mechanism is likely to be relatively closed. When political parties face intense competition, they have an incentive to broaden access to patronage as widely as possible, to maximize their expected vote share (Geddes, 1994). Moreover, if differing parties hold control of the executive and legislature, or of municipal and state offices, individuals turned down by one politician's patronage machine may appeal to others (on the division of power and patronage in the federal bureaucracy, see Johnson and Libecap, 1994;

Skowronek, 1982). When access to patronage is relatively closed, small changes in the distribution of skills may have large effects on governments' cost-benefit analysis. When patronage systems are accessible to a broad swath of the population, changes in the distribution of skills are likely to have a smaller impact – as much of those gaining in ability will have access to the patronage system if they desire it. Consequently, I advance a second hypothesis: The association between the density of institutions of higher education and the adoption of merit will be strongest in relatively non-competitive political systems.

Relation with Existing Literature

This theory posits a novel explanation for the adoption of meritocratic recruitment by US cities – highlighting the importance of a henceforth unexamined explanatory term: the distribution of educational attainment. In so-doing, it provides for an empirical test of a general theoretical model developed in Hollyer (2010), and expands upon cross-national empirical tests conducted in Hollyer (2011). It also adds to the list of factors that have been emphasized in the American politics literature as forces driving civil service reform, which include industrialization and economic development (Skowronek, 1982), electoral competitiveness and divided government (Johnson and Libecap, 1994; Ruhil and Camões, 2003; Skowronek, 1982), and the efforts of reform-minded citizens (Stahl, 1962).

As noted above, the vast majority of empirical studies – both quantitative and qualitative – of bureaucratic recruitment in the US focus on the federal bureaucracy. Historical works typically examine the factors driving the adoption the Pendleton Act in 1883 and the subsequent 'covering in' of additional bureaucrats under its civil service protections. Initial reform efforts are often credited to the efforts of a handful of reformist Mugwump politicians and pressure from citizens, organized in such bodies as the National and New York Civil Service Leagues (Skowronek, 1982; Stahl, 1962). Conditions for the adoption of reforms were made more felicitous due to the increasing costs politicians faced from negotiations between the presidency and congress over the allocation of patronage posts – particularly in times of divided government (Johnson and Libecap, 1994; Skowronek, 1982). Once the Pendleton Act was passed, sitting presidents tended to increase the number of bureaucrats subject to its protections – to 'cover in' offices – when their party faced likely electoral defeat. In extending protections for existing appointees, the incumbent party could hamstring efforts by its successors to exploit the patronage mechanism (Skowronek, 1982). The expansion of civil service protections was given further impetus by increasing levels of organization among bureaucratic officials, who demanded the protections civil service rules could offer (Johnson and Libecap, 1994; Skowronek, 1982). This was particularly true of officials in newfound technical agencies, who could plausibly claim a level of expertise and created networks with relevant legislators and with academic institutions (Carpenter, 2001).

While these claims regarding the federal bureaucracy are well-established, it is not clear how well they generalize to other institutional settings. The Pendleton Act was unusual insofar as its coverage could be expanded by executive order, rather than requiring legislative action. Such provisions were unlikely to exist in state and local civil service legislation, and were absent in reforms adopted by European countries. The competitive national elections and divisions of power characteristic of the US national government during the late-19th century were far from universal at the state and local level, and were wholly absent in many European states (Hollyer, 2011). And the costs of administering a patronage system were likely to be far lower in smaller political systems with fewer divisions of power.

The timing of the adoption of merit reforms at the state and local level also differed markedly from that at the national level. New York was the first state to introduce civil service legislation, which was promulgated contemporaneously with the Pendleton Act (Ruhil and Camões, 2003). But many states failed to introduce civil service legislation until it was effectively mandated by the federal government in 1940 (Rauch, 1995). The earliest cities to adopt merit reforms did so in 1884; while others maintained patronage systems that lasted well into the middle of the 20th century (*Civil Service Agencies in the United States: A 1937 Census*, 1938; Skowronek, 1982). The examination of subnational data also allows the researcher to exploit substantial cross-sectional variation which is absent when focusing on federal level reforms alone.

Yet relatively few studies take advantage of this variation to test more general theories of the adoption of merit reform. Ruhil and Camões (2003) examine civil service reforms in 46 US states, and conclude that both political competitiveness and the percentage of white foreign born residents are associated with the hastened adoption of civil service regulations. Though, the intent of their investigation is not a test of an explicit theory, rather an examination associations posited in the existing literature. Wolfinger and Field (1966) examine the adoption of merit reforms in US cities during a later period, with an aim of debunking claims that cities are characterized by a particularly political ethos. In related work, Rauch (1995) employs a dataset similar to the one used in this paper to test the effects of civil service reforms on infrastructure spending. But Rauch's concern is with the effects of merit systems, not with the factors driving governments to adopt such reforms in the first place.

This paper therefore contributes to a literature in American politics on the adoption of civil service reforms. It suggests a novel mechanism which may drive governments to adopt such reforms. And it tests this proposition using underutilized data on the adoption of civil service boards at the municipal level.

