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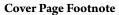Part of the Higher Education Commons, and the Higher Education Administration Commons

Goal Complexity in Financial Aid and the Contingency of Organizational Sector

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By Amanda Rutherford

Expectations of public institutions of higher education now include a growing number of competing goals. Financial assistance policies are expected to reward student talent, expand access to education, boost retention and graduation rates, and more. Yet research has not generally provided an empirical assessment of whether and how higher levels of goal complexity are linked to institutional processes and outcomes. The present study examines financial assistance goal complexity in two- and four-year public institutions using survey data from the State Higher Education Executive Officers Association (SHEEO). Findings show that both two-year and four-year colleges are affected similarly by goal complexity in terms of state and institutional financial aid awards but quite differently for student outcomes. Complexity has a strong negative effect on graduation and retention rates at two-year institutions, suggesting that state actors need to better differentiate between their demands of two- and four-year institutions.

S tudent financial assistance policies in the United States are arguably more political and more salient than ever before. Both major political parties have acknowledged to varying degrees that financial assistance in postsecondary education is an issue worth addressing. For example, while introducing a proposal intended to wipe out student debt, former U.S. Secretary of State Hillary Clinton (Democrat) stated, "No family and no student should have to borrow to pay tuition at a public college or university" (Shah & Hefling, 2015). On the other end of the political spectrum, former Texas Governor James Richard "Rick" Perry (Republican) has consistently called for low-cost degrees, declaring, "A $10,000 degree provides an opportunity for students to earn a low-cost, high-quality degree that will get them where they want to go in their careers and their lives" (Koppel & Belkin, 2012).

At the same time, policymakers across the ideological spectrum are pushing for greater accountability for higher education. Former Secretary of Education Arne Duncan argued, "Institutions must be held accountable when they get paid by students and taxpayers but fail to deliver a quality education" during a recent speech at the University of Maryland, Baltimore County (Anderson, 2015). Senator Lamar Alexander (R-TN), in working to review and reauthorize the Higher Education Act of 1965, focused on how to force colleges to be held accountable with "more skin in the game," proposing to mandate that institutions pay portions of student debt for those who default or pay insurance based on student risk factors, while he also called for reducing some other forms of regulation believed by many Republicans to be overly burdensome (Stratford, 2015).

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As debates on higher education affordability and accountability intensify, colleges and universities have been held responsible for meeting an ever-growing number of competing goals. Institutions must retain and graduate students, prepare students to compete in global markets for employment, and provide quality education within the classroom (Fain, 2012). These institutions are also expected to value access and diversity such that all student groups experience similar opportunities (Coleman et al., 2009). Beyond these many student-centric measures, colleges are tasked with employing faculty who win national grants and produce renowned research while maintaining classes that offer the latest, most innovative learning tools (Thomson Reuters, 2008). All of these goals must coincide with state and federal regulations related to student privacy, immigration, sexual misconduct, affirmative action, and tax reporting processes (Higher Education Compliance Alliance, 2015). Institutions are also situated in an environmental context in which federal and state dollars represent a limited resource such that reliance on students for revenue is necessary, the market for higher education is increasingly global and more competitive, and student demand for postsecondary education continues to grow and become more specialized (Lane, 2011; Jongbloed, 2003).

Importantly, many of the ideals pushed by policymakers, SHEEOs, and other state actors pull colleges in opposing directions. For example, rewarding higher graduation rates may lead to perverse incentives in the recruitment and admission of students, which may hurt access and equity standards (Umbricht, Fernandez, & Ortagus, 2015). Likewise, affordability may lead to lower quality standards in an environment of limited resources. As the responsibilities of colleges and universities have multiplied, the necessary trade-offs among goals have become more apparent to many institutional leaders (Immerwahr, Johnson, & Gasbarra, 2008; Rutherford & Meier, 2015). For example, affordability, quality, and access are often pitted against one another in an iron triangle in which a change in one node adversely affects the other two. Yet, as outlined in Immerwahr, Johnson, and Gabarra (2008), many political principals of colleges and universities do not share the belief that these factors oppose one another and argue that universities and colleges should be able to successfully improve across several goals (without the need for any additional funding).

What implications do these multiple goals have for postsecondary education institutions? This exploratory study seeks to push beyond understanding and defining the many goals that colleges face to understanding how the compounding of goals affects the ways in which institutions operate and perform. Institutional-level data can help to assess connections between scholarly concepts of principal agent relationships and goal complexity to better grasp how state-level goals might help or hinder institutions tasked with implementing such goals. Further, this study distinguishes between the effects of goal complexity in public two- and four-year institutions, as the variance in the structures and missions of these two institutional types may affect how administrators respond to goals set by state-level actors. This work is especially important given the shift from self-regulation to stringent external accountability in the way governance structures in the U.S. interact with institutions of higher education (Alexander, 2000; Shin, 2010).

This study focuses on goals as related to financial assistance; data are directly comparable across surveys conducted by the State Higher Education Executive Officers Association (SHEEO) and are used to determine the extent of goals that are expected to be achieved by institutions as a result of aid policies. Empirical results show that while goal complexity has a similar association with state and institutional financial assistance to students in both two-year and four-year institutions, higher levels of complexity have a stronger negative effect on two-year institutions as related to salient student outcomes of graduation and retention. This latter finding has especially important implications that can be informative for institutional leaders who must determine how to balance the many goals, expectations, and demands that are externally imposed on institutions.

Conceptual Framework

Two strands of literature provided a foundation for the current study: that of principal-agent relationships and that of goal complexity in the public sector. Principal-agent relationships consist of a principal (e.g., a political institution) hiring an agent (in this case, a college or university) to accomplish some task (e.g., education of students; the production of active democratic citizens; Waterman & Meier, 1998; McLendon, 2003; Lane & Kivisto, 2008).

