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Michael K. McLendon
James C. Hearn
Christine G. Mokher

Partisans, Professionals, and Power: The Role of Political Factors in State Higher Education Funding

In recent years, several converging trends have constrained state appropriations for public postsecondary institutions. Despite real growth in total appropriations of state tax funds for postsecondary operating expenses, state investment in higher education has substantially declined relative to changes in enrollment, state wealth, and the growth of institutional budgets. Legislators have pursued tax cuts and other structural restraints on tax growth. K–12 schools have faced new demands from federal mandates and, in many states, burgeoning enrollments. Healthcare costs, and thus Medicaid costs, have risen dramatically. The national government's capacity to continue to provide various grants to states has rapidly deteriorated as large federal budget deficits loom (Archibald & Feldman, 2006; Kane, Orszag, & Apostolov, 2005). Together, these developments have compelled institutions to pursue new, non-governmental revenues, and in some research-oriented flagship institutions, state revenues have declined to as little as one-third or even one-tenth of total institutional revenues (Duderstadt, 2000;

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Michael McLendon is Associate Professor of Public Policy and Higher Education and Associate Dean, Peabody College of Vanderbilt University. James Hearn is Professor of Higher Education at the Institute of Higher Education, University of Georgia. Christine Mokher is a research scientist with CNA. Please address correspondence to Michael K. McLendon, Box 514, Peabody College of Vanderbilt University, Nashville, TN 37203-5721. Phone: 615.322.2355. Email: michael.k.mclendon@vanderbilt.edu.

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Ehrenberg, 2006; Hearn, 2006; Heller, 2001). Analysts have warned, however, that while there are many potential benefits to the new entrepreneurialism in higher education, state governments' continued fiscal commitment to the enterprise is both historic and essential (Johnstone, 2002). What factors drive that commitment of state support of postsecondary education?

In a widely cited report, Hovey (1999) argued that higher education suffers more than other public funding priorities under difficult state fiscal conditions. There is little question that higher education's needs tend to be less visibly pressing in the public arena, its political base tends to be less secure, and its state funding is less likely to be formulaically tied to other sources of revenue. Subsequent empirical work has supported Hovey's conclusion. Okunade (2004) found that competing interests, such as corrections, K–12 education, healthcare, and welfare, tend to win scarce funding at the expense of higher education. Kane et al. (2005) demonstrated substantial real losses of higher-education funding attributable to growth in Medicaid expenditures. Rizzo (2004) found that, between 1976–77 and 2000–01, public education's share of state discretionary expenditures fell by 4% and, within public education's total funding, the proportional share allocated to higher education fell by 6%.

Thus, over the past quarter-century, higher education suffered disproportionately in state funding. Of course, similar principles might make higher education especially apt to benefit when states' economic fortunes reverse, but there is no evidence for that pattern. While appropriations have risen in the last two years, in some cases dramatically in percentage terms (Schmidt, 2007), there is little sign of returns to prior proportional funding levels. What is more, the larger funding context remains quite constrained: recent analyses suggest that every state faces a tax-revenue shortfall in the years up to 2013, with 3 states (Wyoming, Alabama, and Louisiana) facing deficits of more than 10% of revenues and 26 more facing deficits of over 5% (Boyd, 2005).

Enduring such difficulties, some states will protect their colleges and universities by maintaining or increasing funding, while others will let those institutions languish or decline. Understanding the conditions driving states toward one or the other approach to funding colleges and universities is important for theoretical reasons, as a fundamental problem in the political economy of education. That understanding is also important for practical reasons, as higher-education leaders and systems seek to find levers likely to help them preserve and grow their resources under ongoing adversity.

Among the factors potentially influencing appropriations are a variety of demographic, economic, and structural conditions, such as unemploy-

ment levels, enrollment trends, population size, and the extent of the states' private higher-education resources (Kane et al., 2005; Okunade, 2004; Toutkoushian & Hollis, 1998). Of special importance, however, for appropriations analysis is the role of *political* factors. Public postsecondary institutions are embedded within a larger political environment, and it stands to reason that that environment will likely influence policy adoption patterns in postsecondary education in meaningful and measurable ways. In fact, a growing number of studies recently have suggested the importance of accounting more fully for certain state political influences on higher-education policy development (see e.g., Archibald & Feldman, 2006; Cornwell & Mustard, 2006; Hossler, et al., 1997; Lowry, 2001b; McLendon, Deaton, & Hearn, 2007; McLendon, Hearn, & Deaton, 2006; McLendon, Heller, & Young, 2005; Nicholson-Crotty & Meier, 2003; Rizzo, 2004; Tandberg, 2006; Weerts & Ronca, 2006).

In the context of understanding state appropriations to higher education, several recent studies have affirmed the importance of system-level political influences (Archibald & Feldman, 2006; Nicholson-Crotty & Meier, 2003; Rizzo, 2004; Tandberg, 2006; Weerts & Ronca, 2006). For example, in a fixed-effects analysis of state funding trends in the 1980s and 1990s, Archibald and Feldman (2006) found Democratic control of the lower chambers of state houses and of governors' offices positively associated with funding levels. Rizzo (2004), also employing fixed-effects methods and a panel data set spanning the years 1976 through 2000, found Republicans and unified party control of government negatively associated with the share of state education budgets allocated to public higher education.

Unfortunately, the number of rigorous empirical analyses of political factors influencing state policy for higher education, overall, is small (McLendon, 2003). Moreover, with the exception of a few studies, such as ones mentioned previously, much of the research on state funding for higher education employs cross-sectional datasets or panel datasets covering only a relatively brief time period, thus limiting the inferences that can be drawn about the associations between state characteristics and appropriations to higher education. As a consequence, our understanding of the factors propelling changes in public institutions' state funding levels remains underdeveloped both conceptually and empirically. Increasing knowledge of those factors will ideally not only add to the growing theoretical literature on public choice in higher education but also spur more informed public debate and decisions concerning state funding of postsecondary education.