This paper also contributes to a growing literature that examines merit reforms from a comparative perspective. Existing comparative work suggests that the adoption of merit reforms may be a function of political competitiveness and uncertainty, economic development, or war. The role of electoral competitiveness is hotly debated, with some authors (Egorov and Sonin, 2004; Mueller,

2009) suggesting that competitive democratic systems promote meritocracy, and others (Besley and Persson, 2010; Evans, 1995; Geddes, 1994) arguing the reverse. Silberman (1993) contends that political uncertainty and a need for legitimization may give rise to meritocratic bureaucracies. Other authors, stress the importance of economic development (Gerth and Mills, 1970; Weber, 1978) and the importance of developing a military capacity (Besley and Persson, 2010; O'Brien, 2001; Tilly, 1992).

The majority of papers in this comparative literature rely on cross-national empirics – both qualitative and quantitative – to test theoretical predictions. As noted above, the empirical design in this paper offers stronger grounds for causal claims than does such cross-national work – given reductions in the threat of omitted variable bias due to the reliance on subnational data and the plausibly exogenous character of the principal explanatory variable. Several existing pieces comparative pieces also rely on subnational empirical designs: Most directly, Lapuente and Nistotskaya (2009) test the proposition that governments with longer time horizons are more willing to adopt merit reforms, using data from Russian provinces. In related work, Gimpelson and Treisman (2002) rely on evidence from Russia to claim that decentralization causes a growth in bureaucratic employment and patronage activities. This paper adds to these studies by offering a novel explanation for the development of merit-based recruitment, emphasizing shifts in the distribution of skills.

This paper tests a general theory of merit reforms in a specific context (for an application in a different context, see Hollyer, 2011). It emphasizes that the distribution of skills has important implications for the development of merit systems generally, including examples outside of the US context (for related arguments, see Hollyer, 2010; Mueller, 1984). It also offers an opportunity to test several of the contentions from the existing comparative literature – particularly those related to political competitiveness – using subnational data drawn from US cities. In so-doing, it offers an empirical framework less likely to suffer from threats to inference than existing cross-national studies.

Empirics

Data Description

The outcome variable in this analysis is an indicator equal to one in the event that a given city adopted a civil service board in a given year. All observations after the first year in which a civil service board has been established are treated as censored – the data are modeled as multiple record survival data. The civil service board indicator is coded based on two surveys conducted by the Civil Service Assembly of the United States and Canada in 1937 and 1940, along with an addendum to the 1940 survey published in 1943 (*Civil Service Agencies in the United States: A 1937 Census*, 1938; *Civil Service Agencies in the United States: A 1940 Census*, 1940; *Civil Service Agencies in the United States: A 1943 Supplement*, 1943). These surveys note whether a given municipality

has an operational civil service board and the year in which this board began operations.⁶ I code the first year in which a given municipality is reported to have a civil service board based on these data.

The principal explanatory variable of interest is the number of colleges and universities *per* 1,000 residents. As noted above, patronage in the 19th century United States overwhelmingly focused on those with relatively low-opportunity costs to in-kind party service (Reid and Kurth, 1989). More highly educated/skilled individuals were effectively excluded from the patronage mechanism as they were unwilling to sacrifice the time and effort necessary to win patronage bids for posts. As educational opportunities available only to the relatively skilled increased, the variance in the skills distribution rose. The gap in skills between the highly educated workers excluded from patronage and the less educated who were enmeshed in the patronage process widened, implying that the sacrifices to bureaucratic efficiency from maintaining a patronage system were rising. The density of institutions of higher education within a given municipality is likely to be strongly correlated with the width of this gap – and municipalities with more such institutions are predicted to be more likely to adopt civil service boards. This measure also has the advantage of being plausibly exogenous to incumbent governments' decision calculus – most colleges and universities were founded well before municipal governments determined whether or not to implement civil service boards, and most were either private institutions or established by state – rather than municipal – governments.

To construct this measure, I examined online sources – largely Wikipedia – regarding each of the 316 municipalities in my dataset for which I have information both on the establishment/non-establishment of civil service boards and for which I possessed additional control variables. Where these sources indicated the presence (past or continued) of a college or university, I examined online references for that institution for dates of founding, any relocation, and changes in mission or status.⁷ I construct two measures of the concentration of colleges and universities in a given municipality. One counts the number of all such institutions *per* 1,000 residents. I refer to this measure as the *Full Sample* measure. The other index excludes women's colleges and historically black institutions from the count. I refer to this as the *Limited Sample* measure.

For the theoretical tests here, the latter measure is likely to be the more appropriate. Un-

⁶It is possible that a given municipality is coded as never having a civil service board in my data if that municipality established such a board and then abolished it before the survey was conducted. Given that there are few municipalities that cease to report having a civil service board between the 1938 and 1940 censuses and the 1943 addendum, this concern is unlikely to substantially affect my results.

⁷The most common such changes were the transformation of normal schools (for teachers) into teaching colleges and then state universities, and the broadening of the mandates of seminaries/bible colleges. Normal schools (which ran two-year programs) were primarily converted into state teacher's colleges during the 1920s, and today make up much public university systems of many states. Seminaries and bible colleges largely expanded their mandate to include secular subjects during the late-19th century. I leave all normal schools in my calculation of the number of colleges and universities *per* 1,000 residents. Bible colleges and seminaries are typically included if reference material indicated they taught secular material, or if their name indicated that such material was likely to be covered – e.g., 'Theological Seminary and College'.

fortunately, during the period under examination (1909-1931), many municipalities would have excluded women and African Americans from bureaucratic posts regardless of the presence or absence of a civil service system. Consequently, the education of these groups was unlikely to affect the decision-making of municipal governments with respect to bureaucratic recruitment. Moreover, historically black institutions in particular are overwhelmingly concentrated in the South. Indeed, the Second Morrill Act of 1890 required states with segregated land-grant colleges to open alternative institutions accessible to African Americans.⁸ Consequently, failing to adjust for the segregation of institutions in the South may lead to an over-count of the density of colleges and universities in southern municipalities, potentially biasing results.