Institutions of higher education have multiple principals—including but not limited to policymakers, bureaucratic agencies, and the general public—who have varying perceptions about the purposes colleges should serve. Within the principal-agent relationship, the principal faces a dilemma caused by the inability to completely monitor the agent's behavior, as continuous monitoring is quite costly (McCubbins & Schwartz, 1984; Lupia & McCubbins, 1994). This imperfect oversight provides the agent some opportunity to shirk (i.e., steer away from) various responsibilities the principal values in order to pursue its own interests. As such, the principal often attempts to control the agent through written contracts, budgetary restrictions, and additional accountability systems (Weingast & Moran 1983), even though these transactions can be quite costly (Waterman & Meier, 1998). This is apparent, for example, in the recent increase in oversight by state policymakers (the principal) on public institutions of education (the agents) following higher demands for accountability from the American public about whether two- and four-public postsecondary education institutions are performing at an optimal level (these demands are the theme of popular books such as Arum & Roksa's 2011 *Academically Adrift*). These mechanisms, though often insufficient for achieving perfect oversight, are aimed at increasing the likelihood that the agent produces policy outcomes that meet the policymakers' expectations.

Aside from issues of additional (and costly) monitoring and oversight, the agent must have some understanding of the principal's goal(s) in order for agents to achieve policy outcomes that the principal desires. The higher the number of goals that exist, the more difficult it becomes to address all goals and the more room that is inadvertently created for the agent to prioritize some goals over others (Peters & Pierre, 2006). As such, efforts to increase oversight and impose additional goals on public agencies can actually increase the ability of agents to shirk and follow their own preferences in selecting among many goals.

If the assumption that agents and principals do not share the same goals holds, then an increase in goals may be linked to more shirking and lower levels of organizational performance. The assumption that agents necessarily have goals that are adverse to those of the principal is somewhat contentious (Krause, 1996; Peters & Pierre 2006) so alternatives should be considered. Even where this assumption is relaxed, however, the same negative linkage between the number of goals and agency performance is still likely to occur. This is because the higher the complexity of an organization's goals (and general environment), the more challenging it is to meet multiple goals (e.g., Wood, Bandura, & Bailey 1990). In other words, it is more difficult to achieve multiple goals than a single goal, especially where task difficulty is high.

The hypothesis that goal complexity is negatively related to institutional performance given varying levels of alignment between principal and agent goals is echoed in additional public administration research. Generally, goal complexity has been related to negative organizational consequences such as lower commitment from individuals (Buchanan, 1974) and greater difficulty in developing performance indicators (not knowing how to measure performance can also subsequently hurt performance evaluation efforts: Meyer, 1979). Further, goal complexity can sometimes lead to goal ambiguity in that the compounding of goals can make plans and strategies less clear cut in the presence of trade-offs among competing priorities (Rizzo, House, & Lirtzman 1970). The absence of well-understood goals may initiate a cycle in which demand for accountability produces additional rules and red tape that further expand goal complexity over time (Lynn, 1981).

As the goals imposed by political principals become more numerous and increasingly complex, institutions will be more strained to meet all goals. This subsequently forces the agent to weight and rank goals in decision-making processes that determine the strategic actions of the organization (Peters & Pierre 2006). This is necessary given that organizations—including institutions of postsecondary education—have a limited amount of time, money, and energy, requiring trade-offs among multiple goals, even if each goal has some normatively positive value. Thus, the agent is actually granted some leverage (often unintentionally) to select which goals to prioritize given the capacity of the organization to meet multiple goals. Again, the weighting of goals by the agent may not match that of political principals given differences in expertise and values that are often present in principal-agent relationships.

Principal Agent Relationships, Goal Complexity, and Financial Aid

Following the preceding arguments, this study operated under three assumptions: (1) principal-agent relationships lack complete oversight, necessitating that the agent make some decisions based on values and expectations, (2) goal complexity permeates public organizations (especially as compared to private firms), particularly as agent oversight increases, and (3) goal complexity has negative consequences for organizations in environments with exhaustible resources and capacity.

Colleges and universities constitute a prime space in which to test these linkages given that complex goals are often accepted as norms (Gaither, Nedwek, & Neal, 1994). This scenario is certainly true in the case of student financial assistance. In the 2012-13 academic year, undergraduate and graduate students received $241.8 billion in student aid in grants from all sources. Of this total, nearly 71% was from the federal government, 19% was from institutional sources, and just 4% came from the state (the remaining share was from private sources; Baum, Cardenas Elliott, & Ma, 2014). Student financial assistance and the ensuing effort to offer affordable postsecondary education are complex, bureaucratic processes that involve red tape, high levels of expertise, and the need to react quickly to turbulent changes made by policymakers.

This study focused on state financial aid goals. Each state has developed its own goals that may be more or less numerous than other states' goals as determined by the political and economic environment. State aid programs have grown substantially in the last thirty years, though state support per student has waxed and waned over time (Heller, 2006). Institutions are also expected to implement state and institutional financial assistance policies to achieve specific desired outcomes such as affordability and equity (Johnstone, 2003), and they often have some discretion in how to meet these goals (i.e., assumption 1). How to generate on-the-ground policies and actions within the institution to achieve each of the goals stated by state-level actors, however, is neither clear nor straightforward, especially in a time when resources needed to provide a quality education are tight. Administrators are often forced to rank goals in order of perceived importance (Rutherford & Meier, 2015), which may lead to negative unintended consequences (i.e., assumption 2). Where states have a high number of goals that principals (state-level actors) have deemed important, institutions may have more difficulty in setting priorities and maximizing performance given limited resources and capacity (i.e., assumption 3).

