

A Longitudinal Analysis of Organizational Determinants of Part-time Faculty Employment in Private Baccalaureate Colleges and Universities

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The purpose of the present study is to examine the driving and constraining forces of part-time faculty employment using a conceptual framework grounded in organizational sociology. Rather than positioning higher education institutions as economic organizations seeking to maximize cost saving, this study frames higher education organizations as highly institutionalized organizations. This study seeks to expand upon previous work by Liu and Zhang regarding part-time via an improved methodological approach and a more conceptually homogenous dataset. Employing longitudinal analysis to data about part-time faculty at private baccalaureate institutions, the model explores the institutional characteristics that may serve as drivers of rates of part-time faculty employment. Findings include a negative effect of high salaries on part time employment, suggesting that institutions may not be hiring part-time faculty to engage in cost savings.

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The rise of the academic profession in the U. S. in the late nineteenth century was marked by the establishment of faculty as full-time employees of colleges and universities with career tracks in their fields (Finkelstein, 1996). Following the period of the Great Depression, full-time positions for faculty replaced high numbers of semi-permanent part-time positions, which ensured a certain level of job security and opportunity to engage in well-paid scholarly work. This in turn created a foundation for growth in academic community, shared governance, and professionalization. This tendency began to reverse in the 1970s, however, when the proportion of part-time faculty started to grow across diverse types of higher education institutions. By 1981, part-timers comprised about 32 percent of all faculty in the U. S. and this percentage has grown since that time (Gappa & Leslie, 1993; Ehrenberg & Zhang, 2004). The percentage of part-timers in 2005 constituted 47.6 percent and went up to nearly 50 percent in 2009 (NCES, 2010).

These statistics along with several conceptual reasons make part-timers a curious category of faculty, worthy of exploration. More specifically, due to the nature of their contracts, they have the least amount of institutional connection and are, in this sense, very different from full timers on or off the tenure track (Gappa & Leslie, 1993). Additionally, this category of faculty is prevalent in the U.S. as well as in other countries (e.g. U.K.) and hence a study focusing on part-timers specifically will be of equal interest to the American and overseas readers.

For U.S. higher education specifically, the increasing use of part-time faculty represents a marked change in the nature of colleges and universities as workplaces. They were the first off-tenure-track category (followed by full timers employed off-track) whose growth has been deemed to have serious organizational implications, such as development of two-tiered faculty systems, with marginalized faculty not always being socialized adequately into an organization (Gappa, 1984; Gappa & Leslie, 1993). Ehrenberg and Zhang (2004) argue that increasing institutional reliance on part-timers has a negative impact on graduation rates at four-year colleges, with the largest impact on students being felt at the public non-doctoral institutions. Some believe that reliance on part-timers undermines the quality of student learning (AAUP, 2005; Bettinger & Long, 2007), reduces not only the numbers but also the influence of tenure-track faculty (Haeger, 1998),

increases the power of administrators (Rhoades, 1996, 1998), and constrains academic freedom (AAUP, 2005). Some even argue that the traditionally high status of the academic profession, and indeed the basis for academic community, is being threatened through the increasing institutional reliance on part-timers (Finkelstein, Seal, & Schuster, 1998). Others see it as a fundamental change in the nature of higher education, which is described as being at a crossroads (Gappa, 1984). Despite these negative consequences part-timers form a permanent part of the higher education workforce and their numbers have continued to grow. What drives this phenomenon? Do institutions vary in their reliance on part-time faculty?

It has been previously documented in a cross sectional quantitative study grounded primarily in economics that reliance on part-timers varies by institutional types, financial health and expected savings (Liu & Zhang, 2007). The study's limited theoretical framework and methodological scope, however, warrant the need for further exploration. The purpose of the present study is to examine the driving and constraining forces of part-time faculty employment using a conceptual framework grounded in organizational sociology, improved methodological approach (longitudinal analysis) and conceptually homogenous dataset of private baccalaureate institutions¹, which taken together considerably reduces the risk of omitted variable bias (Wooldridge, 2006) and hence improves on previous research.