As a robustness check, I employ educational expenditures *per capita*, as drawn from the the US Census Bureau's *Financial Statistics of Cities Having a Population of Over 30,000* series, as a measure of supply-side factors affecting patronage decisions. This measure is suboptimal for two reasons: First, the true measure of interest is the distribution of skills in the municipality. Since educational expenditures only translate imperfectly into the breadth and quality of education, this measure is at best an imperfect proxy. Unfortunately, the census data only report more desirable measures – for instance, school attendance figures – for a few years at the municipality level during this period. Though, as I demonstrate below, during the few years they are available, enrollment rates correlate strongly with expenditures *per capita*. Second, educational expenditures are determined by the municipal government – indeed, the school system may be a source of patronage for the municipal government. Consequently, the level of educational expenditures *per capita* may well be endogenous to the government's decision-making regarding civil service reforms. Nonetheless, these measures serve as a useful credibility check on those derived from the concentration of colleges and universities.

The distribution of skills is particularly likely to be important to the government's decision of whether to prefer patronage or merit-based appointments when the political system is highly exclusionary. When the political system is exclusionary – i.e., when relatively few have access to the patronage mechanism – the distribution of skills must be highly skewed in favor of the politically advantaged for it to be likely patronage appointees are highly skilled. The more inclusive the political system, the less the distribution of skills in society is likely to affect this probability. Unfortunately, there are relatively few measures of the inclusiveness of municipal political systems during this period. However, data do exist on state-level political covariates and – since states control much of US electoral law – these controls likely serve as a good proxy for municipal level political inclusiveness.

I first control for an index of state-level political competitiveness and the interaction of this term with my measures of the distribution of skills, described above. This index is constructed based on gubernatorial election returns made available in the ICPSR data file *Party Strength in the United*

⁸<http://www.cal.s.ncsu.edu/agexed/aee501/1890law.html>, accessed November 1, 2011.

States: 1872-1996 (David and Claggett, 1998) and is equal to the product of the Republican and Democrat portions of the two party vote share, multiplied by 400: $\frac{\text{Percent Rep. Vote} \times \text{Percent Dem. Vote}}{(\text{Percent Rep. Vote} + \text{Percent Dem. Vote})^2} \times 400$. The index thus takes on a minimum value of 0 if one party captures the full two-party vote share, and a maximal value of 100, if each party captures equal portions of the two-party vote share.

In states where levels of competitiveness are relatively high, patronage systems are unlikely to be highly exclusionary. This is true for two reasons: First, each party has an incentive to open the patronage mechanism to as wide a variety of potential constituents as possible, so as to broaden its base of support. Second, it is likely that different branches of government will be in the hands of different parties, such that those excluded from (for instance) they mayor's patronage machine may appeal to city councilmen or to state legislators. Consequently, we should expect the interaction of competitiveness and education levels to have a negative coefficient.

It is also important to control for levels of competitiveness given theories that posit that political competition predicts the adoption of merit reforms. For instance, Mueller (2009) contends that political competition will drive politicians to adopt meritocratic reforms, as political leaders strive to ensure that public goods continue to flow to themselves and their constituents even when they are voted out of office. (Skowronek, 1982) notes that executives may seek to adopt merit reforms to enhance their position vis-à-vis the legislature, particularly when the legislative branch is controlled by an opposition party. Contrastingly, both Geddes (1994) and Besley and Persson (2010) contend that political contestation may have negative results for merit recruitment. Geddes holds that the marginal benefits to the extra votes garnered through patronage will be greatest when elections are closely contested. Besley and Persson note that leaders may have an incentive to under-invest in state capacity when opposition groups are likely to succeed them in office. While my theory is agnostic on this question; failure to control for these potential confounding influences of competition may bias my results.

In addition to the competitiveness variable, I control for a variety of state-level voting rules and restrictions on the franchise: whether there was a secret ballot, a poll tax, a literacy test for voting eligibility, and whether womens' suffrage had been established. Each of these terms is coded according to a {0, 1} indicator variable based on data drawn from Lott and Kenny (1999).

I additionally control for a variety of municipality-level covariates which may confound the relationship between the distribution of skills and the adoption of civil service reform. Increasing levels of income, for instance, are likely to be strongly associated with a broad distribution of skills (education) across the populace and – through Wagner's Law – with demand for public services in general. As demand for public services rise so too might demand for a skilled civil service – and thus for merit reforms. The link between economic development and the adoption of the civil service has been prominently advanced by Weber (1978) – and is also pointed to by Skowronek (1982), Reid and Kurth (1988, 1989) and Mueller (1984). To control for this possibility I use a proxy for municipal income in all regressions – the total assessed valuation of property (for municipal taxes)

per capita.

