Tipping the Scales: The Causes and Consequences of Administrative Spending

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Abstract

Public administration literature once devoted distinct effort to identifying the determinants of administrative intensity in organizations. While this literature has received some renewed attention, there remain questions about what aspects of organizational environments generate growth in administrative intensity, particularly as related to political oversight and external accountability mechanisms. This paper aims to expand current theory on the determinants of administrative personnel and costs using data on four-year public universities in the United States from 1998-2011, as this setting has received considerable criticism for perceived administrative bloat. Findings suggest that which political party is in control substantially influences both administrative costs and total personnel. These administrative levels, in turn, have a curvilinear relationship with student outcomes.

Attention to administrative intensity by scholars and practitioners has grown in recent years following concerns that public agencies are top heavy and becoming increasingly inefficient. Administrative intensity, which generally refers to the bureaucratic component of an organization and is often measured through relative spending or number of employees, is influenced by a variety of organizational characteristics. These characteristics, such as size and complexity, shape the level of administrative intensity in an organization which, in turn, is often assumed to influence or is empirically linked to organizational performance. While there is ample research regarding the linkages between internal organizational characteristics and administrative intensity (e.g., Gooding and Wagner 1985; Boyne and Meier 2013), few consider the external factors are key in determining the size of administration in an agency. Environmental characteristics, particularly the influence of politics, play a significant role in the structure and operation of public organizations and should be expected to affect administrative intensity. Political pressures constantly surround public organizations; while politics may be dynamic and subject to change with each election, the forces and preferences of the party in power constitute notable pressure on public agencies. To survive in this environment, organizations must often adapt to the political preferences of stakeholders such as state executive and legislative officials and governing boards. The ongoing oversight and demands for accountability from these political principals are likely to be key factors in understanding changes within an organization.

The hypotheses generated in this study are tested in the context of U.S. higher education, where public institutions have generated much debate among scholars discussing administrative intensity (Hedrick et al. 2009; Martin and Hill 2012; Rutherford 2016). The value placed in holding these institutions accountable, particularly in terms of the efficient use of taxpayer dollars and promising results through student outcomes and economic development, has caused scholars and practitioners alike to scrutinize the level of administration function assumed by public colleges and universities for several types of organizational processes. There is substantial media pressure regarding the juxtaposition of the growing numbers of administrative personnel employed by many colleges and universities and the rising cost of attendance despite lower levels of state appropriations and calls for tuition freezes and greater affordability. Some politicians, such as Kentucky Governor Matt Bevin, suggest cutting administrative overhead in higher education is the best way to ensure “we don’t rob our students” (Williams 2018) and argue that institutions must “find entire parts of [the] campus that don’t need to be there” and eliminate them (Seltzer 2017). Gains in costs and increasing administrative personnel have generated heightened scrutiny from the general public and policymakers such that many stakeholder groups argue that a large share of institutions are overly bloated at the top and are therefore not serving students or the general public in an ideal manner.

Using data on U.S. public four year universities between 1998 and 2011 from the Integrated Postsecondary Education Data System (IPEDS), the following analysis aims to expand current theory regarding the external factors that may be linked to administrative intensity, particularly as competing expectations could be feasible for many of the factors considered below. Following prior literature, we tap size via total student enrollment and create a proxy for complexity through characteristics of the student body that are likely to generate a range in student preferences and, consequently, an increased need for administrative capacity. Above and beyond these more traditional explanatory variables, party control of the state executive and legislative branches as well as whether institutions have centralized governing boards prove to have significant effects on two measures of administrative intensity:

administrative costs and administrative personnel. Among the most consistent findings is that larger shares of Republicans in the state legislature are linked to lower levels of administrative intensity in public institutions. Conversely, Republican governors are associated with increased administrative intensity. A robustness check is also conducted to test current notions about the presence of a curvilinear relationship between administrative intensity and organizational performance. In contrast with recent research that has supported an economies of scale relationship between administrative intensity and performance, our results suggest that administrative intensity does not have this type of influence on student outcomes in US higher education.

Internal Determinants of Administrative Intensity

Several internal characteristics of organizations—primarily size and complexity—have been identified as determinants of administrative intensity and studied at great length by scholars to date (Caplow 1957; Jones 1977; McKinley 1987; Boyne and Meier 2013). The size of an organization, often defined by the total number of employees (Boyne and Meier 2013), has been suggested to have both positive and negative effects on administrative intensity (Blau 1970). Graciunas (1937) argued that as the number of employees within an organization grows, there becomes a greater need for administrators to maintain an increasing number of relationships with employees. As a result, a rise in administrative intensity is observed in the organization in order to ensure the coordination of tasks.

Contrary to this line of thought, others suggest both negative and curvilinear relationships between organizational size and levels of administrative intensity. Jones (1977), for example, argued that decreases in administrative intensity as an organization increases in size may be due to economies of scale. In other words, some growth in total employees could be managed by using the administrative capacity already available instead of requiring an immediate need for additional individuals to oversee coordination needs. In discussing a curvilinear relationship, Boyne and Meier (2013) further suggest that as organizations take on additional employees, administrative intensity initially decreases—per the economies of scale argument—but, at some tipping point when capacity is maximized, will eventually grow in conjunction with size.