Literature Review

Mirroring the growing proportions of part-time faculty has been a growing literature on the topic. That literature has largely been descriptive, hortatory, and conceptual in nature (see Hearn & Anderson, 2001). Of particular interest are the factors behind the trend: what is driving the increases in part-time faculty? Only a few individual studies (Ehrenberg & Zhang, 2004; Gappa & Leslie, 1993; Liu & Zhang, 2007) examine administrators' rationales for employing non-traditional faculty or attempt to

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Baccalaureate institutions include those where baccalaureate degrees represent at least 10 percent of all undergraduate degrees and that award fewer than 50 master's degrees or 20 doctoral degrees per year (The Carnegie Foundation for the Advancement of Teaching, 2005).

link employment of part-time faculty to specific organizational characteristics. Most literature focused on higher education lacks theory-driven, methodologically rigorous, large-scale empirical analysis of the determinants of the institutional employment of part-time faculty.

There exists a more rich and varied body of literature that looks at the driving factors of non-traditional employment in the context of industrial organizations. This work draws on both sets of literature to advance our knowledge about antecedents of part-time faculty employment in academic institutions.

Two different, although not entirely irreconcilable, conceptual lenses are used by researchers to explain the driving factors of part-time employment in the industrial setting. An economic perspective puts the central emphasis on cost reduction and efficiency maximization (e.g. Montgomery, 1987). Here the wage and benefits differential between traditional and flexible hires are viewed as the main sources of cost reduction and hence the primary driving factor of flexible employment (Montgomery, 1987; Houseman, 2001). Sociologists extend this argument by asserting that while industrial organizations seek to reduce their costs and increase their flexibility, the ability to capitalize on flexible employment arrangements may be further encouraged or constrained by a variety of organizational and environmental characteristics, such as organizational size, organizational governance structure and the level of bureaucratization, organizational design of jobs, job technology, screening policies, layoff policies and labor force composition (Davis-Blake & Uzzi, 1993; Uzzi & Barsness, 1998; Kalleberg, Reynolds & Marsden, 2003). Both perspectives find some support in the empirical findings of these studies. Kalleberg, Reynolds and Marsden (2003) find that employers use flexible staffing arrangements to lower labor costs, while Davis-Blake and Uzzi (1993) in addition to cost savings factors also identify organizational characteristics that constrain the nontraditional employment (e.g. informationally complex jobs in bureaucratized firms had a negative effect on nontraditional employment).

What explanations are offered for this trend found by researchers in the context of higher education? Two distinctive studies that look at the antecedents of part-time faculty employment include Gappa and Leslie's (1993) qualitative and Liu's and Zhang's (2007) multivariate approaches.

Based on interviews with senior university administrators, Gappa and Leslie (1993) identify several driving forces of part-time faculty employment: external forces; financial factors; institutional and educational factors. Part-time faculty employment practices are attributed to the interplay of various legal requirements, unionization status, and influence of regional

and professional accrediting associations (external forces). An additional layer of complexity is added by a combination of unstable state financing for the public institutions and unpredictability of student enrollments. Institutions use part-time faculty as a buffer against enrollment changes permitting to keep teaching loads of tenure line faculty relatively stable (financial factors). Furthermore, the internal structures, such as the degree of centralization and departmental freedom to employ their own part-timers, affect the actual practices regardless of existing needs. The abundant nature of the external labor markets in urban areas provides sufficient supply of willing part-timers making such employment decisions easy to implement (institutional factors). Finally, Gappa and Leslie argue, specific educational needs create a demand for part-timers who are often used for teaching lower-division core courses of the undergraduate curriculum and courses of highly practical nature where practical expertise is particularly valued (e.g. business or music). This study provides a comprehensive and rather complex picture of administrators' rationales for employing part-timers. Although it supplies important empirical insights, it remains unclear whether the identified drivers of part-time employment would sustain a rigorous quantitative test.

Liu and Zhang (2007) address this issue by approaching the same question from a quantitative methodological angle. Based on economic theory of internal labor markets (ILM), authors claim that colleges and universities act as rational market agents and hence aim to achieve economic efficiency. The findings, indeed, suggest that part-time employment designed as an employment sub-system allows institutions to save on salary costs differentials, especially when they find themselves in difficult financial circumstances. Further, high numbers of part-time students have a positive relationship with the share of part-time faculty. The authors conclude that the latter "strongly supports the hypothesis that contingent employment could be a business strategy adopted by higher education institutions to align their products with customers needs" (p. 19). Although downplayed by the authors in the discussion, their results also suggest that some institutional factors appear to exercise a restricting influence on part-time employment. For instance, institutional size has a negative effect, with public institutions (with exception of doctoral/research universities) employing fewer part-timers, other things being equal, and more prestigious institutions exhibit a far weaker association between tuition dependency and level of contingent employment. Clearly, economic drivers are not the only defining factors and other organizational characteristics counteract part-time employment tendencies to some extent.