It is important to examine the implications of the variance in goal complexity within colleges and universities to understand when and how environmental factors influence these institutions. If complexity does have negative consequences for either managerial processes or for student success, it will be important that policymakers and practitioners try to limit and rank—not continue to expand—the long list of outcomes for which colleges and universities are held responsible.

Does the Effect of Goal Complexity on Institutions Vary by Sector?

Next, while goal complexity for most institutions of higher education is expanding given the development of outcomes-based funding policies, the rate and type of change in this complexity can vary by organizational sector. The general goals of schools, according to Labaree (1997), include democratic equality, social efficiency, and social mobility. Yet, within public institutions of higher education in the United States, it is quite important to distinguish between two- and four-year institutions in empirical research given the large differences in missions and structures (Dougherty, 2002). While four-year institutions have traditionally been the focus of higher education discussions and reforms in the past, the student population of community colleges and related two-year programs has drastically expanded. For example, in 1969, 26% of all college students attended two-year institutions (public and private); in 2011, 37.4% of college students (over 10 million individuals) attended public two-year schools, and 34.5% attended public four-year institutions (Brock, 2010). Two-year institutions, overall, now hold market shares that are somewhat equal to their four-year counterparts and provide educational services to a significant share of students, although student profiles continue to differ substantially.

Sector differences today hinge on institutional histories as well as efforts by governing boards in the 1950s and 60s to distinguish between programs and accommodate enrollment growths (Callan and Finney, 2003). The mission of two-year institutions has evolved over time but currently includes preparation for transfer to four-year institutions, workforce training, economic development, and democratization and open access (the balance of each mission may depend on the environment of the specific institution; Dougherty & Townsend, 2006; Dowd, 2003). Community colleges serve as an entry point to higher education for many low-income and underrepresented groups (Bragg, 2001) and provide less financially burdensome routes to furthering education beyond the K-12 system. For four-year institutions, organizational missions have focused more heavily on themes of building a concentration of talent and resources, prestige maximization, research production, and global application and expansion (Bastedo & Gumport, 2003). Importantly, four-year institutions are arguably more complex institutions, as they offer both a larger number of degree concentrations (i.e., major fields of study) and a larger number of academic degree types (e.g., BA, MS, PhD).

The differences in the type and level of complexities present in the missions of two- and four-year institutions are likely to influence the extent to which these organizations adjust to goal complexity. Theoretically, organizations that are already more complex may have two advantages for absorbing additional goals. The first is simply a product of diminishing returns; four-year institutions may already be so complex that the imposition of additional goals does not add a marginally high level of complexity or strain on the institution. This is similar to the diminishing effect of complexity and size on the operations of organizations generally (Andrews & Boyne, 2014). Second, these four-year institutions are also larger and have higher levels of slack resources, or capacity, to absorb and tackle additional goals. In other words, these institutions may adapt to change and complexity more readily than two-year institutions that are often smaller and have lower levels of capacity (see a similar discussion in public administration literature such as Andrews et al., 2013). It may be the case, then, that additional goals from the state can be expected to either have little influence or a minimal negative influence on four-year institutions, while the association with two-year institutions will be consistently negative.

Data and Methods

To examine the effect of goal complexity in two- and four-year public colleges and universities, data were collected from the State Higher Education Executive Officers Association (SHEEO) State Tuition, Fees, and Financial Assistance Policies project. SHEEO asked state fiscal officers from all 50 states to respond to

the survey, which contained eight sections related to tuition-setting, student fees, financial assistance, and the alignment of state fiscal policies as related to public institutions (Boatman & L'Orange, 2006; Bell, Carnahan, & L'Orange, 2011). The survey project began in 1988 and has expanded over time to help adequately understand state rationales and decision-making processes about a number of programs. This study specifically focuses on questions related to the influence of state financial aid goals from the 2005-06 and 2010-11 surveys, as questions were consistent across these two survey iterations. In 2005-06, representatives from all 50 states responded to the survey, and in 2010-11, 45 states responded (Michigan, Nevada, New Jersey, Rhode Island, and Washington did not respond). The response rate varies; for instance, in 2012-13, only 35 states responded.

This study viewed the SHEEO in each state as part of actors representing state-level political principals while each institution is an agent. SHEEOs vary in size and structure but were grouped with state policymakers in this study conceptually as political principals with oversight power over public institutions of higher education. It should be noted that SHEEOs may or may not emphasize goals exactly as state policymakers, so their perceptions of goals can vary slightly from those goals defined in state legislation. Still, SHEEOs are a dominant voice for higher education in these states, and they are often perceived as expert informants who can both aid in the oversight of institutions while providing meaningful information to state policymakers. Further, the survey asked SHEEOs specifically about state goals and decision making processes, not system or institutional phenomena.

In reference to understanding goals, these surveys asked, "The following is a list of possible goals of student financial aid policy. Understanding that multiple programs might exist in your state to meet a variety of objectives, please indicate the relative influence of each of the goals in the creation and adjustment of a comprehensive financial aid program" (Boatman & L'Orange, 2006; Bell, Carnahan, & L'Orange, 2011). Respondents could rank each of the following goals as having (1) no influence, (2) minimal influence, (3) moderate influence, or (4) significant influence:

- Promote broad access to higher education

- Improve the affordability of higher education

- Facilitate student choice among higher education providers in the state

- Help equalize tuition between public and independent institutions in the state

- Promote student retention and degree completion

- Recognize talent and reward effort of students

- Keep talented students in the state

- Prepare and place students into specific careers

Respondents were also able to add other goals via an open-ended question; this category is not accounted for here to maintain comparability across time and place.