In this paper, we report the results of a longitudinal analysis of factors associated with state funding effort for higher education.[1] We begin by

developing a conceptual framework that more closely integrates key state political indicators that have received insufficient attention in the past. The focus then turns to describing the construction of a panel data set and a fixed-effects analysis that we conducted on the drivers of state appropriations to higher education, measured as appropriations per $1,000 personal income, over a period of nearly two decades, from 1984 to 2004. The concluding section identifies several findings providing distinctively new perspectives on patterns of state support for higher education over this period.

Conceptual Framework

The conceptual framework for our study draws on three bodies of theory and research: (a) literature on postsecondary finance, particularly research conducted on state appropriations for higher education (Archibald & Feldman, 2006; Hearn, Griswold, & Marine, 1996; Hossler, Lund, Ramin, Westfall, & Irish, 1997; Humphreys, 2000; Leslie & Ramey, 1986; Toutkoushian & Hollis, 1998); (b) literature on postsecondary organization and governance (Hearn & Griswold, 1994; Knott & Payne, 2003; Lowry, 2001b; McLendon, Hearn, & Deaton, 2006; Volkwein, 1987; Zumeta, 1996); and, (c) the comparative-state politics literature (e.g. Barrilleaux & Bernick, 2003; Berry, Ringquist, Fording, & Hanson, 1998; Beyle, 2003; Squire, 2000; Squire & Hamm, 2005; Yates & Fording, 2005).

From these disparate strands of literature, we distilled five core explanations that might account for variation in state expenditures on higher education: political-system characteristics, economic conditions of states, state demography, certain higher-education policy conditions within states, and postsecondary governance arrangements. In the section that follows, we discuss a number of specific factors that we believed might influence appropriations patterns over the 20-year period we studied, 1984 to 2004.

The central focus of the investigation rests with state political influences. While many of the factors we examine (e.g., demography, enrollment, tuition) have previously been studied, the impact of system-level *political* characteristics on state postsecondary funding has less frequently been assayed. Given this distinctive conceptual thrust, we turn first to a discussion of the hypotheses pertaining to the impact of state political institutions on appropriations, focusing on seven such sources of prospective influence.

First, building on recent work into the relationship between partisan control of elective office and state policy outcomes for higher education,

we posit that both *Republican legislative strength* and *Republican gubernatorial control* will be associated with lower levels of state funding effort for higher education (Archibald & Feldman, 2006; Knott & Payne, 2003; McLendon, Hearn, & Deaton, 2006; McLendon, Heller, & Young, 2005; Nicholson-Crotty & Meier, 2003; Rizzo, 2004). It is reasonable to presume that the two major parties may hold substantive policy differences toward public subsidization of higher education. The parties have been shown to hold different preferences with respect to other choices by state government, including levels of taxation, overall spending, and spending on specific social services, such as welfare and education (Alt & Lowry, 2000; Barrilleaux & Bernick, 2003; Barrilleaux, Holbrook, & Langer, 2002; Berry & Berry, 1990; Holbrook & Percy, 1992; Stream, 1999; Yates & Fording, 2005). More specifically, Archibald and Feldman (2006) recently found that both party affiliation of the governor and party control of legislatures may influence higher-education appropriation levels, with Democrats associated with higher funding levels over the past two decades.

We posit that *legislative professionalism* and the imposition of *term limits* on legislative service, the study's third and fourth sources of political influence, respectively, also will shape appropriations to higher education, although in different directions. Professionalism represents the degree of institutional resources (full-time staff, session length, and member pay) available to aid legislatures in their deliberation and lawmaking (Squire, 2000). One finds substantial variation across states in terms of the professionalism of their legislatures.[2] Because legislative professionalism has been linked with higher public spending generally (Squire & Hamm, 2005), it stands to reason that professionalism may be associated with increased expenditures on higher education. On the other hand, because advocates of legislative reform have viewed term limits as a way to impose greater fiscal discipline on legislatures by facilitating the election of members believed to favor more limited government, we surmise that term limits will effectively suppress state spending on higher education.

Two additional sources of political influence are *gubernatorial strength* and *citizen ideology*. Governors everywhere exert considerable sway, although the extent of their policy influence varies from one state to the next, depending in part on their institutional powers (Beyle, 2003). In some states, governors wield strong influence over policy through the line-item veto, broad appointment powers, and robust tenure potential. Elsewhere, governors hold fewer instruments of policy control, thus limiting their influence (Barrilleaux & Bernick, 2003; Beyle, 2003; Dometrius, 1987). Little is known about the policy influence of

governors in higher education, per se. Because governors often provide a check against legislative spending, however, it seems reasonable to surmise that governors with stronger budgetary powers will be associated with lower appropriations to higher education.[3]

Broadly speaking, political ideology may be understood as a coherent and consistent set of orientations or attitudes toward politics. *Citizen ideology* refers to the mean position on a liberal-conservative continuum of the electorate in a state (Berry, Ringquist, Fording, & Hanson, 1998). In the higher-education research literature, only a few studies have examined the influence of ideology on policy outcomes (Hossler et al., 1997; McLendon, Heller, & Young, 2005; Nicholson-Crotty & Meier, 2003). Building on these studies and on the larger literature focusing on governmental spending (e.g. Barrilleaux, Holbrook, & Langer, 2002; Soss et al., 2001), we hypothesize that states with more liberal citizenries—ones that historically are prone to support more generously funded social services and bigger government—will fund higher education at higher levels.

Finally, this study examines the extent to which the interest-group climate for higher education in a given state shapes public investment in higher education. Interest groups historically have been understudied by higher-education researchers (Gove & Carpenter, 1977; McLendon, 2003; Tandberg, 2006, 2007; Zumeta, 1992). A recent series of studies by Tandberg (2006, 2007), however, provides important, new perspective on interest-group dynamics. Tandberg developed several measures of the impact of interest group size on state funding of higher education. In one study, an analysis of state spending for higher education, he found that the percentage of registered lobbyists representing colleges and universities had a statistically significant, positive relationship to state funding levels. Building on this line of work, we posit that states in which higher education's lobbying presence is larger will spend relatively more on higher education.