The complexity of an organization has also been shown to drive administrative intensity, where complexity can be defined as the division of labor and differentiation among subunits in an organization (Andrews and Boyne 2014; Rutherford 2016). As an organization becomes more diversified, it may experience a need to grow the number of administrators to continue to maintain and monitor relationships among different departments in the organization (McKinley 1987). It should be noted, however, that there is also evidence suggesting that complexity does not always boost administrative intensity. Elston and Dixon (2017) make this argument in the context of shared services. Local government organizations, for example, sometimes implement a shared services approach to administrative powers in an effort to become more efficient. Through their longitudinal study, Elston and Dixon further suggest that even by sharing services, the administrative intensity of each organization does not experience a change as a result of the shared resource model.

While distinct from the concept of size, the complexity of an organization is similarly argued to have a curvilinear relationship with administrative intensity. For example, in a study of universities in the United Kingdom from 2003 to 2008, Andrews and Boyne (2014) suggest that as universities expand in size (via total employees) and as the cost and complexity of tasks also grow, comparative levels of administrative intensity decrease up until some tipping point past which it will grow. In this sense, both size and complexity can have similar effects on administrative intensity via the economies of scale argument mentioned above.

External Determinants of Administrative Intensity

Environmental characteristics play an important role in determining how public organizations are structured, the rules and regulations by which they operate, levels of reported accountability for salient performance measures, and more (Rainey et al. 1976; Boyne and Meier 2013). Of the characteristics of the external environment of public agencies, politics stands out. Political factors significantly shape the context in which public organizations make decisions, directly affecting administrative intensity and many other structures and processes in these agencies. Policy makers act as political principals in relation to public organizations and have some role in determining levels of autonomy and control given to bureaucratic actors to make decisions in shaping and implementing policies (e.g., Moe 1984; Wood and Waterman 1991; Lewis 2010). The extensive literature on bureaucratic control asserts that, within decision making processes, bureaucrats will consider and frequently respond to the preferences of their political principals. This is often due to organizational reliance on political support in order to maintain stability in budget allocations, discretion, or agency goals (Pandey and Rainey 2006; Stazyk and Goerdel 2011).

While research on political control and the impact of the external environment on public organizations has generated much theory as well as several important findings regarding performance and decision-making within the public sector, very little work has considered the effect of such factors on administrative intensity. This lack of attention is particularly problematic in the current political climate of the United States, which has been characterized by a growing distrust of government and common belief that public sector organizations are inefficient due to administrative bloat (for examples, see McLaughlin and Boyer 2012; York

2017). Namely, this negative perception is such that any level administrative intensity is seen as inefficient and a poor allocation of resources. This narrative has been a common critique of the public sector, particularly among external stakeholders who advocate for a variety of public sector reforms organized around the perceived ability to dramatically improve cost-efficiency by reducing the size and scope of central administrative functions within public agencies (Gore 1993; Bouvard et al 2011; Curristine et al 2007).

The current study makes an important contribution to research on administrative intensity by analyzing the role of political context in shaping organizational structure and performance. More specifically, we test whether partisanship and state governance structures generate differences in the extent to which organizations allocate resources, such as hiring of additional personnel or fiscal expenditures, to central administrative functions, and whether these differences have implications for organizational performance. Given a context in which administrative intensity, and accountability as related to efficiency more broadly, in public organizations is salient to policymakers, these questions are timely both in terms of theory development and substantive policy debates regarding the need for public sector reform.

Hypotheses

Through what mechanisms might the political environment of an organization shape internal levels of administrative intensity? First, we argue that the values of political parties will dictate the type of pressures faced by public organizations within a given jurisdiction. In the context of the United States, Republican policymakers tend to be suspicious of large government and favor market-based competition and performance (Rudolph and Evans 2005; Jacobs 2017). Given Republican preferences for reduced spending and the increased privatization of some services, organizations are likely to experience pressures to minimize perceived inefficiencies when more Republicans are in office. Whether or not it is accurate, administrative intensity is a commonly cited source of inefficiency in an organization which leads to increased pressure to lessen the resources allocated toward administrative efforts. As a result, organizations may attempt to function with leaner levels of administrative intensity as a way to maintain or secure political support and stability. This leads to the following hypotheses in relation to the executive and legislative branches of governance:

Hypothesis 1: Public organizations in states with Republican governors will have lower levels of administrative intensity.

Hypothesis 2: The higher the share of Republicans in the state legislature, the lower the level of administrative intensity in public organizations in that state.

