EXTERNALIZING EMPLOYMENT IN HIGHER EDUCATION: DETERMINANTS OF CONTINGENT ACADEMIC EMPLOYMENT IN INSTITUTIONS OF HIGHER EDUCATION

by

Nataliya L. Rumyantseva

Dissertation

Submitted to the Faculty of the

Graduate School of Vanderbilt University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in

Leadership and Policy Studies

August, 2008

Nashville, Tennessee

Approved:

Associate Professor Michael K. McLendon

Professor John M. Braxton

Professor James C. Hearn

Professor Kathryn Anderson

To Professor, Dr. G. M. Grigoryan,

My First Teacher of Logic and Passion for Discovery,

National University of Economics,

Kharkiv, Ukraine

ACNOWLEDGEMENTS

Although this work is mostly a product of my own effort, as a dissertation is meant to be, many different people have contributed to the process of its creation by willingly and sometimes unwittingly giving their knowledge, skills, intangible insights, patience, time, wisdom and love. It is only through the interconnectedness between myself and others around me that this project has become possible.

My strongest words of gratitude go to my advisor, Dr. James C. Hearn, who has been my mentor since the summer of 2004 and has continually shown incredible patience with me, allowing me to find emotional comfort in the topic of the dissertation, leaving me sufficient space to reconcile numerous dilemmas going through my restless soul and yet reaching out the hand of support when I most needed it to guide me through seemingly impenetrable forests and wobbly swamps of empirical research and writing.

My second strongest words of gratitude go to my ex-husband and friend, Dr. Luis. E. Fong, who has been there for me when I was in doubt, searching for the topic, confused and unsure about what to study. His strong appreciation for science and empirical research, as well as the deep respect he holds for social sciences, have inspired me on a daily basis and kept me going. He has also shown a lot of patience by listening to the unfiltered analysis of millions of ideas passing through my head on a regular basis, helping me to focus and to ultimately produce this dissertation.

Aside from Dr. Hearn and Dr. Fong, other remarkable people have contributed in various ways to the success of this project. Several faculty members in the Department of

Leadership, Policy and Organizations and Department of Economics deserve a special mention. Dr. John Braxton has unwittingly served as my second mentor, having inspired me through his appealing course on the academic profession and multiple personal conversations to focus on faculty as a key element of an academic institution. Dr. Michael McClendon has also unknowingly encouraged me through his writings to carefully consider ways of shaping my thesis as a written document meant to communicate ideas to the audience and lay foundations for future studies. Dr. Kathryn Anderson has provided invaluable assistance with statistical analysis, helping me to sort out the right from seemingly right. A special thank you note goes to Dr. Thomas Smith for his financial support and the opportunity to contribute to his research projects.

I also thank my friends and parents for their unconditional support during all these years.

TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

CHAPTER I

INTRODUCTION

The struggle by higher education institutions to find their identity was born along with the universities themselves and that struggle continues as these institutions mature and undergo major transformations (Mitchell, 1997). The second half of the 20th century has presented colleges and universities with a new wave of challenges leading to major shifts in their roles and the way they function. Modern universities are no longer simply safe territories for the pursuit of knowledge for its own sake. They are the foundation of the nation's knowledge-driven economy. A college education is in extremely high demand as the requirements for educational credentials continue to grow across industries. In addition, virtually all higher education institutions encounter constraints on their resources as they attempt to respond to the increasing demand for occupation-specific knowledge and education. These two major trends alone preclude universities from operating in traditional ways. Besides, an increasingly diverse clientele and increased competition from other educational providers challenge traditional practices in higher education.

Logically, along with major transformations of academic institutions, all organizational components experience the push to change. The academic profession is an excellent illustration of the emerging "deviant" nature of academia in the 20th and 21st centuries. The traditional nature of tenured and tenure-track faculty is undergoing a shift towards a more flexible concept of faculty. Although there remains a core group of

tenure-track instructional faculty, a growing share of faculty now exists on the margins. Off-tenure-track (OTT) full-time and part-time faculty are now increasingly used to supplement the body of traditional professorships.

This work examines the phenomenon of non-traditional employment in US academic institutions by focusing on the factors that drive such employment and explaining inter-organizational variation in employment practices.