State economic conditions are also likely to shape state investment in higher education. In this study we analyze state effort in funding higher education relative to the level of resources available to the state through its tax base. By taking into account a state's wealth, we can examine how preferences for higher education change over time, given the existing fiscal constraints. In this sense, the analysis (focusing on state funding *effort*) controls for the base economic capacity of a state. Some economic conditions may serve, however, as indicators of the projected future economic outlook of the state. Namely, we expect that states with higher *unemployment rates* will appropriate relatively less to higher education because they may anticipate weaker economies, which

are less capable of funding discretionary items such as higher education (Lowry, 2001b; Strathman, 1994; Toutkoushian & Hollis, 1998).

State funding capacity can also be constrained by tax and expenditure limitations (TELs), which place restrictions on the growth of state expenditures relative to other indicators such as the growth of state personal income. Many states adopted TELs in the 1980s and 1990s amid growing popular interest in reducing the size of government. By 2005, 23 states had adopted these devices, many of them constitutionally imposed (Archibald & Feldman, 2006). We build on recent research by Archibald and Feldman (2006) in positing that states that have adopted tax and expenditure limitations will fund higher education at relatively lower levels.

Turning to demographic conditions of states, we hypothesize that higher population levels are likely to be associated with greater funding effort as states must spend more in order to serve the needs of a larger number of potential consumers (Toutkoushian & Hollis, 1998). The percentage of the population of traditional college-going age (18–24 year olds) is likely to influence state spending on higher education in a number of ways. As total state enrollment rises, states will likely provide more support in order to maintain the same relative level of funding (Clotfelter, 1976; Hossler et al., 1997; Leslie & Ramey, 1986; Toutkoushian & Hollis, 1998).[4] The share of a state's population by other age ranges should also influence appropriations, primarily as a function of competition for resources between higher education and other vested interests. Specifically, we hypothesize that a higher percentage of a state's population in the 5–17 age range will be associated with lower spending effort on higher education as K–12 education effectively draws state spending away from the postsecondary-education sector. Likewise, as the state population ages, state funding effort for higher education likely will diminish as the sector competes increasingly with Medicaid and with other health related costs associated with sustaining older populations (Hoenack & Pierro, 1990; Kane, Orszag, & Apostolov, 2005; Toutkoushian & Hollis, 1998).

Certain policy conditions within state systems of higher education are also likely to impact state funding of higher education. We investigate three such conditions: enrollment share in postsecondary education by control (i.e., public and private), enrollment share by level (i.e., four- and two-year), and the presence in a state of a merit-aid scholarship program. First, a higher share of enrollment in the private-college sectors will suppress state spending on higher education, because states with a higher share of students in private colleges and universities will experience less demand for publicly provided educational services. Two-year

colleges are able to provide services at a lower cost because they have fewer research expenditures, less costly faculty, and fewer student services. Second, states with larger shares of two-year college enrollments, therefore, should be able to provide the same amount of education for less money, resulting in lower expenditures. Lastly, while there is little empirical evidence of the relationship between appropriations and the presence of broad-based, merit scholarship programs, it is possible that these programs may negatively affect the level of appropriations if legislators feel less pressure to maintain the same level of institutional support for higher education (Mumper, 2001; Zumeta, 2005)

The fifth and final category of prospective influences on state investment patterns in higher education involves postsecondary governance arrangements. A growing body of literature now supports the contention that the manner in which a state governs its postsecondary system can influence the postsecondary policies the state pursues. Such governance effects have been documented in studies of state adoption of accountability policies, financing policies, and policies toward the private-college sector (Doyle, 2006; Hearn & Griswold, 1994; McLendon, Deaton, & Hearn, 2007; McLendon, Hearn, & Deaton, 2006; McLendon, Heller, & Young, 2005; Nicholson-Crotty & Meier, 2003; Zumeta, 1996). A smaller group of studies have examined the impacts of governance structures on state funding for higher education (e.g. Lowry, 2001a; Nicholson-Crotty & Meier, 2003). These analyses have tended to find distinctive connections between postsecondary governance arrangements and financing levels and approaches. Building on this literature, we believe consolidated governing boards will be associated with increased state funding effort toward higher education, as these centralized agencies may be more effective proponents of the industry's interests, namely robust public subsidy of the higher-education sector.

In summary, our conceptual framework draws on several established and emerging strands of research on state funding of higher education, and on governmental behavior, broadly. The core framework that we are testing posits government investment in higher education as a product of political, economic, demographic, organizational, and policy conditions of states. In particular, the framework places heavy emphasis on certain facets of state political systems which have received too little attention in past scholarship.

Research Design

As noted, this study examined influences on variation in state appropriations to higher education over a period of two decades, from 1984 to

2004. To pursue this focus, analytically, we employed fixed-effects regression models with the state-year serving as the unit of observation. The sample for the study included data from 49 states. Nebraska was excluded from the analysis because the state's unique unicameral, nonpartisan legislative design precluded testing one of the study's key conceptual concerns: the effects of partisanship (Huber, Shipan, & Pfahler, 2001).

Variables & Measures

We assembled longitudinal data on our sample from a variety of reliable secondary data sources (see Table 1). The dependent variable for our analysis, state appropriations per $1,000 of personal income, was drawn from the Grapevine project at Illinois State University. The values for state appropriations are based on all state tax funds appropriated for the annual operating expenses of higher education within the state. This includes money allocated directly to colleges and universities, as well as appropriations for higher education governing boards, other state agencies which will distribute appropriated funds to higher education institutions, and state-funded student aid programs.[5] By expressing the level of state appropriations in terms of personal income, the variable represents a state's effort in supporting higher education relative to the resources available from its tax base (Mortenson, 2005).[6] These data can be found at http://www.postsecondary.org.

The values for state appropriations per $1,000 personal income were adjusted for inflation using a CPI multiplier from the Bureau of Labor Statistics so that all values are expressed in constant 2004 dollars. State effort has steadily declined over time from an average of $18.91 in 1984 to $7.60 in 2004 among the 49 states in our analysis (see Table 2). The rate of decline from 1984 to 2004 varied across states from 36.4% in Arkansas to 67.0% in Colorado.