To create a measure of goal complexity, a value of 1 was assigned to each goal identified as having significant influence (if the goal was not deemed significant, it received a value of 0). These dichotomous indicators were then summed to determine a total number of goals rated as holding significant influence by state and year. Theoretically, this summative measure could range from 0 to 8; actual responses varied between 0 and 6. The higher the level of goal complexity from the SHEEO, institutions may have more discretion in prioritizing among goals but are also faced with the difficulty in maximizing additional performance indicators given limited capacity. These dual pressures are likely to decrease organizational

performance, especially for two-year institutions that have lower levels of capacity as compared to their four-year counterparts.

This survey measure of goal complexity was merged with two additional datasets. First, state-level data adapted from Rabovsky (2014) assesses the political climate of the state in which institutions are located. This dataset includes information from the U.S. census as well as from Klarner's (2013) data on governors and state legislators. As described below, this study used measures of unemployment, state legislature partisanship, and citizen ideology from this dataset. Second, responses were connected to institutional-level IPEDS data from the National Center for Education Statistics for two- and four-year public institutions. As such, goal complexity for a single state in 2005-06 applies to all institutions in that state for that point in time.

A listing of the number of two- and four-year public institutions included in models by state appears in Table 1. The number of institutions represents the total number of colleges across both survey years (i.e., a single college may be counted once for 2005-06 and again for 2010-11) resulting in 2,464 total institution-year observations (935 four-year observations and 1,529 two-year observations). This reflects the responsibility of all public institutions in the state for meeting the goals set by their political principals at the state level. Even though one-size-fits-all policies are not always appropriate (see, for example, Moynihan, 2008), they are more often than not the reality of the expectations of state-level actors for the organizations they oversee.

Variable Selection

The key variable of interest in this study is goal complexity, as calculated from the SHEEO survey data at the state level that is matched with institutions within each state. To determine whether goal complexity for financial assistance has any meaningful effect on public institutions, this study assessed three outcomes. First, as these goals relate primarily to financial assistance, analyses included the average dollar amount of grants for first-time, full-time freshmen from the state as well as the same measure at the institutional level.[1] These measures were logged because the variables were highly skewed (choosing not to log these variables would have produced biased results in which observations in the tail of the distribution were heavily weighted). These measures represent one of many ways to assess affordability—or at least a signal of affordability—and are generally salient factors for many families. Some institutions may, of course, have higher tuition and fees but offer higher scholarships to influence student choice (see Avery & Hoxby, 2004). Should institutions be expected to achieve a larger number of goals and the hypotheses above be valid, performance has some likelihood of declining as the resources used to award scholarships may be needed to meet other goals. It is also likely that state aid will more directly reflect state goals. Institutional goals, however, may reveal more about how institutions adapt to state decision making and goals, even given the distance between state-level goals and institutional aid.

In addition to affordability, quality via student performance perhaps has been the most discussed performance indicator for institutions in recent years (Rabovsky, 2012; Tandberg & Hillman, 2014). Additional models examined 150% graduation rates and retention rates as reported by IPEDS to determine if goal complexity in higher education finance has any effect on student outcomes. Graduation rates were calculated as the percent of first-time full-time students who graduate within three or six years at the same institution, for two- and four-year institutions respectively. Retention rates report the share of first-time full-time students who persist from the first to second year of instruction. While these two variables do not capture the full extent of how well a college or university performs (they ignore issues of student transfers, for example), they are among the most common indicators examined by multiple stakeholder groups (e.g., policymakers, third-party groups, and parents) for both two- and four-year institutions (Tandberg &

Table 1. In-Sample Representation, 2005 & 2011

State	Two-Year Institution	Four-Year Institution	State	Two-Year Institution	Four-Year Institution
AK	4	2	MT	17	12
AL	49	26	NC	115	32
AR	41	20	ND	8	12
AZ	40	8	NE*	0	0
CA	132	63	NH	8	2
CO	31	24	NJ	19	10
CT	24	10	NM	15	13
DE	6	4	NV	2	5
FL	44	37	NY	56	54
GA	79	43	OH	39	28
HI	12	7	OK	24	27
IA	30	6	OR	32	14
ID	7	8	PA	26	38
IL	76	18	RI	1	2
IN	4	30	SC	40	23
KS	39	16	SD	9	13
KY	2	16	TN	26	14
LA	19	28	TX	105	52
MA	32	18	UT	6	12
MD	30	23	VA	47	28
ME	9	4	VT	0	4
MI	26	15	WA	34	5
MN	49	22	WI	0	27
MO	26	20	WV	8	20
MS	26	16	WY	14	2

*NE is excluded from analyses given its unicameral structure and, consequently, the inability to measure some of the state-level political variables of interest.

Hillman, 2014). As such, if goal complexity has a negative influence on institutions, that effect would be arguably most concerning for these measures, as both principals and agents are likely to prioritize student performance.

All outcome measures are viewed here as a function of the state political and economic environment, institutional student profile characteristics, and institutional resources. Models reflected these factors accordingly to avoid issues of omitted variable bias. At the state level, analyses included state appropriations for higher education, unemployment rates, the percent of the legislature affiliated with the Democratic Party, state citizen ideology (higher values indicate higher levels of liberalism), and whether the state has a consolidated higher education governing board (1 if a governing board is present, 0 otherwise). These variables helped to assess some state-level variance in norms, structures, and policies. It is important to note that, due to the unicameral structure of the Nebraska legislature, this state and its institutions were excluded from the analysis. Total state appropriations to higher education per FTE student (in thousands) provided an indication of the priority of higher education in the state while controlling for ideology and the economy. This measure also picked up variance across states in aid programs that may be in place. Next, unemployment rates captured the state economic environment. Where unemployment rates rise, enrollments are likely to increase, creating a higher demand for both instruction and financial aid at a time when less support is available (Delaney & Doyle, 2007). The influx of students, therefore, is likely to influence both state and institutional grant award strategies and student performance indicators.