It is also possible that governments that spend more heavily face a higher demand for professional public services. Skowronek (1982), for instance, notes that much of the impetus underlying the reform movement in the US lay in the belief that meritocratic recruitment would lead to more efficient government performance. Such municipalities may also have greater resources to devote towards education. To avoid this potential source of bias I control for total municipal revenues *per capita*.

The drive towards municipal reform was largely led by large cities – such as New York and Chicago. Large cities may also experience scale economies in education, such that the concentration of colleges and universities and/or educational enrollments at the time were relatively high. I therefore control for population figures – based off of annual census projections – in all regressions. All municipal level controls are drawn from the *Financial Statistics of Cities* data series.

Finally, I control for a $\{0, 1\}$ indicator variable denoting whether a given municipality was a state capital. This control is likely to be particularly important when using the concentration of colleges and universities as a measure for the distribution of skills – given that public universities are often concentrated in state capitals. Moreover, state and municipal politics intersect in these cities in a manner that may affect decisions regarding the use of patronage. Consequently, failing to control for this variable may bias my results.

The final dataset contains 316 municipalities, covering the period from 1909-1931. Observations are missing for 1914 and 1920, as the *Financial Statistics of Cities* data series did not cover these two years. In all specifications, I exclude cities from Massachusetts and New Jersey from the specification, as municipalities in both states were subject to state-level civil service legislation (*Civil Service Agencies in the United States: A 1937 Census*, 1938; *Civil Service Agencies in the United States: A 1940 Census*, 1940).⁹

Empirical Models

My analysis relies on a Cox proportional hazards regression of the risk of adopting a civil service board as a function of time t and covariate values. The Cox model assumes the functional form $h_{c,t}(t) = h_0(t)e^{\mathbf{X}_{c,t}\beta}$ where c denotes city c and t denotes year t . Time is measured in the number of years from 1909 – the start of the dataset. The baseline hazard function is estimated non-parametrically as a function of the number of cities that establish a civil service board in year t relative to the total number in the risk-set (i.e., the set of cities that have yet to establish a board). $h_0(t)$ is thus only constrained to take on non-negative values and to integrate to one $\int_0^\infty h_0(t)dt = 1$.

⁹To be more precise, Massachusetts legislation required that all municipalities incorporated as cities delegate personnel functions to the State Department of Civil Service and Registration. New Jersey cities could vote to delegate personnel functions to the State Civil Service Commission via local referenda – a mechanism quite different from that operative in my theory. These referenda opened decisions over bureaucratic recruitment to the public, which was overwhelmingly supportive of the adoption of merit reforms in all such elections (Faught, 1915).

This non-parametric treatment, in effect, reduces time to a nuisance parameter.

The Cox model does assume that changes in covariate values serve to shift the level of the hazard function up or down – changes in covariate values do not alter its shape. I test this assumption using Grambsch-Thorneau and Harrel’s Rho tests of the Schoenfeld residuals. Both global and covariate specific tests of the proportional hazards assumption fail to reject the null that the hazards are proportional.¹⁰

My main specification thus assumes the form $h_{c,t}(t) = h_0(t) \exp(\alpha \text{Competitiveness}_{c,t} + \delta \text{Colleges}_{c,t} + \gamma \text{Competitiveness}_{c,t} \times \text{Colleges}_{c,t} + \mathbf{X}_{c,t} \beta)$ where $\mathbf{X}_{c,t}$ is a matrix of municipality and state specific controls.

Results

Results from the preferred Cox specification described above are presented in Table 1. Coefficient values when the density of colleges and universities is calculated using the limited sample – i.e., excluding women’s and historically black colleges – are presented in the two leftmost columns. Coefficient values when using the full set of colleges and universities in my data are presented to the right. The table reports coefficient values from the Cox model, not hazard ratios. Positive values are associated with an increased risk of creating a civil service board, negative values with the reverse. In all specifications, standard errors are clustered by municipality, to allow for arbitrarily structured autocorrelation over time.

In all models, the coefficient on the density of colleges and universities is positive and substantively large. A greater density of institutions of higher education is associated with an increased hazard of adopting civil service reforms. In keeping with expectations, these results are larger when the limited set of colleges and universities are used. Given that women’s and historically black institutions are unlikely to contribute the pool of potential bureaucrats during this period in US history, including these institutions in the measure of the density of colleges and universities introduces problems of measurement error, with the consequent risk of attenuation bias (Greene, 2002, 83-90).

In both models in which the measure based on the limited set of colleges and universities is used, the coefficient on the density of institutions of higher education is significant or nearly significant at the 90 percent level ($p = 0.12$ in Model 2). These coefficients are also substantively large. Estimates from Model 1 indicate that a shift in the density of institutions of higher education from its 25th to 75th percentile in the sample is associated with an approximately 75 percent increase in the hazard ratio (when competitiveness is at its minimum value of zero). This result is consistent with theoretical expectations, which hold that a widening gap between the highly skilled and less

¹⁰It is possible to correct for violations of this assumption by either interacting the offending covariate with time (following Box-Seffensmeier and Jones, 2004) or including higher order polynomials of that covariate in regression specifications (Keele, 2010).

skilled should be associated with a greater tendency to adopt merit reforms.