Study Rationale & Research Questions

The present study extends Liu and Zhang's (2007) economics-based research by approaching the question from the point of view of organizational sociology. This conceptual slant shifts the underlying assumption about the fundamental nature of colleges and universities as rational market agents towards a view that emphasizes their traditional values along with highly institutionalized nature (Park, Sine, & Tolbert, 2010). In this view colleges and universities are more concerned with maintaining traditional modes of delivery as well as employment and less preoccupied with economic efficiency. Hence, the study is seeking to identify drivers as well as constraints of part-time faculty employment. The current study also refines the methodological approach by focusing on a homogenous group of colleges and universities (private baccalaureate institutions), which significantly reduces inter-organizational variance due to different institutional missions, priorities, resource bases, stakeholder demands, differences in employment structures and the like. This permits a better focus on organizational variables of interest in this study and reduces a chance of omitted variable bias (Wooldridge, 2006) thus improving on existing research.

The study asks the following research questions: which organizational and environmental factors drive or constrain employment of part-time faculty in colleges and universities? What is the relative importance of economic factors versus non-financial organizational characteristics? To this end, I developed and tested a conceptual framework to examine how variation across institutions influences organizational reliance on part-time faculty. In the sections that follow, I provide an overview of the conceptual framework, the research design, major findings, and the study's implications.

Conceptual Framework and Hypotheses

The obvious advantages of contingent employment to the organization are cost savings and organizational flexibility (Pfeffer & Baron, 1988). These advantages, however, fly in the "face of the changing basis of competitive success" where people are considered to be key elements of this success (Pfeffer, 1994, p. 21). The latter is especially true in higher education institutions, where members of academic professions are the main productive force of teaching and research. More so, colleges and universities as organizations that exist in a highly institutionalized environment (Park, Sine, & Tolbert, 2010) would prioritize their ability to maintain traditional tenure

line labor arrangements above the needs of economic efficiency. Yet practice tells us they increasingly rely on part-time faculty. It is these assumptions and observations of reality that make Thompson's (1967) and Rogers' (1978) organizational theorizing relevant for understanding the dynamics of part-time academic employment.

Thompson (1967) proposes that organizational changes are often induced by external pressures that hinder the balance between ability to produce and demand for products. These attempts at balance force organizations to respond. In the case of growing demand, for instance, organizations will strive to increase their output by expanding their "core technology." In U.S. higher education, the expansion of demand for university diplomas (Schofer & Meyer, 2005) has induced just such a disequilibrium. How exactly the expansion will be done, to what extent, and through which devices, Thompson (1967) argues, may vary from one organization to another and may depend on a number of organizational characteristics. In higher education this translates into institutions facing choices of expanding along the traditional routes, or looking for new innovative pathways, such as part-time employment. Specifically, Thompson (1967) suggests that some organizations may not be able to expand their core technology, or at least not along the traditional routes, if they are faced with resource constraints. Hence, colleges and universities with lower available resources will be less likely to expand tenure-line faculty and more prone to employ part-timers. Others may be able to buffer themselves from the pressures of the external environment because of their large size or prestigious status (Thompson, 1967). Hence, large and/or prestigious academic institutions will be more likely to seek faculty expansion along the tenure lines. Yet, when organizations depend on the demands of the external assessors to assure their survival and legitimacy, they will adjust their expansion process to fit with assessors' demands (Thompson, 1967). In higher education, professional associations and accrediting agencies often play the role of such an external assessor. If they attempt to regulate employment policies and hiring processes via policy documents, it is likely to shape individual institutional choices.

Rogers' (1978) theorizing about adoption of organization innovations suggests the importance of relative financial advantage resulting from alternative responses to pressures. The higher the perceived advantage resulting from a particular response, the more likely the organization is to adopt this response. In higher education, employing tenure line faculty is the baseline of employment expansions. Alternative employment (e.g. part-time faculty) that requires smaller financial commitment will save resources on

salary differentials and benefit pay. Hence, the higher the difference, the more prone colleges and universities will be to employ part-timers. Rogers (1978) further argues that some organizations may be in a greater need for alternative solutions than others. In higher education, for example some academic fields (e.g. business) derive educational benefits from employing part-timers. By the same token, some fields (e.g. sociology, psychology, engineering and biology) are highly resistant to employ part-timers due to their strong academic orientation (Gappa & Leslie, 1993). Hence, the disciplinary composition of any given college or university is likely to shape the choices of core technology expansion. Some organizations may face labor markets that allow easier access to innovative resources (Rogers, 1978). In higher education this is the case for humanitarian disciplines (e.g. art), which often find themselves able to hire part-timers from an oversupplied pool of PhD graduates.