In addition to executive and legislative actors, the presence of centralized governing boards may further influence attention to controlling levels of administrative intensity in public organizations. For many public organizations, governing boards consist of several members who are appointed by the state governor or legislature. Given that it is in the best interest of policymakers to appoint individuals with minimal distance from their preferences, appointed board members are likely to reflect and represent the interests of policymakers. The political nature of these boards acts as an extension of the policymakers in power, therefore also adding another layer of oversight for public organizations (Gillan 2006; Rutherford and Lozano 2017). Further, Nicholson-Crotty and Meier (2003) find that centralized boards create a single site that can lower the transaction costs of political actors seeking to influence public agencies. The result of this added layer is the presence of political principals who are closer in proximity to the organizations and are able to more closely monitor a wider range of decisions and actions in the organization (Rabovsky and Rutherford 2016; McLendon, Hearn, and Deaton 2006); in other words, these board members can focus on their particular subset of public agencies while the attention of policymakers is divided across a larger range of organizations. This may provide additional incentive for organizations to decrease levels of administrative intensity in an effort to be perceived as efficient. As a result, the third hypothesis can be stated as follows:

Hypothesis 3: Organizations with centralized governing boards will have lower levels of administrative intensity.

Administrative Intensity in the Context of U.S. Higher Education

Determinants of administrative intensity are frequently discussed in the context of higher education, where the term administrative bloat has become widely popular among stakeholder and media outlets. In light of increasing costs of attendance in public universities, practitioners and scholars have turned a critical eye towards administrative intensity as a possible culprit for the inefficient use of institutional dollars (Belkin and Thurm 2012). Practitioners debate the relevance of administrative intensity in these institutions. While some argue there is "too much work for too few people" (Kim 2017) and that increases in costs are due to declines in state funding (Woodhouse 2015), others suggest increases in administrative intensity—as much as 28 percent of hires between 2000 to 2012—are the result of greater expectations of the college experience and services (Carlson 2014; June 2017). In both views, resources allocated to administrative needs are commonly presented as opportunity costs (e.g., that spending on administration necessarily detracts from other areas like classroom instruction), giving policymakers the chance to make administrative intensity a scapegoat in higher education policy and reform.

Perhaps as a response to popular sentiment concerning both the growth in and overall level of administration in institutions of higher education, scholars have directed some attention to this context in trying to explain the causes and effects of administrative intensity. Among education scholars, Leslie and Rhoades (1995) find that the size, complexity, and structure of institutions are explanations for increasing administrative costs in institutions of higher education, supporting earlier work by those in the field of public administration (Caplow 1957; Pondy 1969; McKinley 1987). Defining administrative intensity as the ratio of administrative staff to faculty, Gander (1999) distinguishes differences in public and private institutions and also considers the amount of administrative intensity in the institution, given accessibility to private and public sources of funding. Such differences in the scarcity and transparency of resource use suggest that differences in where resources originate from will result in changes administrative intensity.

Public administration scholars have also considered administrative intensity in the context of higher education. Andrews and Boyne (2014) consider the context of universities in the United Kingdom while Rutherford (2016) focuses on the context of universities in the United States. Both find some evidence for linkages between size, complexity, and administrative intensity, and the latter also focuses on curvilinear relationships between administrative intensity and organizational performance. Despite these studies, the general perception of administrative intensity is linked to some debate regarding the misallocation of resources. Further, the determinants driving administrative intensity, particularly in the external environment, are given little to no attention in trying to fully understand the role of administrative functions in public organizations.

Data

The empirical analysis of this study evaluates both the determinants of administrative intensity and the effects of administrative intensity on organizational performance within the context of public higher education in the United States. Administrative intensity has previously been measured in different ways, commonly including both the number of staff employed for administration/supervision (Pondy 1969; Rutherford 2016) as well as the amount of fiscal resources spent on administrative tasks and activities (Kalseth and Rattso 2003; Andrews and Boyne 2014). To capture potential differences in administrative intensity related to personnel versus spending measures, we use two separate dependent variables to operationalize this concept in our analysis. For personnel intensity, we measure the percentage of total staff who are classified as administrative/executive personnel or "other professionals."[1] In terms of budgetary allocations, we measure the percentage of total expenditures on institutional support. Institutional support includes, "expenses for general administrative services, central executive-level activities concerned with management and long range planning, legal and fiscal operations, space management, employee personnel and records, logistical services such as purchasing and printing, and public relations and development" (IPEDS 2018). Data for both of our administrative intensity variables come from the Integrated Postsecondary Education Data System (IPEDS). Our dataset includes all public research/doctoral universities in the United States (a total of 165 institutions)[2] and covers the years 1998 to 2011.[3] The dataset is unbalanced with 165 observations per year for all but two of the years (four institutions have missing data for 1998 in both models, and two have missing data for 2000 in the spending models). We focus on research universities to control for important differences related to institutional mission and because some of our independent variables are only available for these institutions.

[1] Other staffing categories defined by IPEDS are clerical/office support, service/maintenance, technical/paraprofessional, and skilled crafts.