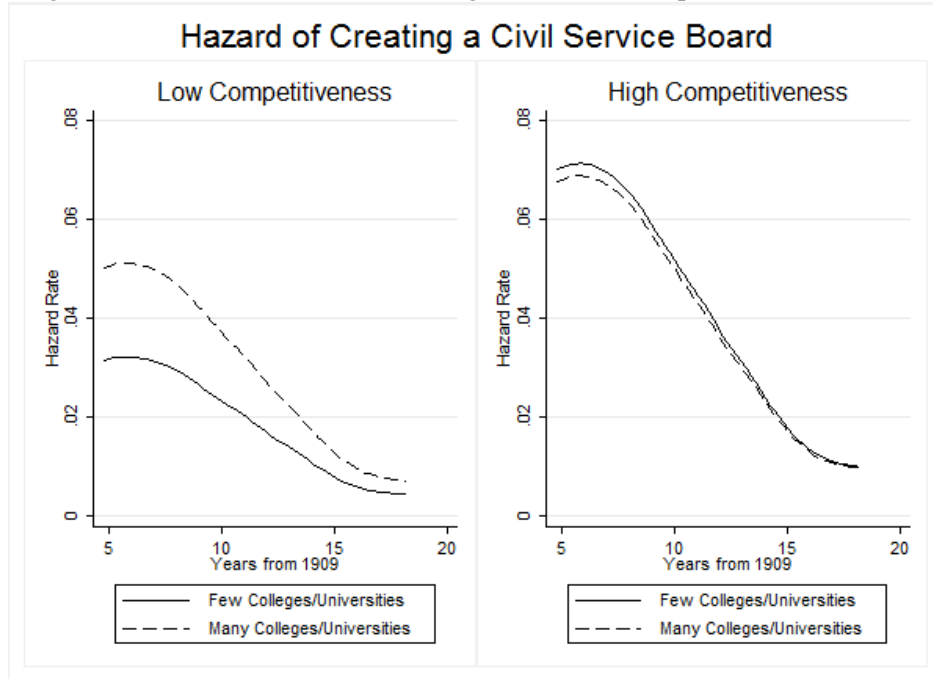
Recall that the theory advanced in this paper further holds that the association between the adoption of merit reforms and the density of institutions of higher education will weaken as the political system grows more competitive. Under competitive political institutions, patronage is likely to draw on a relatively wide swath of recruits, such that skilled individuals will be drawn into bureaucratic service even when patronage is in place. By contrast, in a relatively closed political system, the distribution of skills must be highly skewed in favor of those with access to the patronage system if the most highly-skilled are to be drawn into government service.

In keeping with this prediction, the interaction between the level of competitiveness and the density of colleges and universities is consistently negative in all specifications. But, care must be taken in interpreting this coefficient. Because the Cox model assumes the functional form $h_{c,t}(t) = h_0(t)e^{\mathbf{X}_{c,t}\beta}$, the model is not additively separable in the parameters. A change in a given covariate value x_k is associated with an approximate change of β_k percent in the hazard rate, *given all other covariate values*. Since the coefficient on the competitiveness term is positive, this functional form implies that there is a ‘built in’ positive interaction between the density of colleges and universities and competitiveness. A change in this density is associated with a constant percentage change in the hazard rate – but, since the hazard rate is higher when competitiveness is high, the marginal effect of a change in the density of colleges and universities will be relatively large when levels of competitiveness are high. The negative coefficient on the interaction term must overcome this ‘built in’ interaction for the results to be substantively meaningful.¹¹

To better relate the estimated marginal effects from these estimates, I graphically present the estimated smoothed hazard rates from Model 1 in Figure 1. The graph to the left depicts estimated hazard rates when the level of competition is at its 10th percentile in the sample; while the graph to the right depicts such rates when the level of competition is at its 90th percentile. Dashed lines depict the estimated hazard rate when the density of institutions of higher education is at its 90th percentile; while solid lines depict the hazard when this density is at its 10th percentile. As can be seen from the graph, when levels of competitiveness are low, an increase from the 10th to the 90th percentile in the density of institutions of higher education is associated with an (approximately) 160 percent increase in the hazard rate. By contrast, when levels of competitiveness are high, such an increase has very little effect on the hazard rate. (Indeed, the point estimates suggest a slightly negative association.) These findings are in close keeping with theoretical expectations that the diffusion of skills is more likely to influence the choice of bureaucratic recruitment systems when levels of competitiveness are low.

¹¹On the interpretation of interaction terms in non-linear models see Ai and Norton (2003); Berry, DeMeritt and Esarey (2010); Greene (2010) and Nagler (1991).

Figure 1: Cox Model Results: Colleges/Universities per 1,000 Residents



Estimated hazard rates from Model 1 using the Limited Sample in Table 1. The y-axis depicts the hazard of the creation of a civil service board – the probability that such a board is created in time t given that it has not yet been created. The x-axis depicts the number of years from 1909 (the start of the dataset). The left-hand graph depicts predictions when levels of competitiveness are at the 10th percentile in the sample. The right-hand graph depicts predictions when levels of competitiveness are at the 90th percentile in the sample. Solid lines represent the hazard function when the concentration of colleges and universities is at its 10th percentile, dashed-lines when this concentration is at its 90th percentile. As in all Cox models, the estimated hazard rates are only defined at observed times of civil service board creation, the graph uses a smoothing function to connect these discrete points in an continuous curve.