Statement of the Problem

The rise of the academic profession in the US in the late 19th century was marked by the establishment of faculty as full-time employees of colleges and universities with career tracks in their fields (Finkelstein, 1996). Full-time tenure line positions for faculty ensured a certain level of job security and the opportunity to engage in well-paid scholarly work. This, in turn, created a foundation for growth, shared governance, and professionalization in the academic community. This tendency began to reverse in the 1970s, however, when the proportion of contingent faculty started to grow across diverse types of institutions of higher education. In 1975, OTT full-time and part-time faculty represented about 13 percent and 30.2 percent of total faculty in two-year and four-year colleges and universities, respectively. By 2003, the share of faculty in these categories had risen to 18.75 percent and 46.3 percent, respectively. The share of full-time tenured and tenure-track faculty members decreased from 56.8 percent to 35.15 percent over the same period of time (Curtis, 2005). Clearly, higher education has been experiencing substitution of contingent or contract faculty for tenured and tenure-track faculty (Ehrenberg, 2005). Following Pfeffer and Baron (1988), I use the term “employment

externalization" in this research to describe organizational arrangements that depart from the norm of full-time, permanent work performed at the workplace. Although the term was originally introduced for industrial organizations, I believe it is equally applicable in higher education.

Employment externalization in higher education represents a marked change in the nature of higher education institutions as workplaces. Employment of part-time faculty has organizational implications, such as the potential development of two-tiered faculty systems, with marginalized faculty not always being socialized adequately into the organization (Gappa, 1984, Gappa and Leslie, 1993). Ehrenberg and Zhang argue that the increasing institutional reliance on part-time and full-time off-tenure-track faculty has a negative impact on graduation rates at four-year colleges, with the largest impact being on students at public non-doctoral institutions (Ehrenberg and Zhang, 2004). Some believe that reliance on non-traditional faculty can potentially undermine the quality of student learning (AAUP, 2005; Baldwin and Chronister, 2001). The presence of a large number of part-timers appears to reduce not only the numbers but also the influence of tenure-track faculty (Haeger, 1998). Some argue that it increases the power of administrators (Rhoades, 1996, 1998) and undermines academic freedom (AAUP, 2005). Some even argue that the traditionally high status of the academic profession, and indeed the basis for the academic community, is being threatened through the increasing institutional reliance on non-traditional faculty, especially part-timers (Finkelstein, Seal, and Schuster, 1998).

These sweeping changes in academic institutions appear to be directly connected to such "hot" policy issues as student persistence and graduation (e.g. Ehrenberg, 2005).

Several studies have argued that an increasing reliance on non-traditional faculty reduces graduation rates as well as student persistence into the second academic year when all other factors are held constant (Ehrenberg and Ziang, 2004; Bettinger and Long, 2005). Umbach (2007) provides empirical support for lower quality of educational experience for undergraduates when they are taught by contingent faculty.

Mirroring the growth of the proportion of non-traditional faculty has been a growth in the body of literature on the topic. That literature, however, has largely been descriptive and conceptual in nature. It has focused mainly on the non-traditional faculty characteristics (Tuckman & Caldwell, 1979; Gappa and Leslie, 1993; Baldwin and Chronister, 2001; Benjamin, 1998) and the organizational consequences of non-traditional hiring (Cruise, Furst and Klimes, 1980; Friedlander, 1981; Tuckman, 1981; Baldwin and Chronister, 2001; Umbach, 2007). Only a few individual studies have provided an in-depth, empirically based analysis of administrators' rationales for employing non-traditional faculty (Gappa and Leslie, 1993; Baldwin and Chronister, 2001) or have attempt to link the employment of off-tenure track faculty to specific organizational characteristics (Ehrenberg and Zhang, 2004). Still missing is a theory-driven, sociologically grounded empirical analysis of the determinants of employment externalization in higher education.

This study attempts to fill in this gap in the literature. It focuses on OTT full-time and part-time faculty employment as a form of externalization of employment in higher education. Specifically, it aims towards providing empirical evidence regarding organizational and environmental determinants of employment of OTT full-time and

part-time academics by baccalaureate colleges and universities. The thesis is organized as follows:

- I review existing literature on determinants of employment externalization in industrial, health care and higher educational institutions;
- I address the issues of the study's purpose, its conceptual framework, and its hypotheses;
- I describe data, variables and the analytic methodology employed for data analysis; and finally, discuss the findings and raise questions for future research.

Study Purpose and Research Question

The central point of inquiry in this study is an analysis of the determinants of academic employment externalization in higher education. Academic employment externalization is conceptualized as employment of OTT part-time and full-time faculty. The analysis is limited to four-year baccalaureate colleges and universities. I focus on these institutions because they represent an identifiable sector with relatively consistent and homogeneous organizational characteristics in contrast to, for example, research universities. They tend to share a primary purpose of providing undergraduate education and typically lack units with alternative staff careers and professional profiles, such as hospitals. This allows clear identification of the various organizational and environmental characteristics, which impact the extent of employment externalization, while controlling for the type and mission of the institution. Specifically, this dissertation pursues the following goals:

- It aims to develop a deeper understanding of externalization in higher education;
- It seeks to situate externalization in the environmental and organizational contexts;
- It develops and tests a conceptual framework grounded in organizational theories in order to explain inter-organizational variation of the extent of externalization.