[2] Because the state of Colorado has an unconventional voucher-based system of funding for public universities, we exclude these institutions from our analysis. For similar reasons, we also exclude military academies, which generally have a unique relationship with state and the federal governments.

[3] IPEDS made major changes to classifications for staffing variables in 2012, so we do not include years after this point in our analysis

Key Independent Variables

Our main independent variables focus on factors in the external political environment. First, we hypothesize that institutions in states with more conservative political principals will face greater pressure to reduce administrative intensity, as these are often issues discussed in conservative platforms (at least in the context of the United States). As a result, we expect that institutions in more conservative states will have fewer staff and spend less on administration than those in states with more liberal political principals. We use Klarner's dataset on political competition (Klarner 2016) to measure the percentage of state legislators who are Republican and to construct a dichotomous variable coded 1 if the state's governor is Republican. To get at time dynamics between our independent variables of interest and our dependent variables, we lag each of the external political variables by one year. This allows us to examine how the political context in the previous year impacts administrative intensity in the current year.

Previous research on higher education policy in the United States has found that the structure of state governance systems can affect a variety of higher education policy issues. These include state policies regarding appropriations and student fees (Nicholson-Crotty and Meier 2003; Lowry 2001) and performance based accountability (McLendon, Hearn, and Deaton 2006) as well as internal management and performance of universities (Knott and Payne 2004). Much of this research has found that centralized governance structures are often a tool for reducing discretion and autonomy at the individual campus level (Knott and Payne 2004; McLendon, Hearn, and Deaton 2006). As a result, we hypothesize that public institutions in states with centralized governing boards will have lower levels of administrative intensity than their counterparts in states with decentralized governance structures. This variable was coded via the Education Commission of the States' database on higher education governance structures (ECS 2016).

Control Variables

In keeping with previous studies, we control for several additional factors in our analysis below that should be both theoretically related to our outcomes of interest and that can be measured reliably (Bernerth and Aguinis 2016). In addition to the partisanship of state actors, we expect that state policies regarding performance funding will also have an effect on administrative intensity. Because many of these policies have been adopted, at least in part, as a response to perceived cost inefficiencies and administrative bloat in public colleges and universities (McLendon, Hearn, and Deaton 2006; Dougherty et al. 2016), institutions in performance funding states will likely face increased demands to curtail both hiring and expenditures related to administration. We include a dichotomous variable coded 1 if the state has adopted such a policy. The timing and adoption of performance funding policies was coded via the National Conference of State Legislature's database on these efforts (NCSL 2015) with email follow-ups with state officials and experts for states where there was ambiguity about when or whether these policies went into effect.

We also expect that reliance on government funding will influence administrative intensity and include a measure for the percentage of total revenues that are obtained from state appropriations. When institutions are heavily reliant on public funding, they may face greater regulatory burdens (Bozeman 1987), which can necessitate an increase in administrative capacity to deal with added rules and legal restrictions. In higher education, this could materialize in terms of reporting requirements, policies regarding admissions procedures, hiring and firing policies, and a variety of other issues. Of course, more reliance on public dollars may also open institutions to higher levels of criticism related to administrative processes such that institutions try to avoid excess or untapped capacity. This would create a negative relationship between reliance on state appropriations and administrative intensity.

In recent years, many institutions of higher education have adopted decentralized budgeting systems, often known as responsibility centered management (RCM) or responsibility centered budgeting (Strauss and Curry 2002). These reforms allow individual units to have greater control over their budgets, both in terms of revenues and expenditures, with less control or oversight from a central office. As a result, we expect that adopted RCM reforms will be related to administrative intensity, though it is plausible that the effect could work in either direction. On one hand, as budgeting functions become decentralized, with greater decision-making autonomy and discretion at the level of individual departments and units within the organization, there may be less of a need for a large central administrative office and thus less administrative spending. On the other hand, decentralized structures may actually increase administrative costs by forcing units and departments to hire their own administrative personnel, which could result in an overall increase in administrative costs across the institution as a result of duplication. We include a dichotomous measure for RCM adoption, which was coded through a variety of reports and university documents along with email follow-up with institutional budget offices for cases where the status of RCM was unclear.

Next, we include a measure for organizational size, total undergraduate enrollment, which has been found in other studies to be related to administrative intensity (Blau 1970; Boyne and Meier 2013). Previous research has also found that administrative intensity is partially a response to task complexity (Andrews and Boyne 2014; Rutherford 2016), so we control for a variety of student body characteristics (percent receiving federal financial aid, percent Black students, percent Hispanic students, percent of undergraduates who are part-time students, percent of total enrollment who are undergraduate students) that might result in increased need for administrative capacity. It should be noted here that we do not measure complexity directly as the differentiation among subunits or departments within the organization, but we do assume that characteristics like increased student diversity present a range of preferences and needs that require some type of organizational differentiation (see similar discussion of measuring complexity via diversity in Grissom 2010, Moynihan and Hawes 2012, and Andrews 2017).