Robustness

As a robustness check on the results described above, I substitute the measure of college/university density with a measure of educational expenditures *per capita* to capture the gap between the highly skilled and less highly skilled candidates for bureaucratic posts. Since the vast majority of municipalities in the US had, by this point in time, established universal primary schools (Mariscal and Sokoloff, 2000), variation in municipal funding for education should largely be driven by the provision or non-provision of secondary education. As noted by Goldin and Katz (1997), the majority of individuals left school by age 14 at the end of the 19th century, but this pattern began

to shift over the first decades of the 20th. Variation in educational spending rates is thus likely to capture the expansion of secondary education and – consequently – the gap between the skills of the relatively more educated and the relatively less.

This measure, however, is less than ideal on two grounds: First, educational expenditures do not directly translate into the extent of secondary education. Indeed, increased educational expenditures may very well reflect the functioning of a patronage mechanism in municipal schools, as the government opens more positions and channels more funds towards its appointees in the school system. This particular concern would tend to bias my results downwards. Second, educational expenditures are determined by the same municipal governments that determine bureaucratic appointment mechanisms. Since both decisions are made by the same body, there is an increased likelihood that a common omitted variable drives both decisions – i.e., there is a greater threat of endogeneity than with respect to the results employing the density of institutions of tertiary education.

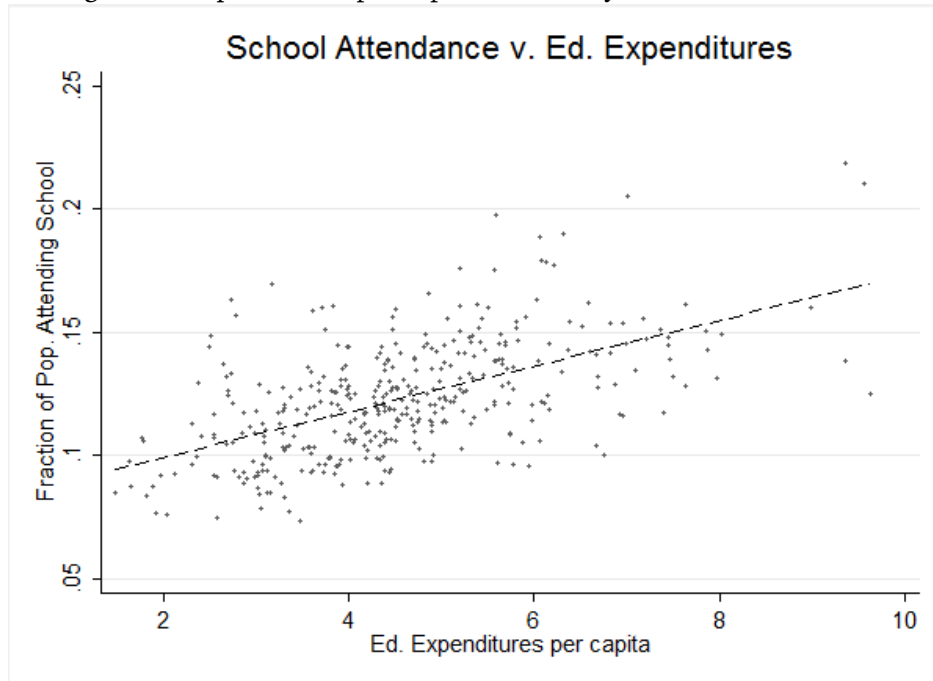
Reliance on this measure of education spending is necessitated by the fact that more appropriate measures of the breadth of secondary education – i.e., enrollment rates – are only reported for a small subsample of the years in my data. The *Financial Statistics of Cities* data contains average daily attendance numbers for only two years – 1911 and 1912. While this coverage is insufficient for attendance figures to serve as an explanatory variable in my panel (which runs from 1909-1931); these figures do allow me to assess the extent to which education expenditures reflect the underlying variable of interest – the distribution of education in the populace.

Figure 2 is a scatterplot of the fraction of the municipal population attending school ($\frac{\text{Ave. Daily School Attendance}}{\text{Population}}$) against educational expenditures *per capita* during the years 1911 and 1912. The dashed-line represents predicted values from a bivariate linear regression of these two terms. As can readily be seen from the figure, there is a strong, positive, and seemingly linear relationship between education expenditures and enrollment rates. The R^2 from this regression is 0.32, implying a correlation coefficient of 0.57. While it is perilous to extrapolate from two years worth of data to the full sample; these results would seem to suggest that educational expenditures act as a reasonable proxy for the distribution of education. To the extent that models employing this measure, rather than the density of institutions of higher education, produce similar results to the models discussed above, the plausibility of my empirical results is strengthened.

Table 2 depicts coefficient values from a Cox regression of civil service board formation against educational expenditure *per capita*, the level of political competitiveness, their interaction, and a set of controls. These models are identical to those reported in Table 1 above, save only for the measure of the distribution of education.