The measure of legislator partisanship captured ideological preferences of state policymakers. Here, higher levels of Democratic Party representation were expected to be associated with greater attention to higher education and, thus, a higher level of grants and other resources aimed at boosting student performance (Doye, 2007; Morphew & Eckel, 2009). An additional control for citizen ideology assessed a separate stakeholder group. Citizens are another political principal for institutions of higher education; citizens may either advocate for specific goals directly to institutions or through policymakers. Similar to policymakers, more liberal citizens in the state may favor additional resources to institutions to increase capacity and favor student performance. Finally, controlling for the presence of a consolidated board was necessary as previous research indicates that board structure is a determinant of performance (Nicholson-Crotty & Meier, 2003).

At the institutional level, student profile and resource variables from IPEDS included size, sticker price, administrative intensity, percent of part-time faculty, the percent of underrepresented minority students (in this case Black and Hispanic students), and the percent of part-time students. In the case of four-year institutions, models also included controls for the level of student (i.e., the percent of undergraduate students). Size was captured through total student enrollment (logged); this also serves as the traditional means through which state political principals assess the financial needs of institutions. Importantly, in this case, larger institutions may be better able to absorb higher levels of goal complexity following economic rules of declining marginal rates of return. Administrative intensity was calculated as the percent of employees who are classified as managerial or other professional staff. This variable—also termed administrative bloat—helped to test for whether additional capacity among administrators (i.e., slack in personnel resources) boosts organizational performance (see Rutherford, 2015, for additional discussion the effect of administrative intensity). The percentages of underrepresented minority students, part-time students, and undergraduate students represent student enrollment profile characteristics that are often linked to student performance (see, for example, Scott, Bailey, & Kienzl 2006). In addition to these characteristics, the percent of part-time faculty is often seen as an indication of attention (or lack thereof) to classroom instruction and a factor in determining student outcomes (Jacoby, 2006; Jaeger & Eagan, 2011).

Descriptive Statistics

After matching state-level survey responses to institutions in each state, individual goals were descriptively assessed before compiling these questions into a single goal-complexity measure for use in regression models. Table 2 reveals that the most important goals across the institution-year observations in this sample are promoting access and improving affordability, while the goal with the lowest degree of influence is

Table 2. Statewide Goals for Financial Assistance Policies, 2005-06 and 2010-11 Surveys

	No Influence (1)	Minimal Influence (2)	Moderate Influence (3)	Significant Influence (4)	Average Influence Score
Promote broad access to higher education	10	72	313	1,999	3.80
Improve the affordability of higher education	0	56	445	1,855	3.76
Facilitate student choice among higher education providers in the state	120	765	875	591	2.82
Help equalize tuition between public and independent institutions	867	843	577	64	1.93
Promote student retention and degree completion	127	653	1,004	572	2.86
Recognize talent and reward effort of students	305	617	1,054	380	2.64
Keep talented students in the state	307	305	968	669	2.89
Prepare and place students into specific careers	359	884	936	169	2.39

Note: Reported in academic years

equalizing tuition between public and independent institutions. States thus appear to value achieving better access and affordability for students but are less concerned with comparisons to private postsecondary educational sector competitors that, in many cases, do not rely as heavily on the state. While goals related to student choice, rewarding student talent, and post-graduation state retention are somewhat important; they fall second to access and affordability in this sample.

Next, Table 3 summarizes descriptive statistics for the single goal complexity measure and all additional variables by institution type. As expected, average state and institutional grants are slightly smaller for first-time full-time students at two-year colleges. Additionally, these institutions are often much more affordable compared to four-year institutions, which may lessen the need for state or institutional awards. For student outcome measures, four-year colleges perform much higher. This is often the case given that many students at two-year institutions attend school part-time, transfer to other institutions, or do not attend school on a continuous basis (Hawley & Harris, 2005). Still, institutions are still often pressured by state-level political principals to maximize these performance indicators, despite high compliance costs (Dougherty & Hong, 2005).

State-level variables were largely comparable given that both two- and four-year institutions are located in each state in the sample. In other words, the larger external environment in this study was the same for both sectors. Among institutional variables, enrollments are smaller and sticker prices lower at two-year institutions; student profiles at two-year institutions also consist of larger shares of minority students and part-time students. Finally, two-year programs include larger shares of part-time faculty and smaller shares of administrators, which indicate lower levels of organizational personnel capacity.

Table 3. In-Sample Descriptive Statistics

	Four-Year Public Institutions				Two-Year Public Institutions			
	Mean	*SD*	Min	Max	Mean	*SD*	Min	Max
Avg. amount full-time, full-year state grant	7.609	0.565	5.521	8.997	6.951	0.539	3.850	8.701
Avg. amount full-time, full-year institutional grant	7.781	0.625	4.407	9.503	6.889	0.635	2.303	8.854
Graduation rates (150%)	46.198	16.379	4.021	100.000	28.826	19.555	0.478	100.000
Retention rates	72.392	12.824	0.000	100.000	58.676	12.878	0.000	100.000
Goal complexity	2.494	1.387	0.000	6.000	2.600	1.443	0.000	6.000
State appropriations per FTE student ($1,000s)	6.858	1.497	3.445	16.239	6.964	1.526	3.445	16.239
State unemployment rate	6.535	2.160	2.742	12.342	6.623	2.229	2.742	12.342
Percent Democrats in state legislature	52.402	12.995	11.429	90.118	51.944	12.415	11.429	90.118
State citizen ideology	48.995	12.852	8.450	95.972	48.517	11.518	8.450	83.293
Governing board	0.302	0.459	0.000	1.000	0.382	0.485	0.000	1.000
Student enrollment (log)	8.924	1.144	2.996	12.467	8.087	1.293	2.944	11.946
Sticker price (log)	8.366	0.467	4.664	9.885	7.602	0.668	3.178	9.372
Percent minority students	19.940	22.646	0.000	96.593	22.487	19.426	0.000	98.483
Percent part-time students	28.185	15.711	0.477	100.000	54.677	16.279	0.185	100.000
Percent undergraduate students	83.426	15.725	0.290	100.000	100.000	0.000	100.000	100.000
Percent part-time faculty	26.541	18.877	0.000	100.000	60.800	20.095	0.000	98.618
Administrative intensity	25.408	7.685	3.177	100.000	16.664	8.504	1.582	58.491