We also control for differences in the academic preparation of incoming students by including a measure for Barron's selectivity ratings. The rating is a six-point scale based on average GPA and SAT/ACT scores of incoming freshmen that ranges from noncompetitive (1) to most competitive (6). Finally, we control for the percent of faculty who are full-time which, along with selectivity, is often found to be an important predictor of performance in studies of institutions of higher education and can be reliably captured through available data (e.g. Titus 2006; Lowry 2001; Hillman, Tandberg, and Fryar 2015; Zhang 2009). Aside from Barron's selectivity, each of these variables come from the IPEDS database described above.

Administrative Intensity and Student Outcomes

A secondary portion of our analysis investigates the effect of administrative intensity on organizational performance to determine if recent findings related to curvilinear linkages hold. More specifically, research has suggested a curvilinear function in which some administrative intensity boosts some types of organizational performance while too much has a deleterious effect (see Rutherford 2016, for example, in the case of degree production). We rely on two commonly used metrics of student outcomes, six-year graduation rates for first-time full-time freshmen and bachelor's degrees conferred per 1,000 total enrollment, to assess organizational performance and employ the two measures of administrative intensity described above as our key independent variables. The dataset for this portion of the analysis contains 167 institutions (two institutions in Nebraska that were dropped in our first stage models due to the state's non-partisan legislature are included here), and covers the years 1998-2011 for degree production and 1998-2009 for graduation rates. Because previous research has found some evidence for curvilinear relationships between administrative intensity and performance, we include squared terms for both staffing and spending intensity. Additionally, we used lagged values of our intensity variables to better evaluate important time dynamics between organizational structure and performance. Finally, we estimate separate models for each component of intensity to avoid potential problems with multicollinearity.

In terms of control variables, we use many of the same measures discussed above, including student characteristics (percent Black, percent Hispanic, percent receiving federal financial aid, percent of undergraduates who are part-time, and total undergraduate enrollment), faculty characteristics (percent faculty who are full-time),selectivity (Barron's ratings), percent of funding from state appropriations, whether the institution has implemented RCM, and expenditures on instruction per enrollment (in constant $1000s). With the exception of Barron's selectivity and the dichotomous variable for RCM adoption, all of the independent and dependent variables for this analysis comes from the IPEDS dataset described above. Summary statistics for all dependent and independent variables are listed in Table 1 below.

<<Insert Table 1 About Here>>

Methods

Our data are time-series cross-sectional with repeated observations over time; our unit of analysis for both sections is an institution-year. To address issues related to autocorrelation that are often problematic for such datasets, we employ OLS regression with fixed-effects for both institution and year. The institution fixed-effects capture any time-invariant characteristics of institutions such as state, region, or classification as a land grant or Historically Black College or University. In other words, our models estimate within-unit effects of our independent variables. Additionally, the year fixed effects capture any factors that influence all institutions in a given year such as nationwide trends due to shifts in the political or economic environment. We conducted robustness checks for multicollinearity and did not find any evidence of problematic correlations between our independent variables. We also tested the robustness of our results regarding inclusion or exclusion of the control variables for each model, and the main findings are consistent across specifications. This provides strong evidence that the key independent variables in our analysis have unique explanatory power that is not an artifact of model specification or potential correlations with control variables.

One important limitation of the fixed-effects models we use is the potential vulnerability to simultaneity and lag effects. In particular, some of the control variables in our model may have an endogenous relationship with the dependent variables. For instance, student outcomes are potentially both influenced by variables such as state appropriations, and also predictors of these variables in subsequent years. We use fixed effects models because these variables are controls rather than our independent variables of interest, and because this methodology is widely used in studies of administrative intensity (e.g. Rutherford 2016; Andrews and Boyne 2014), but note that the findings should be interpreted with some caution.

Findings – Causes of Administrative Intensity

Results for our analysis on the causes of administrative intensity are listed in Table 2, and there are several notable takeaways. With regards to our first and second hypotheses related to the effect of the external political environment, we find mixed evidence. More specifically, we find that more Republican legislatures are associated with lower levels of both measures of administrative intensity, but Republican governors are associated with higher levels of intensity. Thus, we find support for our second hypothesis but not our first. In substantive terms, the negative effect of legislators is consistently stronger than the positive effect of governors. For staffing intensity, a one standard deviation increase in the percent of Republican legislators is associated with a decrease of about 0.48 in the percentage of staff who are managers while a change from a Democratic to Republican governor is associated with an increase of 0.32. Similarly, for spending intensity, a one standard deviation increase in the percent of Republican legislators is associated with a decrease of 0.15 in the percentage of expenditures on institutional support while a change from Democratic to Republican governor is associated with an increase of about 0.17.