In both Model 1 and Model 2, the coefficient on educational expenditures is positive and significant at the 90 percent level. And, the coefficient on the interaction between expenditures and competitiveness is negative and significant at the same level. These coefficient values are very much

Figure 2: Expenditures *per capita* as a Proxy for Attendance Rates



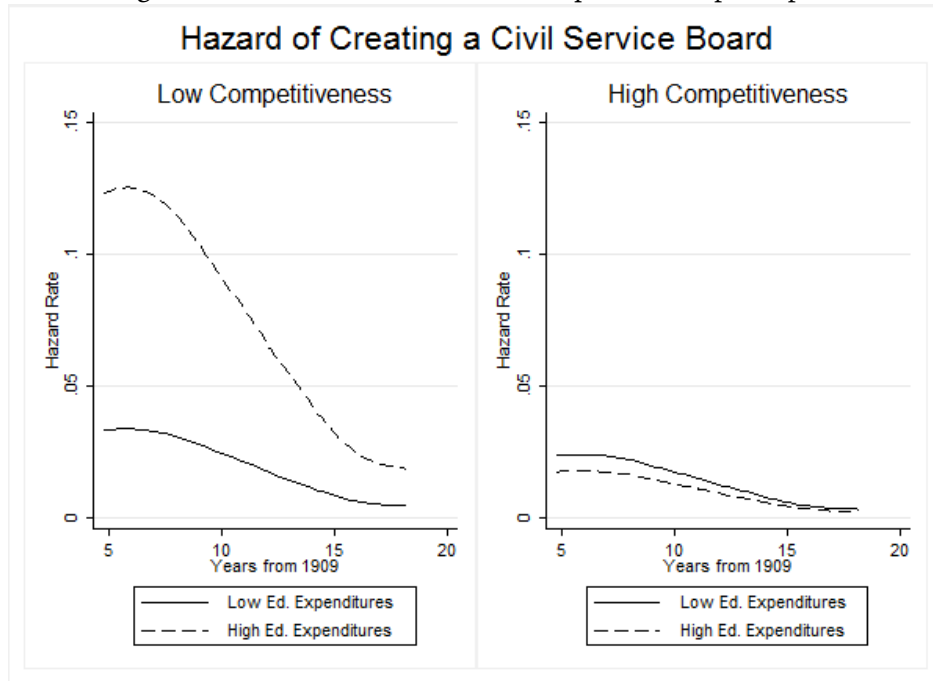
A scatter plot depicting the fraction of the population attending school ($\frac{\text{Ave. Daily School Attendance}}{\text{Population}}$) as a function of educational expenditures *per capita*. Expenditures are plotted on the x-axis, while attendance figures are plotted on the y-axis. Attendance figures are only available for 1911 and 1912, so this plot represents the relationship for those years only. The dashed-line represents predicted values from a bivariate linear regression of attendance figures on expenditures.

in keeping with the regression results in Table 1 above. A shift in education expenditures *per capita* from its 25th percentile to its 75th percentile is associated with a roughly 250 percent increase in the hazard of creating a civil service board, when competitiveness is at its minimum level of zero.

A more complete summary of the estimated marginal effects from the model is presented in Figure 3. The graph to the left depicts smoothed hazard rate estimates from Model 1 when competitiveness is at its 10th percentile. The graph to the right depicts the same when competitiveness is at its 90th percentile. Dashed lines depict estimates when educational expenditures *per capita* are at the 90th percentile; while solid lines depict the same when expenditures are at their 10th percentile.

As is clear from the graph, a shift in educational expenditures from the 10th to the 90th percentile is associated with a nearly 300 percent increase in the hazard rate when levels of competitiveness are at their 10th percentile values. The same increase in expenditures is associated with virtually no change (indeed a slight decline) in the hazard of creating a civil service board when

Figure 3: Cox Model Results: Ed. Expenditures *per capita*



Estimated hazard rates from Model 1 in Table 2. The y-axis depicts the hazard of the creation of a civil service board – the probability that such a board is created in time t given that it has not yet been created. The x-axis depicts the number of years from 1909 (the start of the dataset). The left-hand graph depicts predictions when levels of competitiveness are at the 10th percentile in the sample. The right-hand graph depicts predictions when levels of competitiveness are at the 90th percentile in the sample. Solid lines represent the hazard function when education expenditures are at their 10th percentile, dashed-lines when these expenditures are at their 90th percentile. As in all Cox models, the estimated hazard rates are only defined at observed times of civil service board creation, the graph uses a smoothing function to connect these discrete points in a continuous curve.

levels of competitiveness are at their 90th percentile. These results largely mimic those presented in Figure 1, and are strongly consistent with theoretical predictions. Increasing the supply of secondary and tertiary education is associated with an increased risk of merit reform when levels of political competitiveness are low, and this association diminishes in magnitude as competitiveness rises.

Conclusion

This paper thus offers an explanation for the adoption of merit reforms in the 19th and early 20th century United States. Changes in the distribution of skills rendered the existing patronage systems increasingly costly to incumbent governments. As the gap between the highly-skilled and less-skilled workforce grew – due to increasing levels of secondary and tertiary education – the losses in efficiency entailed by maintaining a patronage system that overwhelmingly attracted less skilled candidates for bureaucratic posts grew. This was particularly true as the 19th century advance and technological changes boosted the returns to skill in public administration. It is also particularly true in relatively closed political systems, in which a greater portion of the population was likely to be excluded from the patronage mechanism.