Methods

This study relied on an estimation strategy using Ordinary Least Squares (OLS) models. To control for correlated errors that may exist by institution across the two time points in this dataset, errors were clustered by institution.[2] Importantly, as the study investigated only two points in time, results should not be used to make causal statements but should provide some indication of associations that are likely to exist.

Limitations

Before considering the findings and implications of this study, several limitations should be highlighted. First, this research only focused on goals related to financial assistance policies. This analysis excluded goals that may be entirely unrelated to financial aid (e.g., research productivity). While finance is related to access, equity, quality, and affordability in many direct and indirect ways, it likely does not cover all goals that state actors expect from institutions of higher education. Therefore, it is possible that the current measure of goal complexity is understated in size; still, even higher levels of goal complexity in this area may reveal negative implications for institutions.

Second, associations detected in this study are similar to an aerial view of the implications of goal complexity. Relationships should not be interpreted in a causal manner but do shed light on how additional layers of goals by the state can be linked to institutional response and student outcomes. The data, further, cannot provide any assessment of the micro-level mechanisms that explain why or how a significant link is detected. Where these links occur, mixed methods research can then be conducted to better understand how individual institutions react to the imposition of external goals by the state. This is especially important as trade-offs can take place among institutional and state-level strategies. For example, where state aid decreases, institutions may see a need to increase their own grants for certain groups of students to meet enrollment and revenue goals.

Finally, while this study examined some determinants of student outcomes, it did not consider individual student attributes that may influence student success. For two-year institutions, this may include student decisions to transfer to other programs or purposefully drop out after receiving necessary training. Across all institutions, student ambition, habits, and goals can matter significantly (see, for example, Hawley & Harris, 2005). While these individual characteristics are significant, this study focused on external political factors that can influence institutional decisions and, thus, student success.

Key Findings

Table 4 first shows the effect of goal complexity on state and institutional financial assistance. Here, trends are similar for two- and four-year institutions. For both models of average dollar amount of grants for first-time, full-time freshmen from the state, goal complexity is positively associated with higher levels of average state financial assistance. This link is substantively stronger for four-year institutions than for two-year institutions. In terms of the size of state grant aid per student a one-unit increase in goal complexity is associated with a 5.9 percentage point increase for four-year institutions and a 1.9 percentage point increase for two-year institutions. Resources may be slightly higher where goals are more numerous, but this may also raise some questions of equity across the two institutional types.

Beyond this key variable, state-level factors appear to drive state grant models while institutional factors do not. For four-year institutions, state appropriations per thousand FTE students, unemployment, and left-leaning citizen ideology are positively linked to the average size of state grants, while the share of Democrats in the legislature is negatively associated with this outcome. Similar relationships are seen for two-year institutions with the exception of a null relationship between citizen ideology and state grants. Among institutional-level variables, only sticker price is significant across both four- and two-year models, revealing a positive association among resources. The share of part-time students and the share of part-time faculty in four-year institutions, and the share of minority students in two-year institutions, are linked to lower average state grants as well.

Table 4. The Effect of Goal Complexity on Financial Assistance

	Four-Year Public Institutions		Two-Year Public Institutions	
	Avg. Amount Full-Time, Full-Year State Grant	Avg. Amount Full-Time, Full-Year Institutional Grant	Avg. Amount Full-Time, Full-Year State Grant	Avg. Amount Full-Time, Full-Year Institutional Grant
Goal complexity	0.059**	-0.026**	0.019*	-0.046**
	(0.014)	(0.011)	(0.010)	(0.012)
State Context				
State appropriations per FTE student ($1,000s)	0.071**	0.014	0.039**	0.033**
	(0.013)	(0.011)	(0.010)	(0.013)
State unemployment rate	0.056**	0.030**	0.043**	0.007
	(0.007)	(0.007)	(0.005)	(0.007)
Percent Democrats in state legislature	-0.007**	0.003*	-0.005**	0.000
	(0.002)	(0.002)	(0.002)	(0.002)
State citizen ideology	0.007**	-0.008**	0.00002	-0.013**
	(0.002)	(0.002)	(0.002)	(0.002)
Governing board	-0.315	-0.076*	-0.145**	-0.196**
	(0.023)	(0.046)	(0.032)	(0.042)
Institutional Context				
Student enrollment (log)	0.035	0.101**	-0.013	-0.011
	(0.023)	(0.022)	(0.017)	(0.021)
Sticker price (log)	0.188**	0.496**	0.177**	0.201**
	(0.059)	(0.062)	(0.026)	(0.033)
Percent minority students	0.001	0.003**	-0.002**	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
Percent part-time students	-0.006**	-0.007**	-0.002	-0.002
	(0.002)	(0.002)	(0.001)	(0.002)
Percent undergraduate students	-0.007	-0.006**		
	(0.003)	(0.002)		
Percent part-time faculty	-0.002*	-0.003**	-0.0002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Administrative intensity	0.001	0.004	0.0004	0.005*
	(0.003)	(0.003)	(0.002)	(0.003)
Constant	5.156**	3.367**	5.620**	6.083**
	(0.694)	(0.692)	(0.268)	(0.324)
N	931	934	1508	1367
R²	0.27	0.42	0.12	0.15
F	25.35	55.46	21.66	21.81

*p<0.10, **p<0.05, Errors clustered by institution. Standard errors shown in parentheses

Interestingly, while the average size of state grants is positively associated with goal complexity, the average size of grants at the institutional level actually declines as complexity increases. A one-unit increase in goal complexity (here, one additional goal) translates to a 2.6 percentage point decrease in award size for four-year institutions and a 4.6 percentage point decline in award size for two-year institutions. Compared to the state models, four-year institutions may come out with little to no change overall while two-year institutions may stand to lose in terms of grant aid for students. As students' choice processes are often highly affected by institutional aid and scholarship dollars (Avery & Hoxby, 2004), this can have meaningful implications for the recruitment and retention of students in both settings.