<<Insert Table 2 About Here>>

Turning to our third hypothesis, we find some evidence about the effects of centralized governing boards. In both models, the coefficient for centralized governing boards is negative, though it is not statistically significant in the staffing intensity model. For spending intensity, institutions in states with centralized governing boards spend about 1.5 percent *less* on administration. This suggests that centralized governing boards, which generally have greater capacity and policy influence, may help absorb some of the administrative functions that would otherwise be left for individual campuses, thus reducing the level of administrative intensity within each campus (though perhaps adding other administrative costs at the state level). We also considered the possibility that centralized governing boards might interact with our partisanship variables, such that governing boards have a more negative effect on intensity in states with

Republican governors and state legislatures. When we estimated interaction terms with these variables (models not shown here), results did not support this hypothesis.

We also find statistically significant relationships between reliance on state appropriations and both of our dependent variables, but the effects work in opposite directions. Our models detect a negative relationship ($\beta = -0.115$, $p < 0.001$) for staffing but observe a positive effect on spending intensity ($\beta = 0.066$, $p < 0.001$). It may be that as institutions become less reliant on the state, they hire more administrative staff either to help secure other sources of revenue (e.g., research grants, private donations, commercial operations) or because they receive less pressure from stakeholders to keep these numbers small. The latter possibility would not clearly explain the positive relationship between spending intensity and state dollars, however. Those institutions with less reliance could spend less on administration per student because these staff are more cost efficient than other administrators. Those with higher levels of reliance may spend more on administrative work given the higher levels of red tape or other processes that accompany state dollars.

In terms of our other variables of interest, we find some evidence that performance funding policies are associated with less administrative intensity. Institutions in states with performance funding policies have lower levels of staffing intensity ($\beta = 0.435$, $p < 0.1$), but there is no statistically significant relationship for spending intensity. Similarly, RCM is associated with an increase of about 1.17 in the percentage of staff who are managers, but there is no statistically significant increase in the proportion of money spent on administration. This suggests that RCM may cause some duplication in terms of managerial functions across units, but this duplication does not necessarily translate into overall increases in administrative spending. Next, enrollment is positively associated with staffing intensity ($\beta = 0.199$, $p < 0.001$), which suggests that as institutions become larger, they are not always able to take advantage of economies of scale regarding administrative functions. We also find that the percentage of faculty who are full-time is negatively associated with spending intensity.

Finally, we find statistically significant relationships between administrative intensity and several student characteristics. As institutions become more heavily weighted towards undergraduate enrollment, staffing intensity declines, but there is a positive relationship between the percentage of students who are part-time and both measures of intensity Additionally, the percentage of students who are Black is negatively associated with the staffing intensity while the percentage of students who are Hispanic is negatively associated with spending intensity, both of which do not support our initial expectations. Though outside of the scope of this study, it may be that many of the colleges and universities that serve these populations are unable to hire additional managers or spend more on administration due to a lack of resources or other priorities. For example, Cunningham et al. (2014) discuss how minority serving institutions (MSIs) are under-resourced compared to other types of institutions and have less to spend per student; revenue per FTE student was $16,648 at four year MSIs compared to $29,833 at non-MSIs in the 2010 fiscal year. Importantly, the mixed findings for various characteristics in the overall model do not generate clear support theoretically for a positive, negative, or curvilinear relationship between complexity and administrative intensity (the latter, of course, is not directly tested in the analysis in this study). It does show that how complexity and administrative intensity are measured matters and can shape the way in which scholars understand whether complexity pushes administrative intensity in one direction in a consistent manner across multiple contexts.

Findings – Administrative Intensity and Student Outcomes

As a robustness check related to prior research, we also examine the effect of administrative intensity on organizational performance. Our results for these models are listed in Table 3. Models 3 and 4 show the findings for degree production while models 5 and 6 list findings for graduation rates. Given that these results are of secondary importance for study, we focus our discussion below on the findings for our two key independent variables of staffing and spending intensity.

<<Insert Table 3 About Here>>

For degree production, mixed evidence emerges regarding the effect of administrative intensity. We find no statistically significant relationships between staffing intensity and degree production per enrollment. However, the base term for spending intensity is negative and statistically significant while the squared variable is positive and significant. This is consistent with previous research that has found a curvilinear effect of administrative intensity, but the shape of the relationship appears to be reversed. Whereas previous research found administrative intensity to have positive benefits before reaching a point of diminishing returns, our models show that intensity is negatively associated with performance at low levels, but the effect becomes positive at higher levels. For graduation rates, we find similar patterns for both measures of administrative intensity—the base term is positive and the squared term is negative. For each of our models, we also implemented test for curvilinearity developed by Lind and Mehlum (2010), and, aside from model 3 (the effect of staffing intensity on degrees produced), the results were statistically significant ($p < 0.10$), which confirms that the effect of administrative intensity on student outcomes is curvilinear. To better understand these relationships, Figure 1 also shows marginal effects for our two key independent variables on graduation rates and degree production.