These theoretical propositions, associated hypotheses and specific variables are presented in the Table 1. All hypotheses are presented in *ceteris paribus* terms.

Table 1

Explanation of Hypotheses

Proposition	Hypothesis	Variable
Some organizations may not be able to expand technological base in response to external pressures due to limited resources (Thompson, 1967)	<i>Hypothesis 1: Schools with lower levels of financial resources will tend to employ more part-time faculty.</i>	Core non-tuition revenue per full-time equivalent (FTE) student
Some organizations, due to their size or prestigious status, may be better able to buffer themselves from external pressures (Thompson, 1967).	<i>Hypothesis 2: Schools with larger enrollments will tend to employ a smaller proportion of part-time faculty.</i> <i>Hypothesis 3: More prestigious institutions will employ fewer part-time faculty.^a</i>	FTE enrollment Tuition sticker price

^a Although an attempt was made to measure prestige using Barron's selectivity index, this approach yielded a vast amount of missing data. Subsequently, tuition sticker price was used as an approximation for prestige.

Table 1 (continued)

Proposition	Hypothesis	Variable
If organizations depend on the opinion of an external assessor for survival or wellbeing, they will adjust their expansion choices to satisfy the demands of the assessor (Thompson, 1967).	<i>Hypothesis 4: Institutions that belong to accrediting associations who have explicit mandates or suggestions on part-time faculty employment will employ fewer such faculty.</i>	Accreditation dummy variable =1 if accrediting agency has specific regulations on part-time employment, 0 otherwise.
The extent to which a response strategy is likely to be adopted depends on organizations' perception of relative financial advantage resulting from a particular choice (Rogers, 1978).	<i>Hypothesis 5: Institutions paying higher assistant-professor salaries will employ more part-time faculty^b.</i> <i>Hypothesis 6: Institutions paying higher benefits will employ more part-time faculty^c.</i>	Assistant professors' average salary Assistant professors' benefits ratio
Some organizations may be in a greater need for innovative solutions than others (Rogers, 1978).	<i>Hypothesis 7: Institutions with large programs in business will employ more part-timers.</i> <i>Hypothesis 8: Institutions with large programs in sociology, engineering, biology and psychology will employ fewer part-timers.</i>	Ratio of FTE graduates in business relative to total FTE Ratio of FTE graduates in sociology relative to total FTE Ratio of FTE graduates in engineering relative to total FTE Ratio of FTE graduates in psychology relative to total FTE Ratio of FTE graduates in biology relative to total FTE
Some organizations may face labor markets that allow easier access to innovative strategies (Rogers, 1978).	<i>Hypothesis 9: Institutions with large programs in arts will employ more part-timers.</i>	Ratio of FTE graduates in arts relative to total FTE

^b Due to data limitations, a better suited measure of the relative wage of part-time faculty to that of assistant professors cannot be obtained. This imperfection is largely mitigated by the fact that part-timers' salaries may be assumed to be fairly constant across the country and considerably less on per-hour basis as compared to that of traditional faculty (Monks, 2004).

^c Limited benefits may be available to some part-time faculty. However, that is nearly impossible to ascertain.

In addition to the variables derived from the conceptual theorizing by Thompson (1967) and Rogers (1978), Liu and Zhang's (2007) study points towards the importance of part-time student numbers as an antecedent of part-time faculty employment. The authors argue that the needs of part-time students are best addressed by part-time faculty and spare the traditional faculty of late-night teaching responsibilities. As this variable demonstrates high statistical significance in the previous study, it will be included in the current analysis.