The study is, therefore, explanatory rather than predictive in nature. It attempts to understand the antecedents of employment of contingent faculty, rather than trying to predict future patterns.

Now that I have defined employment externalization in an academic environment as "employment of OTT part-time and full time faculty," the goals of this work can be addressed by the following research question: *What factors explain the inter-organizational variation in the employment of OTT part-time and full-time faculty in academic institutions?*

Significance of the Study

This study addresses one of the major changes in the nature of higher education institutions that occurred in the 20th century—employment externalization. As OTT part-time and full-time appointments grow, very few studies have attempted to systematically analyze why and how colleges and universities choose to externalize their academic labor force. The significance of the present study is that it develops a theoretical framework for understanding organizational employment choices while capitalizing on existing empirical and theoretical literature. It then tests the theory in the context of the multivariate modeling.

CHAPTER II

REVIEW OF THE LITERATURE

The current literature on non-traditional employment arrangements in contemporary organizations is relatively scarce. In higher education the phenomenon has been called “contingent employment” and refers to the study of the antecedents and consequences of OTT part-time and full-time faculty employment. In the wider sociological literature on organizational behavior the broader term “employment externalization,” which was first advanced by Pfeffer and Barron in 1988, has been used. A number of empirical studies on externalization have since followed which focus on the employment structures of non-academic, industrial organizations. This chapter draws on empirical studies focused on both academic and industrial organizations.

Phenomenon Identification

Pfeffer and Baron (1988) were the first to note the existence of a continuum of employment relationships and thus laid conceptual foundations for understanding employment externalization. The continuum of employment relations ranges from long-term attachments between workers and organizations under a system of formal regulations (employment internalization) to arrangements in which workers are only weakly connected to the organization in terms of physical location, administrative control, or the duration of employment. The trend towards the latter end of this continuum has been termed “externalization”.

Employment externalization is often conceptualized as an employer's reliance on part-time, temporary, and contract workers. Part-time work is usually defined as regular wage employment in which the hours are less than "normal" (35 hours per week in the United States). Temporary employment happens when the length of the contract is clearly defined for a short period of time. Employers may hire some temporary workers directly or through employment intermediaries, such as temporary help agencies. Employment through an intermediary is considered temporary if the focal organization supervises the employee. If the supervision remains with the intermediary agency, such employment is classified as contract work. Employees of contract companies may work either at the client's site or offsite. The first type is called contracting and; the second is subcontracting (Kalleberg, 2000). In this study of higher education institutions, the concept of "academic employment externalization" is illustrated by OTT part-time and full-time faculty employment.

Externalization: driving forces and constraining factors

The obvious advantages of externalization to the focal organization are cost savings and organizational flexibility. The sources of cost savings are the opportunity to pay lower salaries to externalized workers and the option to avoid offering benefits. Organizational flexibility comes from the ability to hire workers only for the duration and work load required by the company's circumstances.

Although the cost saving advantages of externalization are evident, these employment arrangements fly in the "face of the changing basis of competitive success" where people are considered to be a key element of this success (Pfeffer, 1994). Perhaps

the most obvious disadvantage of externalization is reduced “loyalty, dedication and willingness to expend extra effort on behalf of the organization” (Pfeffer, 1994). Nevertheless the trend continues to grow. Naturally, this raises the question of what can justify its growth. Obviously, for employment externalization to make sense, the advantages of externalization must outweigh the disadvantages. Since major advantages of externalization are cost savings and flexibility, the outside environmental conditions must put a premium on or emphasize the importance of cost reduction and flexibility. Such importance is gained only under conditions of environmental pressure for cost reduction and increasing demand for flexibility. Logically, one would wonder what are the sources of those pressures which lead contemporary organizations to maximize cost reduction and to increase flexibility. The sources of pressure will vary depending on the type of industry and the organizational structure. For industrial organizations Pfeffer and Baron (1988) identify three main sources of pressure creating a need for higher flexibility and cost savings: 1) the changing nature of consumer demand that puts a premium on a wider variety of available products and a producer’s ability to respond quickly to changes in market conditions; 2) increasing competition in both domestic and foreign markets in terms of price and services; and 3) the near perfect information that has become possible with sophisticated and affordable computer technology, creating considerable pressure to decrease the costs of production.