<<Insert Figure 1 About Here>>

Our findings indicate that the curvilinear relationship found between administrative intensity and performance in previous studies (Rutherford 2016; Andrews, Boyne, and Mostafa 2017) does not hold across all settings and organizations. Most importantly, our results do not support the argument that administrative intensity is linked to improved economies of scale that can be translated to organizational performance, at least among public research/doctoral universities in the United States. Whether this is due to differences in time, space, or the way in which administrative intensity is measured is unclear and is a topic that warrants additional attention in future work. For example, when administrative intensity is measured as staffing or spending per enrollment (analysis not shown here), an inverted u-shaped relationship between intensity and performance emerges, which supports prior research. Work seeking to understand how different stakeholder group measure and perceive administrative intensity and capacity could also help to improve conceptual clarity.

Implications

The above findings provide some support for the hypotheses generated in this study. More importantly, they indicate that politics is generally important for understanding variance in administrative intensity in public organizations. For example, using both personnel and spending measures of administrative intensity, the political affiliation of the state governor is related to intensity, though in the opposite direction than we hypothesized. More support is generated for the second hypothesis related to the state legislature as conservative legislatures are linked to lower levels of administrative intensity in public universities when measured as either staffing or spending intensity. In considering why these two points of politics have effects on administrative intensity that push in opposite directions, it may be important to note that the legislature has more direct fiscal oversight of public institutions in a state. Further, these relationships are likely to extend over a longer period of time with members of the legislature who are reelected with fewer policies regarding term limits and less salience than a governor's race. As such, the legislature may place more attention on administrative intensity in state institutions of higher education and may consistently outweigh what may be more symbolic pressure from the governor's office. Of course, this is merely speculation, and other factors may also be at play in these relationships. As mentioned above, it is still the case that measurement of administrative intensity matters. When measured as managers per 1000 undergraduates enrolled, administrative intensity has a positive and significant relationship with Republican governors. This is quite different from the negative relationship we find in the analyses shown here when administrative intensity is measured as a percentage of employees. Each findings has different implications and highlights the need that more research on how political levers affect organizational structures and staffing decisions.

Additionally, we expected that the presence of a centralized governing board would add another layer of oversight that could lower administrative intensity. We found this to be the case for spending intensity for the context represented in our data. Interestingly, these findings also suggest that additional external levers including reliance on state appropriations and the presence of state-level performance funding policies can have some influence on levels of administrative intensity in public institutions. Though these are not the primary focus of this study, they do bolster the need to understand how the external environment shapes internal decisions and structures as related to administrative intensity.

These linkages suggest that while there is a significant association between the level of administrative intensity in public organizations and the political party in power, the nature of this relationship may be centered more heavily on administrative staffing rather than spending. The same is also observed when we consider recent research on the possibility of a curvilinear linkage between administrative intensity and organizational performance. Theoretically, this means that scholars should be diligent in considering how to best measure administrative intensity as based on prior literature and what aspects appear to be of salient concern to elite or mass agendas. Such decisions can certainly have an influence on the relationships detected in the data at hand.

While the relationships and conclusions drawn from the analysis are meaningful for developing theory and knowledge on the causes and effects of administrative intensity in public organizations, there are important limitations to consider. The focus on public four-year universities in the United States limits the scope of the analysis in terms of generalization. The objectives and goals of public universities are often dependent on the composition of clients (students) served and what resources are available to the university. These aspects are controlled for in the analysis presented here, but the relationship between increasing percentages of Black and Hispanic students and the decrease in personnel and spending, respectively, suggest there may exist greater priorities for such organizations. Future research should explore the nuances of these characteristics and also focus on better understanding the comparisons in conceptualizations of administrative intensity. Further, causality is continuously difficult to secure, though we do offer analysis that provides observations across time and space. That said, replication is vital, particularly when natural experiments may allow for an examination of administrative intensity in organizations before and after a treatment.

The key purpose of this manuscript is to encourage others in the field to consider not only the internal organizational dynamics that shape salient factors such as administrative intensity but to also give a stronger nod to the relationship between politics in the external environment and administrative intensity within public and nonprofit agencies. Given continued political discussion of agency reform and bureaucratic bloat across many countries and throughout multiple levels of governance, the need to understand when and why administrative intensity should grow or shrink will remain relevant in understanding the balancing of multiple goals in public agencies as bureaucrats both respond to and try to shape their environments.

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Table 1 - Summary Statistics

	Mean	SD	Min	Max
% Total Staff Managers (Staffing Intensity)	34.19	7.42	10.09	64.86
% Spending on Institutional Support (Spending Intensity)	7.49	3.13	0.76	32.52
Graduation Rates	45.15	16.51	1.93	100
Degrees Produced Per Total Enrollment	180.59	48.24	2.23	1634.36
Republican Governor	0.58	0.49	0	1
% Legislature Republican	48.84	12.80	8.85	88.57
Centralized Governing Board	0.33	0.47	0	1
Performance Funding Policy	0.23	0.42	0	1
RCM	0.07	0.26	0	1
% Revenues from State Appropriations	29.40	10.48	4.66	62.42
Total Undergraduate Enrollment (in 1,000s)	17.29	9.14	1.17	70.89
Instructional Expend (constant $ 1000s) per Enrollment	9.10	4.11	3.02	38.24
% Students Receiving Federal Aid	28.24	14.06	0	100
% Undergraduate Students Part-Time	17.19	11.16	0.95	60.69
% Students Black	12.64	18.90	0.21	98
% Students Hispanic	7.04	11.15	0.06	80.84
% of Total Enrollment Undergraduate	77.54	7.25	53.26	92.75
% Faculty Full-Time	76.50	12.78	34.96	100
Barron's Selectivity	3.41	1.06	1	6