Research Design, Data and Method

The empirical analysis is performed on a population of private baccalaureate colleges and universities, as classified by the Carnegie Classification System. The classification is a useful tool in terms of identifying institutions that share a number of organizational characteristics and practices distinctive from other groups, e.g. research intensive universities. Previous studies have made an extensive use of this classification (e.g. Becker and Watts, 1999; Birnbaum and Umbach, 2001). Baccalaureate institutions tend to be teaching-intensive and undergraduate focused, which logically means they are likely to prioritize the quality of teacher-student interactions and student experience. This is consistent with the main assumption of this study about the nature of higher education institutions. Next, they tend to lack such complex organizational components as medical schools, which in themselves tend to employ a lot of part-timers. Additionally, this institutional type exhibits less complexity in employment structures and is more likely to categorize employees performing typical duties of part-time faculty as part-time faculty. In research-oriented institutions, to the contrary, much of the teaching of single courses is done by graduate students and post-docs, which do not appear in the part-time faculty statistics.

Furthermore, focusing on private institutions allows avoiding structural differences in revenue sources between privates and publics, unionization policies (Gappa & Leslie, 1993) and fluctuations in broader institutional priorities. As controlling for most of these confounding variables would not be possible using the available data, the homogenous nature of the institutions in the sample further reduces the chances of omitted variable bias. Despite the conceptual homogeneity of the institutions in the sample, there is still a considerable degree of variation in the levels of part-time faculty employment. The proportion of part-timers in the dataset varies from none to 90 percent with a standard deviation of 0.19.

The data for the study came from the Integrated Postsecondary Education Data System (IPEDS) provided by National Center for Education Statics (NCES) and accreditation guidelines for regional accrediting associations (Western, North Central, New England, Northwestern, Southern, and Middle States accrediting associations). I limit my sample to years 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2003 (2001 is dropped due to data limitations). There are a total of 530 private baccalaureate colleges and universities in the data set². Pooled time-series (panel data) linear regression approach [PTSA] with institutional and temporal fixed effects (Syars, 1989) is employed to test the effects of organizational characteristics on the proportion of part-time faculty.

Panel data are data where multiple cases (colleges and universities in this study) are observed at two or more time periods. Apart from boosting the numbers of observations for any given analysis, these data's distinctiveness also permits combining two kinds of information (the cross-sectional information reflected in the differences between subjects, and the time-series or within-subject information reflected in the changes within subjects over time) in one dataset (Wooldridge, 2006). Furthermore, applying fixed effects methods to panel data allows controlling for omitted variable bias in a more optimal way than ordinary multiple regression techniques would permit. It is worth pointing out that this approach only allows establishing the average level (across cases and over time) of relationships between independent and dependent variables. Although, in reality, such relationships are likely to vary from case to case and from year to year.

Some variables in this analysis have a positive skew (salary, size, revenue, tuition sticker price). Taking a natural logarithm of such variables makes their distribution more normal and helps fitting them into a model better (Wooldridge, 2006). Specifically, I estimate the following model:

$$\begin{aligned} \text{PROPORTION}_{s,t} = & \alpha + \beta \text{SAL}_{s,t} + \gamma \text{BEN}_{s,t} + \eta \text{Size}_{s,t} + \varphi \text{ER}_{s,t} + \kappa \text{T}_{s,t} + \nu \text{AC}_{s,t} + \zeta \text{PTS}_{s,t} + \text{BUS}_{s,t} + \\ & \text{SOC}_{s,t} + \text{ENG}_{s,t} + \text{BIO}_{s,t} + \text{PHY}_{s,t} + \text{ART}_{s,t} + v_s + \omega_t + \varepsilon_{s,t} \end{aligned}$$

where $\text{PROPORTION}_{s,t}$ refers to the share of part-time faculty in school "s" in year "t". $\text{SAL}_{s,t}$ is a natural logarithm of an average salary of assistant professors in the institution. $\text{BEN}_{s,t}$ is a ratio of total benefits paid to assistant

² Although the data on benefits to assistant professors are not directly available, they were estimated based on the total benefits paid by the university multiplied by the proportion of assistant professors in total full time faculty.