In addition to serving the purpose of cost reduction and flexibility, externalization is often employed as a way to cope with internal organizational pressures or needs, such as unionization or the need for workers with highly specific and rare qualifications. In the first case, externalization reduces the number of workers who are potential targets for

unionization, threatens the job security of workers currently in the firm, and disperses the workers (particularly in the case of work at home), making unionization more difficult. In the second case, at times of technological change, an organization may lack sufficient permanent employees with a particular set of skills. In this case externalization provides access to qualified workers who can address the needs of several employers at a time or who may be unwilling to work full-time.

Although pressures for externalization are plentiful, some environmental and organizational factors put constraints on the extent of externalization in any particular institution. Environmental constraints may include technical as well as institutional pressures. Organizational constraints or preferences not to externalize may include the degree of bureaucratization and the organizational culture. In the case of nonprofit organizations seeking to maximize the quality of their product as opposed to financial gain (e.g. higher education institutions), these may be self-imposed in order to protect themselves from externalization. The interaction of pressures and constraints ultimately affects the extent to which organizations choose to externalize employment (Fig. 1). Therefore, interplay of these factors could explain the inter-organizational variation in the degree of employment externalization.

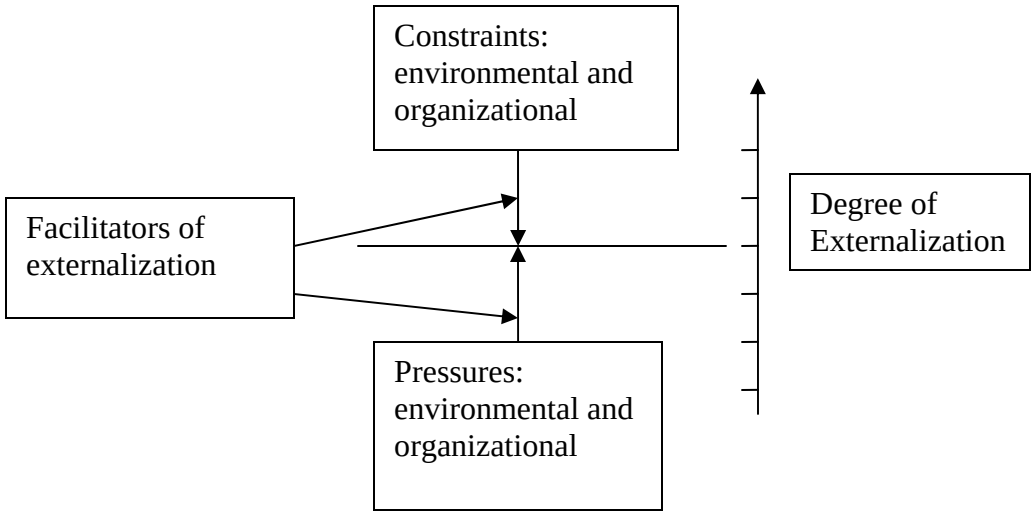

Figure 1. Determinants of an Institution's Degree of Externalization

Studies of the Antecedents of Externalization

Two main lenses used in the current literature to explain variation in the extent of externalization are the economic lens and the sociological lens. An economic framework explains the use of non-traditional employment arrangements by employers resulting from their attempts to maximize efficiency or to reduce costs (e.g. Montgomery, 1987). Perspectives in this category include the cost reduction perspective and transaction cost economics. The cost reduction perspective emphasizes the wage and benefits differential between traditional and flexible hires (including part-timers, temporary workers and contract workers) as the primary driving force of employment externalization. Montgomery (1987) and Houseman (2001) postulate that employers tend to use flexible staffing arrangements to avoid paying benefits to certain groups of workers and/or to save on wage differentials. Montgomery emphasizes the role of recruiting and training expenses in this. Supposedly, firms with a higher median level of such expenses (quasi-

fixed costs) will find the employment of part-time workers relatively less attractive. The size and unionization status of an organization are likely to increase quasi-fixed costs and therefore, will reduce the attractiveness of part-time labor. Montgomery finds that benefits, wages and the costs of hiring and training are negatively related to the predicted probability of hiring part-timers. However, benefits turn out to be positively related to the proportion of part-time workers employed by a firm. Houseman finds that the presence of good benefits in a company (measured with a dummy variable) positively relates to the predicted probability of the presence of part-timers and the intensity with which firms use part-timers (their proportion). In summary, according to these studies, cost-saving pressures appear to have a significant impact on a company's decision to externalize its labor force.