In order to test the hypotheses described earlier, a series of characteristics representing a state's political, economic, demographic, and educational environment were included as independent variables. Political variables included percentage of Republican legislators, Republican governor, legislative professionalism, term limits, gubernatorial power, citizen ideology, and number of higher education interest groups.[7] The economic and demographic variables consisted of the unemployment rate, tax and expenditure limitation (TEL) status, total population, percentage of the population aged 5–17, percentage of the population aged 18–24, and percentage of the population aged 65 and over. Characteristics of the higher-educational environment included the share of higher education enrolled in private institutions, share of higher education en-

TABLE 1

Variable Descriptions and Sources

Variable	Description	Source
State Appropriations to Higher Education	Appropriation per $1000 personal income (CPI adjusted—2004 dollars)	Grapevine data from Postsecondary Education Opportunity (postsecondary.org)
% Republican Legislature	Average percent of major party state legislators in both houses who are Republicans	Klarner data at State Politics & Policy Quarterly (SPPQ) data archive, personal communication
Republican Governor	Whether the governor was Republican (1=yes, 0=no)	Klarner data at State Politics & Policy Quarterly (SPPQ) data archive, personal communication
Legislative Professionalism	Index of legislative professionalism (higher values indicate greater professionalism)	Legislative Studies Quarterly (LSQ) data from King & Squire; personal communication
Term Limits	Whether state legislators are subject to term limits (1=yes, 0=no)	National Conference on State Legislators (NCSL)
Gubernatorial Power	Index measure indicating degree of governor's institutional powers (5=most powerful)	Beyle (http://www.unc.edu/~beyle/)
Citizen Ideology	Index of citizen ideology (High score = more liberal)	Berry data from the Inter-University Consortium for Political & Social Research (ICPSR)
Higher Education Interest Groups	Number of higher education interest groups in the state	Personal communication with David Tandberg
% Unemployed	Annual state unemployment rate	Bureau of Labor Statistics
Tax & Expenditure Limitation (TEL)	Whether the state has a tax and expenditure limitations (TEL) policy (1=yes, 0=no)	Archibald & Feldman, 2006
Log of Total Population	Log of the total state population	Census/ Southern Regional Education Board (SREB), yearly totals and decennial census
% Population Aged 5–17	Percentage of the total state population age 5–17	Southern Regional Education Board (SREB), Census data
% Population Aged 18–24	Percentage of the total state population age 5–17	Southern Regional Education Board (SREB), Census data
% Population Aged 65 and Over	Percentage of the total state population age 65+	Southern Regional Education Board (SREB), Census data
% Enrolled in Private Institutions	Share of higher education enrolled in private institutions	Southern Regional Education Board (SREB)
% Enrolled in Two-Year Institutions	Share of higher education enrolled in two-year institutions	Southern Regional Education Board (SREB)
State-Based Merit Scholarship Program	Whether the state has a broad-based merit scholarship program (1=yes, 0=no)	Cornwell, Misztal, and Mustard, 2006
Consolidated Governing Board	Type of higher education governing board (1=consolidated governing board, 0=other type of board)	McGuiness' State Structures Handbook and Education Comission of the States (ECS)

rolled in two-year institutions, and the presence of a state-based merit scholarship program. Finally, postsecondary governance was indicated by whether the state had a consolidated governing board.

Percentage of Republican legislators and *Republican governor* are measures of partisan control within a state. The percentage of Republican legislators is an average of the percent of major party state legislators in both houses who are Republicans. Republican governor is a dummy variable with a value of 1 if the state's governor is a Republican and a value of 0 if the governor represents another political party. Values for both variables came from Klarner's data set, "Measurement of Partisan Balance of State Government," which is available at http://www.ipsr.ku.edu/ SPPQ/journaldatasets/klarner.shtml.

Legislative professionalism is calculated as an index of the state legislature's average member pay, average days in session, and average staff per member relative to Congress (Squire & Hamm, 2005). A value of 1.0 indicates a perfect resemblance to Congress, and therefore a high level of professionalism, while a value of 0.0 indicates little institutional professionalism. Our data source for years 1979–1987 is King (2000). For years 1988–1994, we used Squire (1992). The source for years 1995–2001 was Squire (2000). Squire also provided data for 2002 directly to us, and values were pulled forward to 2004.

Term limits is a dummy variable that indicates whether a state's legislature was subject to a constitutionally imposed term-limitation mandate, with a one-year lag. We gleaned data on state term limits from various on-line publications of the National Conference on State Legislatures (NCSL).

Gubernatorial power is an index measure indicating the degree of the governor's institutional powers. This index, developed by Beyle (2003) and widely used in state politics research, is based on six components including formal powers of tenure, veto, budget, appointment, party control, and organization. The values range from 1 to 5, with a value of 5 representing the most powerful governors, institutionally. Data are publicly available from Beyle's website at http://www.unc.edu/~beyle/ gubnewpwr.html.

Citizen ideology is an index that represents the mean position on a liberal-conservative continuum of the electorate in a state (Berry, Ringquist, Fording, & Hanson, 1998). Following Berry et al.'s (1998, 2004) widely-used measure, we calculated the ideological preferences of a state's citizens based on the roll call voting behavior of the members of Congress who represent the public. Higher scores indicate more liberalism. Data from Berry et al.'s (1998) study of citizen ideology are available at the Inter-University Consortium for Political and

Social Science Research (http://webapp.icpsr.umich.edu/cocoon/ICPSR-PRA/01208.xml).[8]

Our final political variable, representing higher education interest groups, is defined as the total number of state higher education institutions and registered interest groups lobbying for higher education in a given state. The data were provided directly by David Tandberg, of the Pennsylvania Department of Education (2007). Tandberg's interest group data were retrieved from state websites and government archives, the Council on Governmental Ethics Laws (CGEL) *Blue Book* (various years), and data provided by Lowery. Data on the number of public institutions were retrieved from the National Center for Education Statistics' *Digest of Education Statistics*.

Turning to state socio-economic and postsecondary-related variables, *percent unemployed* is the annual state unemployment rate, non-seasonally adjusted. This variable has been lagged one year since the full effect of the state unemployment rate on the state's tax base may not be realized until the budgetary process during the following year. We obtained data from the local area unemployment statistics on the Bureau of Labor Statistics website (http://www.bls.gov/data/).