professors to total salary outlays. $Size_{s,t}$ is a natural logarithm of total full time equivalent enrollment. $ER_{s,t}$ is the natural logarithm of core educational non-tuition revenue per student. To calculate this variable, the total non-tuition revenue is computed first (sum of private gifts, grants and contract revenues), then it is divided by the full-time equivalent enrollment. A natural logarithm is then taken to compute the final variable. The revenue variable is computed using necessary adjustments for the fact that IPEDS collected financial information differently in the period including and following year 1995. The adjustments are based on the recommendations of the NCES manual (NCES, 2000). It is important to note that although the NCES manual offers a convenient system of cross-walk from financial data collected before and including 1995 to data collected after 1995, the formulas do not perfectly compensate for discrepancies, thus introducing the unavoidable noise in the data. $T_{s,t}$ refers to a natural logarithm of tuition sticker price which is used as a proxy measure of institutional prestige. $AC_{s,t}$ is a dummy variable that marks schools that are affected by regulations of regional accrediting associations in the years when they had explicit regulations regarding employment of part-time faculty. $PTS_{s,t}$ is a proportion of part-time students in the institution. $Bus_{s,t}$; $Soc_{s,t}$; $Eng_{s,t}$; $Bio_{s,t}$; $Phy_{s,t}$; $Art_{s,t}$ are variables representing the proportion of graduates from corresponding disciplines (business, sociology, engineering, biology, psychology and arts) divided by full time equivalent enrollment. All financial indicators measured in absolute terms (educational revenue per full-time equivalent (FTE) student, tuition sticker price, salary) were adjusted by higher education price index (base year 1982) in order to account for inflation. The terms U_s and ω_t are school and year fixed effects and $\varepsilon_{s,t}$ is an error term with the usual properties.

Analysis and Results

Data analysis was accomplished using the STATA statistical software package. As the original dataset contained a large proportion of missing variables, a procedure of multiple imputations (Little and Rubin, 2002) was applied to improve the quality of data. This procedure, as compared with listwise deletion, allowed reconstituting around 30 percent of the data, yielding 4,166 usable observations in the dataset, combined of 530 colleges and universities across 8 years (some schools have fewer than 8 yearly data points). The mean school size in the dataset is 1,172 (SD=751) FTE students. The mean non-tuition revenue per FTE student expressed in constant dollars

of 1982 is \$14,466 with a very large standard deviation (SD=40,617). The average proportion of part-time faculty is 32 percent (SD=.19), ranging from none to 90 percent. For information on descriptive statistics refer to Table 2.

Table 2

Descriptive Statistics for Key Variables (in natural form) in the Imputed Dataset

Variable	Mean (St. Dv.)
Average assistant professor salary*	\$18,907 (3,065)
Benefits ratio	0.25 (0.10)
Full time equivalent enrollment	1,172 (751)
Educational revenues per FTE*	\$14,466 (40,617)
Tuition sticker price*	\$10,737 (5,361)
Accreditation (dummy variable)	0.48 (0.49)
Proportion of part-time students	0.22 (0.27)
Proportion of part-time faculty	0.34 (0.19)
Ratio of business graduates to FTE	0.09 (0.32)
Ratio of sociology graduates to FTE	0.03 (0.04)
Ratio of engineering graduates to FTE	0.01 (0.01)
Ratio of biology graduates to FTE	0.01 (0.32)
Ratio of psychology graduates to FTE	0.02 (0.01)
Ratio of arts graduates to FTE	0.01 (0.01)

**Indicator was adjusted for Higher Education Price Index (base year 1982).*

The results of the PTSA analysis are presented in Table 3. The coefficients are reported in unstandardized form. Regression 1 reports coefficients for yearly increase in the proportion of part-timers. In 1991 there was a significant drop in the proportion of part-timers, the trend started to go upwards from 1995 to 2003 with a significant increase every year as compared to the base year of 1987. These results empirically confirm that overall there has been a gradual but significant increase in part-time employment within private baccalaureate colleges and universities. Regression 2 incorporates organizational characteristics in addition to yearly effects. Even after individual organizational variables are controlled for, the significant upward trend in proportion of part-timers remains in years 1997, 1999 and 2003. Regression 2 also presents the impact of organizational variables on the level of part-time employment. Benefits, revenue, tuition sticker price and accreditation variables do not have a significant relationship with the proportion of part-timers. These outcomes suggest that potential increase in cost savings from benefits and improvement of financial health of the institution makes no difference to the growth of part-time employment.

Similarly, the improvements in institutional reputation approximated by the tuition sticker price and changes in the position of accreditation associations on part-time employment have no impact on the growth of such employment.