It is also worth noting that, for four-year institutions, having high unemployment rates and the share of legislators from the Democratic party are positively related to grant size while citizen ideology and consolidated boards work in the opposite direction. At the institutional level, sticker price is strongly correlated with grant size; the more students pay to attend, the more dollars available to allocate to institutional grants (i.e., strategies of discount rates).

Enrollment size and the percentage of minority students are also positively linked to grant size, while the share of part-time students, undergraduate students, and part-time faculty are negatively associated with this dependent variable. The negative relationships may be because these characteristics are associated with institutions experiencing more turbulence with low levels of institutional capacity.

Table 4 indicates that goal complexity may affect a trade-off in the average size of state and institutional grant aid but that two year institutions may be worse off. It could be argued that decisions concerning institutional aid can be an indication of some goals (i.e., access and affordability) but can also serve as a means to achieve longer-term student outcomes. Does goal complexity affect these longer-term, more salient measures of student performance? Table 5 shows whether an association exists between goal complexity and student graduation and retention in two- and four-year public institutions. While models in Table 4 show similarities across institutional structures as related to state and institutional grants, models in Table 5 highlight the differences between institutional types and also raise concerns about the deleterious effects of goal complexity in postsecondary education. Models 1 and 2 show that goal complexity has no effect on graduation and retention for four-year institutions. These findings support the notion that four-year colleges and universities are likely to have enough structural complexity (e.g, in granting multiple levels of degrees across a large number of program concentrations for many types of students) that any additional complexity is marginally small and unnoticeable. Further, these institutions are likely to have higher levels of slack and capacity to absorb additional demands from principals. Institutional leaders might already be utilizing any autonomy they have to determine preferences and make decisions that are in the best interest of the agent. This can be somewhat hidden from the political principal, given the complex nature of the organization and the need to have some level of expertise to master the subject at hand.

For two-year institutions, however, the association between goal complexity and both graduation and retention is negative and significant. For each additional goal identified as being highly influential by the state, institutional graduation rates decline by .824 percentage points. Similarly, for each additional goal, retention rates decrease by .50 percentage points. These rates of decline are significant when considering that states may add multiple goals at the same time, doubling or tripling this effect size. Of course, graduation and retention may be viewed slightly differently in these institutions given the potential for students to transfer to baccalaureate programs or re-enter the workforce without completing their program. Yet, these institutions are still held accountable for these outcomes—one only needs to look at media reports, third-party advocacy groups, and academic research to read of the many innovative ways many community colleges are attempting to raise retention and graduation rates (Stuart, 2013; Selix & Willen, 2010; Fain 2013). The larger issue mighty be related to the fact that although community colleges enroll students that are less academically prepared and more at risk for dropping out, these institutions often

Table 5. The Effect of Goal Complexity on Student Performance Indicators

	Four-Year Public Institutions		Two-Year Public Institutions	
	Graduation Rate	Retention Rate	Graduation Rate	Retention Rate
Goal complexity	0.068	0.291	-0.824**	-0.500**
	(0.237)	(0.278)	(0.223)	(0.179)
State Context				
State appropriations per FTE student ($1,000s)	0.270	0.599**	-0.188	0.422**
	(0.262)	(0.188)	(0.285)	(0.183)
State unemployment rate	0.001	0.499**	0.207	-0.137
	(0.156)	(0.146)	(0.126)	(0.140)
Percent Democrats in state legislature	-0.036	0.012	-0.119**	0.041
	(0.038)	(0.032)	(0.035)	(0.025)
State citizen ideology	0.215**	0.138**	0.157**	0.027
	(0.035)	(0.030)	(0.035)	(0.027)
Governing board	3.124**	2.449**	5.595**	2.935**
	(1.029)	(0.938)	(0.905)	(0.574)
Institutional Context				
Student enrollment (log)	3.437**	4.034**	-3.292**	1.955**
	(0.498)	(0.561)	(0.552)	(0.413)
Sticker price (log)	8.091**	3.682**	-3.030**	2.849**
	(1.362)	(1.189)	(0.780)	(0.543)
Percent minority students	-0.181**	-0.065**	-0.101**	-0.023
	(0.018)	(0.015)	(0.021)	(0.019)
Percent part-time students	-0.607**	-0.354**	-0.025	-0.029
	(0.055)	(0.044)	(0.040)	(0.028)
Percent undergraduate students	-0.389**	-0.253**		
	(0.054)	(0.052)		
Percent part-time faculty	-0.076**	-0.027	-0.163**	-0.046**
	(0.036)	(0.028)	(0.030)	(0.020)
Administrative intensity	0.038	0.040	-0.266**	-0.182**
	(0.061)	(0.067)	(0.066)	(0.041)
Constant	-12.840	19.698	92.337**	21.850**
	(13.020)	(13.975)	(8.048)	(5.813)
N	876	932	1521	1529
R^2	0.67	.54	.23	.08
F	68.78	46.64	18.10	10.54

*p<0.10, **p<0.05, Errors clustered by institution. Standard errors shown in parentheses

receive less resources and are expected to be held to the same standards as their four-year counterparts. In other words, they have less institutional slack, which hinders the ability to maximize agency autonomy to set preferences and make decisions that will work in the interest of the agent. Thus, changes in the external environment will be a larger shock for two-year institutions—less complex organizations than their four-year counterparts—to absorb.