Tax and expenditure limitation (TEL) is a dummy variable indicating whether a state has a law or constitutional provision limiting the growth of state expenditures relative to an indicator such as the change in state personal income. This variable was lagged by one year since the effect of a tax and expenditure limitation would not be expected during the year in which the law was adopted. Data were taken from Archibald & Feldman (2006).

In our study, *population* is expressed in terms of the log of the total state population, the percentage of the total state population between the ages of 5 and 17, the percentage of the total state population between the ages of 18 and 24, and the percentage of the total state population over the age of 65. The values for all three variables were lagged one year. These variables are based on data from the US Census collected by the Southern Regional Education Board at http://www.sreb.org/main/EdData/DataLibrary/datalibindex.asp.

Enrollment included variables for (a) the share of higher education students enrolled in private institutions, and (b) the share of higher education students enrolled in two-year institutions. All variables are lagged by one year. Data were downloaded from the Southern Regional Education Board (SREB) data library, above.

Merit aid is accounted for by including a dichotomous variable that indicates whether the state has a broad-based merit scholarship program.[9] Our source for data on state merit scholarship programs is Cornwell, Misztal, and Mustard (2006).

Finally, the measure of postsecondary governance is whether the state had a *consolidated governing board*. We use a dummy variable to represent whether, in each given year, a state practiced this most centralized form of state-wide governance of higher education. We gleaned data on the governance arrangements of the states from numerous editions of McGuinness' (1985, 1988, 1994, 1997, 2003) *State Postsecondary Structures Handbook*.

TABLE 2

Descriptive Statistics for Variables in the 49 States in the Analysis, 1984 and 2004 (Standard Deviations in Parentheses)

Variable	Mean 1984	Mean 2004	Difference	% Change
State Appropriations per $1,000 personal income*	18.91 (6.80)	7.60 (2.61)	–11.31	–60%
% Republican Legislature	38% (19%)	51% (14.70)	13%	34%
Republican Governor	31% (47%)	55% (50%)	24%	80%
Legislative Professionalism	0.26 (0.15)	0.18 (0.12)	–0.08	–30%
Term Limits	0.00 (0.00)	22% (0.42)	22%	N/A
Gubernatorial Power	3.79 (0.67)	3.44 (0.41)	–0.35	–9%
Citizen Ideology	46.02 (15.15)	49.68 (13.24)	3.66	8%
Higher Education Interest Groups	6.76 (8.90)	8.57 (10.28)	1.81	27%
% Unemployed	7% (2%)	6% (1%)	–1%	–22%
Tax & Expenditure Limitation (TEL)	37% (49%)	47% (50%)	10%	28%
Log of Total Population	14.90 (1.02)	15.10 (1.03)	0.20	1%
% Population Aged 5–17	20% (1%)	18% (1%)	–2%	–7%
% Population Aged 18–24	13% (1%)	10% (1%)	–3%	–21%
% Population Aged 65 and Over	11% (2%)	13% (2%)	2%	10%
% Enrolled in Private Institutions	20% (13%)	22% (12%)	2%	8%
% Enrolled in Two-Year Institutions	32% (14%)	33% (13%)	1%	5%
State Merit Scholarship Program	0% (0%)	29% (46%)	29%	N/A
Consolidated Governing Board	39% (49%)	39% (49%)	0%	0%

*All monetary values are CPI-adjusted and expressed in 2004 constant dollars

Analytic Methods

We conducted a pooled, cross-sectional, time-series analysis using fixed effects for both state and year. The use of fixed effects allowed us to estimate variation within each state over time, rather than to compare differences between states. Consequently, our analysis accounts only for the effects of state characteristics that change over time within each state, rather than for constant characteristics, such as region. The use of the fixed-effects approach permits us to control for unobservable, time-variant characteristics about states for which we do not have data and that would lead to bias in the standard error terms.[10] Since our analysis only tests the effects of variables that change within states over the years of our study, the results are not directly comparable to many other empirical analyses of state funding for higher education that use a cross-sectional approach (e.g. Hossler et al., 1997; Lowry, 2001a; Okunade, 2004).

Three tests were conducted to verify the appropriateness of pursuing the fixed effect specification. One assumption of the fixed-effects model is that there is no correlation between the independent variables and the time varying component in the error term (Wooldridge, 2002). In order to conduct a test of strict exogeneity, we added additional variables to the regression model to control for the leading values ($t+1$) of all of the conceptually important political variables. None of the leading variables were statistically significant, indicating that there is no relationship between the independent variables and the error term.

Secondly, we performed tests to determine whether group effects (α_i) are present in the underlying data. We estimated our model of state appropriations using random effects instead of fixed effects, performing Breusch and Pagan's (1980) Lagrangian multiplier test for random effects. The residuals were highly correlated within each state over time, indicating that state fixed effects were needed to obtain unbiased estimates.

Finally, we performed a Hausman's (1978) specification test to determine whether random effects or fixed effects provide a better specification for our model. The null hypothesis is that the coefficients estimated by the efficient random-effects estimator are the same as the ones estimated by the consistent fixed-effects estimator. The null hypothesis is rejected as the results indicate that there is a systematic difference between the fixed-effects and the random-effects estimates. Based on these three tests, fixed-effects modeling was selected as appropriate for our analysis.

Our fixed-effects model controls for variation between states due to time-invariant characteristics in order to examine changes within each state over time. The fixed effects for year control for any unobserved ex-

ternal changes over time, such as new policies affecting the federal funding of higher education, which may produce a common effect across states. We specified our model using the following equation:

$$y = x_{it}\beta + \alpha_i + \gamma_t + \varepsilon_{it}$$

where *i* is the cross-section identifier for the state, *t* is the time identifier for the year, x_{it} represents the independent variables, α_i is the group-specific constant for the states, γ_t represents the year effects in comparison to the base period of 1984, and ε_{it} is the error term (Greene, 2003).[11] Robust standard errors were used to further control for any heteroskedasticity that may result from using panel data. The results are presented in block mode to demonstrate how each set of hypotheses (political-system, economic, demography, higher education policy, and postsecondary governance) contribute to the variation in the dependent variable.

Findings and Implications

Our analysis (displayed in Table 3) suggests a number of new perspectives on the factors that have influenced state appropriations to higher education in the United States over the past two decades. While some of the findings buttress previous research, others find no parallel in the extant literature and, thus, provide distinctively new perspectives into this phenomenon.