These claims are supported with empirical results based on the substantial variation in recruitment methods across US municipalities and over time. Municipalities with a greater density of institutions of higher education faced a greater hazard of adopting civil service boards than those without such institutions. This result diminishes in size as the level of political competitiveness rises. Since the majority of institutions of higher education were founded before the civil service movement started, and were located for reasons plausibly exogenous to the government's decision regarding recruitment methods, these findings offer relatively strong causal purchase on the question of when and why civil service boards are created. While one should hesitate to definitively describe these results as causal, they are strongly indicative of a causal relationship between the distribution of skills and the method of bureaucratic recruitment.

The findings in this paper build on existing work that examines the relationship between changes in the skill distribution – as proxied by changes in education systems – and the adoption of merit recruitment in Western Europe (Hollyer, 2010, 2011). The findings in this paper advance previous work by (1) demonstrating that similar results hold in a context outside of Western Europe, and (2) offering stronger grounds for causal claims than the cross-country empirics offered in Hollyer (2011). These other pieces offer strong evidence that relationships described in this paper generalize to contexts beyond the US.

Taken in total, these works present strong evidence that there exists a general relationship between the distribution of skills and the choice of merit- or patronage-based recruitment schemes. As those least likely to participate in the patronage system grow increasingly skilled, patronage systems are increasingly likely to be abandoned for merit recruitment.

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Table 1: Cox Proportional Hazards Results: Colleges/Universities *per* 1,000 Residents

	Limited Set		Full Set	
	Model 1	Model 2	Model 1	Model 2
Colleges/Universities <i>per</i> 1,000	43.743* [-3.040,90.526]	31.477 [-8.173,71.127]	17.105 [-23.906,58.117]	11.973 [-30.111,54.058]
Competitiveness	0.022* [-0.003,0.046]	0.017** [0.001,0.033]	0.017 [-0.006,0.041]	0.014 [-0.003,0.031]
Competitiveness × Colleges/Universities <i>per</i> 1,000	-0.450* [-0.985,0.084]	-0.331 [-0.791,0.129]	-0.215 [-0.688,0.259]	-0.162 [-0.638,0.313]
Property Values <i>per capita</i>	-0.308 [-0.884,0.268]	-0.332 [-0.903,0.240]	-0.320 [-0.896,0.257]	-0.340 [-0.914,0.234]
Revenues <i>per capita</i>	0.022** [0.001,0.043]	0.020* [-0.002,0.042]	0.022** [0.001,0.044]	0.021* [-0.002,0.043]
Population	0.003*** [0.001,0.004]	0.002*** [0.001,0.004]	0.002*** [0.001,0.004]	0.002*** [0.001,0.004]
Secret Ballot	0.595 [-0.655,1.846]		0.341 [-0.815,1.497]	
Poll Tax	0.356 [-0.412,1.123]		0.299 [-0.462,1.060]	
Literacy Test	-0.074 [-0.689,0.540]		-0.070 [-0.681,0.541]	
Womens Suffrage	0.985 [-0.522,2.491]		0.989 [-0.513,2.490]	
State Capital	-0.694 [-1.658,0.270]	-0.561 [-1.475,0.353]	-0.660 [-1.649,0.329]	-0.532 [-1.463,0.399]
# of Subjects	190	190	190	190
# of Failures	65	65	65	65

Results from a Cox regression of the hazard of establishing a civil service board on the number of colleges/universities *per* 1,000 residents, political competitiveness, the interaction of these two terms, and assorted controls. Limited Sample results refer to counts of the number of colleges and universities that exclude historically black and women’s colleges; whereas, these institutions are included in the Full Sample. The table reports coefficient values, not hazard ratios – positive coefficients are associated with an increased hazard of establishing a civil service board, negative coefficients with the reverse. 95 percent confidence intervals are reported in brackets. * denotes significance at the 90 percent level, ** denotes significance at the 95 percent level, and *** denotes significance at the 99 percent level. All standard errors have been clustered by municipality.

Table 2: Cox Proportional Hazards Results: Ed. Expenditures *per capita*

	Model 1	Model 2
Ed. expenditure <i>per capita</i>	0.273* [-0.032,0.579]	0.247* [-0.031,0.526]
Competitiveness	0.029* [-0.000,0.059]	0.026** [0.002,0.051]
Competitiveness × Ed. Expenditures <i>per capita</i>	-0.003* [-0.006,0.000]	-0.003* [-0.006,0.000]
Property Values <i>per capita</i>	-0.257 [-0.820,0.306]	-0.290 [-0.855,0.276]
Revenues <i>per capita</i>	0.018 [-0.007,0.043]	0.018 [-0.009,0.044]
Population	0.002*** [0.001,0.004]	0.002*** [0.001,0.004]
Secret Ballot	0.277 [-1.027,1.582]	
Poll Tax	0.324 [-0.429,1.077]	
Literacy Test	-0.102 [-0.691,0.487]	
Womens Suffrage	0.942 [-0.577,2.461]	
State Capital	-0.629 [-1.545,0.287]	-0.526 [-1.376,0.324]
# of Subjects	190	190
# of Failures	65	65

Results from a Cox regression of the hazard of establishing a civil service board on education expenditures *per capita*, political competitiveness, the interaction of these two terms, and assorted controls. The table reports coefficient values, not hazard ratios – positive coefficients are associated with an increased hazard of establishing a civil service board, negative coefficients with the reverse. 95 percent confidence intervals are reported in brackets. * denotes significance at the 90 percent level, ** denotes significance at the 95 percent level, and *** denotes significance at the 99 percent level. All standard errors have been clustered by municipality.