Unlike goal complexity, control variables have similar effects for both institutional types. State-level measures of citizen ideology and consolidated boards are both positively associated with graduation rates. Within the institutions, some differences can be detected, however. While the percentage of minority students is negatively linked to graduation rates in both settings, enrollment and sticker price helps four-year college graduation rates but hinders two-year graduation rates. This is likely because these characteristics can further the selectivity of four-year institutions so that those who attend the institution are already highly likely to graduate. For two-year institutions, these characteristics only act as challenges that can keep students from completing degrees in an open-access environment. Slightly different trends are noted for retention rate models. State appropriations per FTE student and a consolidated governing board is positively linked to retention in both institutional contexts. Within the institutional context, similar enrollment and sticker price are positively linked to retention in both contexts. The share of undergraduates and part-time students can hinder retention at four-year institutions, while part-time faculty and administrative intensity present challenges to retention in two-year institutions.

Robustness Check

While the survey is largely interested in public institutions, some state financial aid policies and associated goals may also extend to private institutions. When both public and private institutions are included in models (not shown), findings largely do not change. The negative association between complexity and average institutional grant size loses significance for four-year institutions, but the negative relationship between complexity and graduation rates is strengthened (p<.01). Both approaches lead to the same inference that goal complexity has negative consequences for institutions and that these consequences can be especially strong for two-year systems.

Implications

Previous research has generally linked higher levels of goal complexity to lower levels of individual and organizational performance. Many education scholars recognize and implicitly acknowledge that goal complexity is ubiquitous throughout the higher education sector—institutions are expected to provide access to all students, maintain affordable prices, offer the highest quality of instruction, preserve safe and secure environments for learning, and produce students who are well prepared to lead a democratic society and compete for the best jobs, among numerous other goals. Yet empirical examination of whether and in what ways goal complexity within the state-institutional principal agent relationship has any measureable effect on these institutions is not abundant. This study has utilized information about SHEEO expectations related to the goals of financial assistance policies for students to extend this discussion. Findings show that in cases of higher goal complexity, both two- and four-year institutions offer smaller grants to students. For two-year institutions, goal complexity can present formidable challenges to student graduation and retention rates.

Importantly, this study posits that the key differences in how goal complexity affects two- and four-year colleges are capacity and resources, but additional investigation is required to determine whether this linkage can be validated in the postsecondary education setting. Future research should determine how to best

capture variance in capacity across institutions and then use this measure to help unpack the micro-level determinants of the negative associations detected in this study (see, for example, Andrews & Boyne, 2010, for work on capacity in other contexts). For example, the fact that four-year postsecondary institutions can often be less dependent on state appropriations compared to two-year institutions may also help buffering efforts as well as capacity and autonomy to make decisions. This work can produce both theoretical contributions as well as practical lessons that can be used by state actors and institutional leaders.

This study finds that negative implications exist, especially for student performance outcomes, when state-level political principals expect financial assistance policies to achieve an abundance of (often competing) goals. State-level actors should note that the expansion of goals for the institutions can have negative consequences that may affect the overall success of students. To help alleviate the burdens of goal complexity, SHEEOs can work to better communicate which goals are most important for institutions; this may also require that SHEEOs work more closely with policymakers as well in the defining and shaping of policies such as those focused on outcomes-based funding. While it may be difficult to prioritize some goals over others when all goals matter, SHEEOs can gain from the knowledge that the presence of too many goals will only create additional challenges for institutional administrators.

At the institutional level, administrators should advocate that state-level actors—both SHEEOs and policymakers—avoid compounding goals given the negative implications of higher levels of complexity. This is especially important for two-year institutions, which are sometimes overlooked by policymakers focused on one-size-fits-all, quick-fix policies and goals that may be more applicable to four-year institutions (four-year institutions often have higher levels of salience with policymakers). Two-year institutions should also work to remind their political principals of the share of students that two-year institutions serve—often a majority of students in the state—and why attention to concise, clear goals is important for these institutions. Should these institutions face too many pressures while acting as open-access points for all types of students, goal complexity will continue present management challenges.

Finally, as financial assistance policies are just one area within higher education in which multiple, competing goals are prevalent, institutional leaders should discuss and clearly communicate goal-setting processes across all departments and campus units. Financial assistance goals will likely need to be coordinated with admission, retention, engagement, and many other goals. Likewise, goals related to quality, equity, or accountability are likely to influence financial assistance plans and strategies. The more complimentary and less conflicting these many goals can be made, the better the institution can serve its students and boost outcome measures including, but not limited to, retention, graduation, and degree production.

> ### Nexus: Connecting Research to Practice
>
> - State-level actors—both SHEEOs and policymakers—should work to narrow and specify the intended goals of their financial assistance policies.
>
> - Institutional administrators, especially those at two-year institutions, should actively reach out to state SHEEOs and policymakers to communicate that the compounding of goals can have negative implications for institutions and, more importantly, students.
>
> - State policymakers should differentiate between financial assistance policy goals—and performance goals more generally—that should be applied to two-year institutions versus four-year institutions.

Endnotes

[1] Note that the analysis tested measures for the percentage of students receiving institutional grants and receiving state grants. Goal complexity did not significantly affect these percentages; the movement appears, instead, with the average amount of aid funding.

[2] State fixed effects were also examined but not included in final models due to issues of variance and collinearity.

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