We turn first to the study's core conceptual interest—the political drivers of state appropriations to higher education. We examined seven characteristics of state political systems that we hypothesized would account for variation in state spending between 1984 and 2004. The fixed-effects analysis indicated a statistically significant relationship between state appropriations and nearly all of the political variables in the analysis.[12] As anticipated, the analysis yielded a significantly positive relationship between legislative professionalism and appropriations: as state legislatures acquire greater analytic capacity, they invest more robustly in higher education. This relationship has been empirically documented in only a single published study (Nicholson-Crotty & Meier, 2003), yet it is one warranting further theoretical and analytical attention. Why and how, precisely, does professionalism influence decision making in legislative bodies, particularly in the context of decisions about higher-education funding? Conceptually, why does professionalism seem to influence this particular kind of policy activity, state funding decisions, whereas previous studies have shown scant evidence of the effect of legislative professionalism in other areas of postsecondary policy (e.g. Doyle, 2006; McLendon, Hearn, & Deaton, 2006; McLendon, Heller, & Young, 2005)?

As anticipated, the analysis shows that Republican legislative strength and Republican gubernatorial control tend to suppress state spending on higher education. On average, a 1% increase in Republican legislators is associated with a $0.05 decline in state appropriations per $1,000 of personal income, while a partisan change to a Republican governor is associated with a $0.23 decline when other factors are held constant. These findings provide added support for the assertion that the two major political parties may hold different policy preferences with respect to public subsidy of higher education (Archibald & Feldman, 2006; Knott & Payne, 2003; Nicholson-Crotty & Meier, 2003; Rizzo, 2004). Although we cannot speak to the precise causal mechanism, what does seem clear from the analysis is that direct state appropriations over the past two decades have declined the most where Republicans have exerted greatest strength in the legislature and where they have held the governor's office.

As a state adopts term limits, appropriations per $1,000 of personal income tend to increase by about $0.46, other factors held constant. The relationship is noteworthy for at least two reasons. First, this study is the first such one providing empirical evidence of a connection between term-limited legislatures and state policy choices for higher education. Second, the specific direction of this relationship—term-limited states associated with *higher* appropriations levels—runs counter to our hypothesized finding. A few observers have argued that the higher-education community tends to rely heavily on a small number of legislative "patron saints," whose expulsion from office under state term-limit laws could undercut the community's advocacy, leading to possible declines over time in influence and funding (Peterson & McLendon, 1998; Richardson et. al, 1999). Our analysis in fact suggests the reverse: all things equal, higher education tends to benefit *more* financially under conditions of legislative term-limitation. A potential explanation for this finding could be that less experienced lawmakers are more likely to become "captured" by interest groups—in this case by higher-education lobbyists.

The analysis seems to provide some evidence reinforcing this view: for every additional registered higher-education lobbyist in a given state, appropriations to higher education rise by about $0.05 per $1,000 of personal income. This result aligns with recent research by Tandberg, which also found that the size and density of a state's higher education interest-group community influences state financial support for higher education. The relationship is novel, raising many new avenues for research. As Tandberg (2007, p. 30) recently noted, the focus on interest groups "provides a missing element to our understanding of state public higher education funding." The results reported here support Tandberg's assertion, while signaling that more work in this area clearly is needed.

TABLE 3

OLS Regression Results for State Appropriations to Higher Education per $1,000 Personal Income with Fixed Effects for State and Year (Robust Standard Errors in Parentheses)

	Model 1	Model 2	Model 3	Model 4	Model 5
Political-System Characteristics					
% Republican Legislature	–0.04 ***	–0.05 ***	–0.05 ***	–0.05 ***	–0.05 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Republican Governor	–0.31 **	–0.31 **	–0.16	-0.23 *	–0.23 *
	(0.11)	(0.11)	(0.10)	(0.10)	(0.10)
Legislative Professionalism	13.12 ***	13.58 **	13.16 ***	9.56 ***	9.56 ***
	(4.11)	(4.12)	(3.43)	(1.98)	(2.00)
Term Limits	0.65 **	0.65 **	0.45 *	0.46 *	0.46 *
	(0.22)	(0.22)	(0.19)	(0.18)	(0.18)
Gubernatorial Power	–0.72 **	–0.74 ***	–0.46 **	–0.49 **	–0.49 **
	(0.21)	(0.21)	(0.18)	(0.18)	(0.18)
Citizen Ideology	0.02	0.02	0.02	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Higher Education Interest Groups	0.05 **	0.05 **	0.06 **	0.05 **	0.05 **
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Economic Conditions					
% Unemployed		–0.20 ***	–0.31 ***	–0.39 ***	–0.39 ***
		(0.05)	(0.05)	(0.05)	(0.05)
Tax & Expenditure Limitation (TEL)		0.67	0.08	0.43	0.43
		(0.38)	(0.41)	(0.44)	(0.44)
State Demography					
Log of Total Population			–1.24	0.19	0.19
			(1.34)	(1.28)	(1.28)
% Population Aged 5–17			–0.25	–0.07	–0.07
			(0.17)	(0.11)	(0.11)

TABLE 3 (*Continued*)

OLS Regression Results for State Appropriations to Higher Education per $1,000 Personal Income with Fixed Effects for State and Year (Robust Standard Errors in Parentheses)

	Model 1	Model 2	Model 3	Model 4	Model 5
% Population Aged 18–24			–0.95 ***	–0.88 ***	–0.88 ***
			(0.16)	(0.11)	(0.11)
% Population Aged 65 and Over			–1.34 ***	–1.07 ***	–1.07 ***
			(0.18)	(0.15)	(0.15)
Higher Education Policy Conditions					
% Enrolled in Private Institutions				–0.07 *	–0.07 *
				(0.03)	(0.03)
% Enrolled in Two-Year Institutions				0.12 **	0.12 **
				(0.04)	(0.04)
State Merit Scholarship Program				–0.30	–0.30
				(0.25)	(0.26)
Postsecondary Governance					
Consolidated Governing Board					0.01
					(0.32)
Constant	8.65 ***	9.66 ***	59.54 **	29.65	29.66
	(1.20)	(1.21)	(22.47)	(19.87)	(19.92)
No. of observations	1029	1029	1029	1029	1029
R^2	0.84	0.84	0.87	0.88	0.88