This picture gets somewhat more complicated if we consider the impact of assistant professors' salaries. Contrary to what was hypothesized, assistant professors' salary have a negative effect on the proportion of part-timers. One percent increase in average salary is associated with a 0.0003 decrease in proportion of part-timers. The original hypothesis supposed that salary levels would approximate potential financial savings resulting from salary differentials between tenure-line and part-time faculty. This hypothesis is not supported by the results. The negative effect, however, may be explained if we consider that salary levels may represent the relative power of tenured faculty to influence employment policies in their institution. Tenure-line academics may be more likely to seek traditional recruitment for the purposes of enriching the academic community and the quality of student/faculty interactions. Higher paying institutions may exhibit stronger preferences for shared governance and be influenced by traditional academic considerations in their recruitment policies. This preference is particularly likely for baccalaureate institutions given their heavy teaching orientation and concern for undergraduate experience.

Contrary to my original predictions, the results suggest that full-time equivalent enrollment has a strong positive effect on the level of part-time employment. A one percent increase in the size of the student body is associated with a 0.0004 increase in the proportion of part-timers. What could account for this surprising outcome? Some evidence suggests that larger institutions are more likely to follow a decentralized model of power distribution (Child, 1973), where individual departments have their own budgets and are free to decide on part-time employment strategies. A similar view has been expressed by practicing administrators at the university and departmental levels in informal interviews. In this scenario, departments may be left to their own devices to cope with student demand, often on short notice, and therefore resort to flexible hiring mechanisms by drawing from a local pool of educated workforce.

Proportion of part-time students has a strong and positive influence on presence of part-time academics, as expected. When the ratio of part-time student to total FTE increases by 0.1 it is associated with a 0.013 increase in the share of part-time faculty, all other things being equal. Disciplinary composition of a university appears to have some association with part-time hiring. When the size of a business program increases, the proportion of part-

timers employed at the institution also rises. Growth of student numbers in sociology and biology programs is associated with a reduction in the numbers of part-time faculty. This study supplies no evidence that the size of engineering, psychology and arts programs appears to have any association with this type of employment.

Table 3

Regression Results for Part-time Faculty Proportion

Variables	Regression 1			Regression 2		
	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.
Constant	0.33	0.00	***	0.37	0.20	+
Assistant professor salary (log)*				-0.03	-0.01	**
Benefits ratio				0.00	0.00	
FTE Enrollment (log)				0.04	-0.01	**
Non-tuition education revenues per FTE (log)*				0.00	-0.01	
Tuition sticker price (log)*				0.00	-0.01	
Accreditation				0.02	-0.01	
Proportion of part-time students				0.13	-0.03	***
Graduates in business				0.06	-0.26	*
Graduates in sociology				-0.92	-0.22	**
Graduates in engineering				0.81	-0.60	
Graduates in biology				-1.64	-0.41	**
Graduates in psychology				0.47	-0.42	
Graduates in arts				0.64	-0.49	
Year 1989	0.00	0.00		0.00	0.00	
Year 1991	-0.04	0.01	***	-0.50	-0.01	***
Year 1993	0.02	0.01		0.02	-0.02	
Year 1995	0.02	0.01	*	0.02	-0.02	
Year 1997	0.03	0.01	***	0.05	-0.02	*
Year 1999	0.05	0.01	***	0.05	-0.02	*
Year 2003	0.04	0.01	***	0.05	-0.02	+
N		4,166			4,166	
Minimum DF		23.2			10.0	

*Significance Levels: *** $p < .001$; ** $p < .01$; * $p < .05$; + $p < .10$*

Discussion and Suggestions for Future Research

The present study builds on the existing work by Liu and Zhang (2007) and seeks to identify organizational determinants of part-time faculty employment. The study uses an improved methodological approach in addressing the issue and yields a set of outcomes that, when contrasted with Liu and Zhang's (2007) findings, raise interesting questions about institutional motivation with respect to employment choices and a broader changing nature of higher education in the U.S.

One the strengths of the present study, as compared to cross sectional analysis by Liu and Zhang (2007), is the nature of the data and methods employed. The sample consists of 530 conceptually homogenous institutions observed over an eight year period of time. In very heterogeneous samples, including a cross section of different institutional types, with only few independent variables, the size effects are likely to be biased by unmeasured differences in institutional goals and the logic of institutional choices, revenue bases, collective bargaining policies, different stakeholders' agendas and differences in the employment structures and official branding of various roles (e.g. post-doc teaching a single course and not appearing in the part-time faculty statistics). Whereas, a sample comprised of a single institutional type is free of most of these differences and reduces the chance of omitted variable bias. Additionally, the panel nature of the dataset significantly boosts the number of observations as compared to the previous study. This design permits to control for institutional as well as temporal fixed effects, further reducing the possibility of omitted variable bias. The present study also introduces new conceptual variables in the regression equation that highlight the distinctive, not always economic, basis for employment choices made by higher education institutions. Given the differences of the methodological and conceptual approach, this study improves on previous multivariate research conducted by Liu and Zhang (2007).