Table 2 – Causes of Administrative Intensity

	(1) Staffing Intensity	(2) Spending Intensity
Republican Governor (Lagged)	**0.322****	**0.167****
	(0.15)	**(0.08)**
% Legislature Republican (Lagged)	**-0.037***	**-0.012**$^{+}$
	(0.01)	**(0.01)**
Centralized Governing Board (Lagged)	-1.988	**-1.517**$^{+}$
	(1.82)	**(0.91)**
Performance Funding Policy (Lagged)	**-0.435***	-0.034
	(0.22)	(0.11)
RCM	**1.165**$^{+}$	-0.087
	(0.67)	(0.33)
% Revenues from State Appropriations	**-0.115*****	**0.066*****
	(0.02)	**(0.01)**
Total Undergraduate Enrollment (in 1,000s)	**0.199*****	-0.007
	(0.05)	(0.02)
% Students Receiving Federal Aid	-0.013	**-0.014****
	(0.01)	**(0.00)**
% Undergraduate Students Part-Time	**0.071*****	**0.026***
	(0.02)	**(0.01)**
% Students Black	**-0.164*****	0.011
	(0.05)	(0.02)
% Students Hispanic	**0.167****	**-0.091****
	(0.06)	**(0.03)**
% of Total Enrollment Undergraduate	**-0.078***	-0.017
	(0.03)	(0.02)
% Faculty Full-Time	-0.015	**-0.011***
	(0.01)	**(0.00)**
Barron's Selectivity	0.137	-0.011
	(0.13)	(0.06)
Observations	2307	2305
Universities	165	165
Fixed Effects for Years	Yes	Yes
Fixed Effects for Universities	Yes	Yes
Adjusted R^2	0.861	0.807

Standard errors in parentheses
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3 – Administrative Intensity and Organizational Performance

	(1) Degrees Produced	(2) Degrees Produced	(3) Graduation Rate	(4) Graduation Rate
Staffing Intensity (Lagged)	-0.304		**-0.239***	
	(0.40)		**(0.09)**	
Staffing Intensity (Lagged)^2	0.007		**0.004****	
	(0.01)		**(0.00)**	
Spending Intensity (Lagged)		**-1.676****		**-0.421*****
		(0.54)		**(0.12)**
Spending Intensity (Lagged)^2		**0.043***		**0.013****
		(0.02)		**(0.00)**
RCM	**-6.059+**	**-5.756+**	**1.702***	**1.810***
	(3.19)	**(3.18)**	**(0.80)**	**(0.80)**
% Rev. from State Approp.	0.093	0.127	0.035	**0.048***
	(0.10)	(0.10)	(0.02)	**(0.02)**
Undergrad. Enroll (1,000s)	**-1.685*****	**-1.604*****	0.056	0.077
	(0.22)	**(0.21)**	(0.06)	(0.05)
Instr. Exp per Enr. ($1000)	**2.406*****	**2.518*****	0.085	0.126+
	(0.31)	**(0.31)**	(0.08)	(0.08)
% Students Black	**-0.555***	**-0.658****	**-0.505*****	**-0.531*****
	(0.25)	**(0.24)**	**(0.06)**	**(0.06)**
% Students Hispanic	**2.862*****	**2.812*****	**0.460*****	**0.445*****
	(0.30)	**(0.30)**	**(0.08)**	**(0.08)**
% Students Rec. Federal Aid	-0.004	-0.015	**-0.031****	**-0.032*****
	(0.04)	(0.04)	**(0.01)**	**(0.01)**
% Undergrad. Part-Time	**-0.854*****	**-0.840*****	**-0.050***	**-0.055***
	(0.10)	**(0.10)**	**(0.02)**	**(0.02)**
% Faculty Full-Time	0.021	0.019	**0.024***	**0.026***
	(0.05)	(0.05)	**(0.01)**	**(0.01)**
Barron's Selectivity	0.136	0.028	**0.782*****	**0.755*****
	(0.62)	(0.62)	**(0.13)**	**(0.13)**
Observations	2283	2283	1956	1956
Universities	167	167	167	167
Fixed Effects for Years	Yes	Yes	Yes	Yes
Fixed Effects for Univs	Yes	Yes	Yes	Yes
Adjusted R^2	0.870	0.871	0.973	0.973

Standard errors in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 01$

Figure 1: Marginal Effects for Administrative Intensity on Student Outcomes