*$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$

Finally, we had hypothesized that states with stronger governors might spend less on higher education because governors possessing robust budget authority often use their power as a check against legislative spending (Barrilleaux & Bernick, 2003; Beyle, 2003). Our analysis indeed finds that states whose governors hold greater institutional power fund higher education at relatively lower levels. The notion of governors as restraining forces on spending might appear at first glance to run counter to their oft-cited role as policy entrepreneurs and activists in higher education (e.g., as proponents of new merit-based student-aid programs or catalysts for restructuring efforts in higher education). Still, general appropriations budgets are rather undistinctive as political targets, and governors who make funding those budgets a priority may actually be limiting the potential funding pool for other gubernatorial priorities.

Our analysis produced some unanticipated results. For example, we found no evidence that the ideological propensity of a state's citizenry or postsecondary governance structure influences state appropriations to higher education. The ideology non-finding is noteworthy because several other studies have documented a relationship between political liberalism and state spending on higher education (Doyle, 2007; Nicholson-Crotty & Meier, 2003). The statistical non-significance of governance also merits discussion. Building on the work of Lowry (2001b) and others (e.g. McLendon, Hearn, & Deaton, 2006; Zumeta, 1996), we argued that consolidated governing boards would be associated with higher state appropriations because these entities would best be positioned to leverage their size and centralized resources in pursuit of state subsidy benefiting their constituents: public providers of higher education services. A growing body of empirical research has pointed to postsecondary governance as one determinant of various policy outcomes in the states (Doyle, 2006; Hearn & Griswold, 1994; Hearn, Griswold, & Marine, 1996; Knott & Payne, 2003; Lowry, 2001b; McLendon, Hearn, & Deaton, 2006; McLendon, Heller, & Young, 2005; Nicholson-Crotty & Meier, 2003; Volkwein, 1987). One possible explanation for our non-finding is that governance arrangements are largely a pre-existing characteristic of states that do not change much over time. Indeed, according to the typology of state governance patterns popularized by McGuinness (2004), only five states switched from a consolidated governing board to another form of governance during the years of this study, so only a very large effect would be discernable in the regression results. Variations *across* states in governance structures cannot be picked up by the fixed effects approach reported here, so the results may not be strictly comparable with other studies.

The modeling points to a number of noteworthy relationships between higher-education appropriations and state economic, demographic, and enrollment patterns. These results confirm many of our hypotheses, demonstrating strong empirical connections between appropriations levels and unemployment rates (i.e., higher rates equate to lower appropriations), population share (i.e., higher shares of college-aged and elderly populations associated with lower spending), and enrollment patterns (i.e., greater enrollments in private colleges associated with decreased appropriations and greater enrollments in two-year colleges associated with increased appropriations). These results provide additional, confirming evidence of the important role that state economic and demographic conditions play in shaping public investment in higher education.

Conclusion

State funding remains one of the most prominent and debated issues confronting U.S. higher education. The longitudinal analysis reported here reinforces the importance of demographic patterns, economic conditions, and certain higher education policy conditions as ones influencing state appropriations to public colleges and universities. Yet, our analysis also points to *political* influences shaping public choice. More so than in many past studies on this topic, our research indicates that certain attributes of state political systems and institutions affect government spending on higher education in statistically significant ways.

Notably, we find strong empirical evidence that, independent of other factors, partisanship, legislative professionalism, term limits, interest groups, and gubernatorial power influence appropriations levels. The results of this study buttress the findings of a number of other recent investigations documenting distinctive, statistical connections between state political conditions and state adoption of certain postsecondary accountability and financing policies (Archibald & Feldman, 2006; Cornwell, Misztal, & Mustard, 2006; Knott & Payne, 2003; McLendon, Deaton, & Hearn, 2007; McLendon & Hearn, 2007; McLendon, Hearn, & Deaton, 2006; Nicholson-Crotty & Meier, 2003; Tandberg, 2006, 2007). Particularly noteworthy is the relationship between partisan legislative strength and state postsecondary policy behavior. Less than a decade ago, the evidence for such a relationship was tenuous; today, the empirical record seems to be accumulating in support of the claim that party politics may "matter" in helping shape public choice for higher education. There is need, however, for a detailed conceptual unpacking of the partisanship finding. In the context of state appropriations, for example, what is the nature of the relationship between party control of state-

houses and the declines in state funding effort observed over the past 30 years? Does this relationship stem from differences between the parties in their true policy preferences, or from strategic behavior of legislators under certain kinds of conditions (e.g., electoral competition, for example), or from other factors not yet accounted for in the extant empirical modeling? Given the recent growth in findings relating to partisanship factors, the time has come for a finer-grained conceptual and empirical assessment.

Our study also provides added warrant for research into the postsecondary policy impacts of legislative professionalism and turn-over, interest-group activities and gubernatorial power. Each of these areas represents interesting conceptual lines for future research. We would draw attention in particular to the policy influence of governors. A modest, yet growing, body of empirical work has demonstrated the importance of gubernatorial influence in a number of areas of state postsecondary policy (e.g., Doyle, McLendon, & Hearn, 2006; Knott & Payne, 2004; McLendon, Deaton, & Hearn, 2007; Nicholson-Crotty & Meier, 2003). The nature of this influence, however, has been theorized as taking a number of different forms, ranging from electoral competition to party identification to gubernatorial power and tenure. A recent event history analysis by Mokher (2008), on the factors driving state adoption of different kinds of P-16 structural arrangements, points in a distinctively new direction—that of policy entrepreneurism and the decision by some chief executives to position themselves as "higher education governors." What are the incentives for one's becoming a higher education-focused governor, what forms does this influence take, in what ways is such influence meditated by other forces within state policy systems, and how best can we study it? These are questions that also could guide future research on policy determinants in the arena of higher education.