Additionally, there are some differences in the substantive findings. Unlike Liu and Zhang's conclusions, the present study finds that changes in most economic factors do not have an impact on the increasing numbers of part-timers. It is interesting that assistant professors' salary levels exercise a negative impact, suggesting that institutions with higher salaries are resisting the trend—a finding directly contradicting the economic argument. At the same time, if Liu and Zhang found that FTE enrollment has a negative effect in comprehensive and liberal arts colleges and universities, this analysis finds that institutional size has a positive effect. This difference may be due to differences in the samples as well as better controls for omitted variable bias

in the current study.

Additionally, the ability to control for temporal effects in this study permits conclusions that are not possible in the cross-sectional design. The results suggest that even after controlling for a set of organizational characteristics, the temporal effects do not disappear in the most recent years in the dataset. Factors other than those included in the analysis must be driving part-time academic employment upwards. Clearly, neither Liu and Zhang's nor the current study have been able to develop a comprehensive list of relevant variables that may be associated with the trend in question. This finding in itself raises interesting questions about the changing nature of higher education institutions. Are part-timers actively pursued by all colleges and universities regardless of their financial status in search of employment flexibility? Does the negative coefficient on salary suggest that a stronger academic profession is capable of counteracting the market pressures? Are these findings reflective of the divergence between professional and market logics in which colleges and universities presently find themselves? If so, what does it tell us about the changing identity of higher education in the current context of decreasing resources and rising expectations?

If Liu and Zhang (2007) assumed universities act as rational market agents aggressively pursuing financial savings, the current study made the opposite assumption, positioning universities as traditional highly institutionalized organizations (Park, Sine and Tolbert, 2010). Have these assumptions been confirmed by the empirical findings of the two studies? Even though Liu and Zhang find that institutions make choices based on economic efficiency considerations, they also provide some evidence that institutions resist part-time employment if they are public and doctoral and are able to spend more per student. By comparison, the present study supplies no evidence that part-time faculty employment levels vary by institutional revenue or ability to save resources. Most of these variables are irrelevant and make no difference to variation in the proportion of part-timer hires. Assistant professors' salary exercises a constraining effect directly challenging the cost saving argument. However, the results do not yield as many constraining effects as was originally predicted by the conceptual framework. Organizational size, for instance, exercises a surprising positive impact, suggesting that larger institutions that could potentially resist such employment actually give in to it more easily than their smaller counterparts. The position of accrediting associations on part-time faculty employment makes no difference to institutional choices. Are colleges and universities active rational market agents or are they less concerned about economic efficiency and strive to provide the best quality education for the students

and be a home to a powerful academic profession? The evidence from the two studies is mixed and inconclusive. Colleges and universities appear to be both rational and traditional, resisting the pressures and giving in to them at the same time. These empirical results suggest that higher education finds itself straddling market demands with the professional and pedagogical considerations, attempting to manage the tensions around economic survival and preservation of institutional identity. Colleges and universities in the U.S. may be finding themselves on the verge of a powerful identity transformation, seeking to integrate what is normally considered as mutually exclusive rationales into a consistent whole. Part-time faculty employment may be used as a safety net by higher education institutions in the process of such struggles and efforts to figure out ways forward under new socio-economic conditions.

Undoubtedly more research is needed to understand how higher education institutions adjust to strong economic pressures and struggle to preserve their traditional identity at the same time. Research into employment choices between part-timers, tenure track, and other forms of faculty may be just such an empirical window into understanding these struggles. Further research in this direction should seek to tap into more fundamental shifts occurring at various levels, including organizational, departmental, and individual, seeking for evidence of change in values, beliefs and self-concepts of institutions and their stakeholders. Moreover, if we are to understand these changes in their full complexity, an array of alternative views of higher education should be embraced while searching for explanations of employment choices, ranging from a well-established economic argument (e.g. ILM theory), resources dependency theory, institutional theory as well as newer conceptualizations involving academic capitalism (Slaughter & Rhoades, 2004), and academic managerialism (Deem, Hillyard, & Reed, 2008).

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