More broadly, the study as a whole prompts an intriguing question for theory and possible empirical analysis: to what extent are states' institutional appropriations coming to represent something new for state policymakers? States have moved over the past three decades away from an emphasis on direct subsidization of institutions covering much of every student's educational costs. Instead, states are increasingly establishing higher tuition levels (which create opportunities for greater federal student-aid awards) and, when feasible, higher state student-aid awards targeted selectively on needy or meritorious students. Under this emerging model, non-needy students generally receive appreciably less support from states' institutional subsidies—in abandoning low or no tuition policies, states are no longer providing generous "blanket" subsidies for students of all income levels. In this context, students, families, and sep-

arate state, federal, and private merit and need-based aid programs are more responsible than before for covering students' college expenses, relative to states' institutional subsidies (Rizzo, 2004). One can raise the question, then, of whether policymakers now view states' institutional appropriations as less directly and less visibly tied to students' educational access than in the past. If so, the political factors driving appropriations decisions in earlier periods may differ from those driving appropriations now.

While follow-up research on such issues is important, there may be more immediate returns to the analysis conducted here. The finding here that Republican governors and Republican-dominated legislatures tend to be associated with somewhat lower appropriations for higher education will come as no surprise to most statehouse veterans. But, viewed creatively, the present findings may provide at least two new hints for strategic action. First, in light of the finding here that unemployment rates are negatively associated with appropriations,[13] lobbyists for greater appropriations might emphasize to policymakers that higher-education enrollments may tend to rise under weak economic conditions (Merz & Schimmelpfennig, 1999; Heller, 1999), and a combination of decreased funding and increased enrollments may reduce quality when a state may most need a high-quality, responsive higher-education system. Second, to the extent such issues may be up for policy discussion in a state, the results here appear to suggest that term limits can serve, rather than disserve, higher-education interests. It would be rash to counsel unquestioning support for such limits (there are a variety of potentially offsetting benefits to supporting longer terms for policymakers), but campus and system leaders and lobbyists might well reconsider any reflexive opposition to term limits. In sum, while no quantitative analysis, standing by itself, should ever drive policy positions, the work presented here does hold promise for shaping stakeholder stances toward some significant factors surrounding the funding of higher education.

Notes

[1]As with other studies in this tradition, we do not assume that the relationships are causal. Rather, we seek to understand factors that tend to be associated over time with state appropriations for higher education. Our approach therefore mirrors the design and methods pursued by other leading studies in this area such as ones by Kane, Orszag, and Apostolov (2005), Toutkoushian and Hollis (1998), and Archilbald and Feldman (2006), the last appearing in the pages of this journal. Weerts and Ronca (2006) and Hossler et al., (1997) pursued similar questions but deployed cross-sectional designs, rather than the longitudinal ones reported in this manuscript and in the studies cited above.

[2]Some legislatures, like New York and Michigan, are highly professionalized; others, such as Georgia and New Hampshire, resemble "citizen assemblies."

[3]Some governors have been vocal proponents of higher-education funding. On balance, though, we believe that the institutional role of chief executives in checking legislative spending will serve to constrain state funding most where governors wield the most budgetary power.

[4]Due to concerns about the potential endogeneity in the relationship between enrollment and state appropriations (Toutkoushian & Hollis, 1998), the percentage of the population in the 18–24 age range is used as a proxy for the demand for higher education. This approach is consistent with other empirical studies of state funding for higher education where the relationship between enrollment and appropriations is not the primary conceptual interest (e.g., Archibald & Feldman, 2006; Rizzo, 2004; Weerts & Ronca, 2006).

[5]Our measure does not include lottery-funded scholarship programs and other non-tax sources of funding for higher education.

[6]Our choice of dependent variable mirrors that of Archibald and Feldman (2006) and others.

[7]The values for term limits have been lagged one year in order to indicate the first year in which legislators were ineligible to run for re-election, rather than the year in which term limits were first approved by the state. All other political values are unlagged.

[8]Although one might assume that citizen ideology would be closely associated with partisan control in a state, the relationship is, in fact, small empirically: the correlations for citizen ideology are –0.20 for Republican legislative control and –0.04 for Republican governor. Indeed, none of the correlation coefficients between *any* of the political variables in the analysis exceeded ±0.35; most were notably smaller.

[9]We tried operationalizing the broad-based merit aid variable in two different ways: (a) all broad-based merit aid programs, regardless of the source of the funding; and (b) only broad-based merit aid programs that were funded by sources other than general fund revenues (e.g. state lottery or tobacco settlement). There were no significant differences in any of the findings, so we have presented only the model including the variable for all broad-based merit aid programs.

[10]One of the assumptions of ordinary least squares (OLS) regression is that errors are independent over time and across states. Without the fixed effects, the coefficients on the independent variables are incorrectly estimated and the standard errors are biased, which may lead to false conclusions about which variables are statistically significant. This can be particularly problematic when the substantive variables of interest are influenced by the unobserved characteristics of the state.

[11]The issue of endogeneity between tuition, enrollment and appropriations has long been a concern in empirical studies of state appropriations (Clotfelter, 1976; Hoenack & Pierro, 1990; Koshal & Koshal, 2000; Toutkoushian & Hollis, 1998). Valid instrumental variables, however, have yet to be identified. Based on our understanding of the legislative budget process, we assumed that the level of state appropriations has an effect on the average in-state tuition, but tuition does not affect appropriations and therefore does not belong in the structural equation. In a separate analysis, we tested this assumption by including average in-state tuition at public universities in the model, while using two-stage least squares regression (2SLS) to account for the endogeneity of the tuition variable due to simultaneity. In the first stage, tuition was predicted using the lagged value of the average in-state public tuition within the state's higher education compact (SREB, WICHE, MNHEC, or NEBHE) as an instrument. The second stage indicates that there is no significant effect of tuition on state appropriations after accounting for the endogeneity of tuition. Furthermore, all other results remain the same as the OLS model, so only the findings from the OLS model are presented here. Findings of the 2SLS modeling are available on request.

[12]All findings are relatively consistent across all specifications of the block modeling. When presenting the magnitude of the effects, we refer to coefficients from the fully specified model (Model 5 in Table 3).

[13]Perhaps an unsurprising result because, as Hovey (1999) notes, state economic cycles are strong predictors of system funding levels.

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