The transaction cost economics perspective maintains that employers will choose market mechanisms (flexible arrangements) over hierarchies (standard arrangements) depending on their relative efficiency and costs, which in turn vary depending on other features of the transaction (Williamson, 1988). A transaction is conceptualized as a decision to fill a given position. Based on this premise, Masters and Miles (2002) generate three explanations for employment externalization. Organizations are less likely to use external labor arrangements 1) for positions that have a high probability of repetition; 2) for positions that require firm-specific skills; or 3) for positions whose performance is difficult to assess. They find that all three hypotheses are supported by empirical findings.

In contrast, sociological theories often place more emphasis on the management of resource dependency and other institutional processes. Sociologists argue that while

industrial organizations seek to reduce their costs and increase their flexibility, the ability to capitalize on flexible employment arrangements depends heavily on a variety of organizational and environmental characteristics (Davis-Blake and Uzzi, 1993; Uzzi and Barsness, 1998; Kalleberg, Reynolds and Marsden, 2003). Among key organizational characteristics hypothesized to affect externalization in these studies are: organizational size, labor retaliation and unionization status, organizational governance structure and the level of bureaucratization, organizational design of jobs, job technology, screening policies, layoff policies and labor force composition. Environmental influences include the way in which both the perceived and the real supply and demand within the labor market affect the capacity of an organization to output its product (Uzzi and Barsness, 1998; Kalleberg, Reynolds and Marsden, 2003), as well as governmental concerns regarding externalization (Davis-Blake and Uzzi, 1993).

The empirical findings of studies of externalization support economic and sociological explanations for employment externalization. Generally, the results are broadly consistent with assertions that employers use flexible staffing arrangements to lower labor costs, as well as to reduce the uncertainty surrounding the availability of labor (Kalleberg, Reynolds and Marsden, 2003). A set of organizational and environmental characteristics has been shown to either encourage or constrain externalization (Davis-Blake and Uzzi, 1993). For instance, when the nature of the job (e.g. one requiring informationally complex or firm-specific skills) or the firm (e.g. bureaucratized) required employment stability, externalization was less likely to occur. Organizations subject to governmental oversight also tended to limit their use of externalization.

The study by Lemak, Alexander and Roy (2003) is distinctive for its application of a sociological framework to the analysis of externalization in professional organizations, specifically drug treatment units. Along with traditional market economics emphasizing competitive pressures, the study draws upon institutional perspectives to suggest that drug treatment organizations choose contingent work arrangements as a result of influences in the institutional environments and client- or task-related requirements. The results of the study emphasize that health care organizations are not subject exclusively to the economic or technical demands of the markets in which they operate. Social context and institutional demands also directly influence staffing arrangements in outpatient drug treatment units. More specifically, the findings suggest that labor market uncertainty and demand uncertainty are systematically associated with greater use of contingent staff. Institutional factors such as licensure by the Drug Enforcement Agency were found to be important influences on contingent staffing among drug treatment units. Moreover, expectations and norms from the immediate organizational context, determined by profit and ownership status, are strong predictors of the use of non-traditional staff. Clearly, institutional environment impacts organizational use of externalized labor.

Studies of Employment Externalization in Higher Education

The antecedents of employment externalization have not been widely studied in higher education. The notable exception are the studies by Baldwin and Chronister (2001), Ehrenberg and Zhang (2004), and Gappa and Leslie (1993). Baldwin and Chronister (2001) and Ehrenberg and Zhang (2004) study the forces driving full-time OTT faculty employment, whereas Gappa and Leslie (1993) focus on administrators' rationales for part-time faculty employment.

Based on their interviews with the administrators of top ranking university, Gappa and Leslie (1993) distinguish several categories of forces driving part-time faculty employment: external forces; financial factors; institutional and educational factors.

The first group of factors includes *external forces*. Part-time hiring involves legal issues that deans and departmental chairs may inevitably confront if part-timers are present. These include benefits required by state laws and the legal liability that comes with them, contractual agreements that may lead to stipulated unemployment compensation, retirement and other benefits. State system policies adopted by legislatures or statewide systems of public colleges and universities often stipulate the amount of instruction that may be performed by part-timers and impose limits on the budget designated for part-time appointments. Academic program reviews, common in state systems and used as a comprehensive assessment of quality, sometimes explicitly discuss the limits imposed when using part-time faculty, thus limiting reliance on such faculty for schools affected by these regulations. Collective bargaining is another mechanism that may affect the decision of university administrators to rely on part-timers. If the latter are included in a bargaining unit, either exclusively or in combination with traditional

faculty, the unit is more likely to establish an effectively led movement to secure the rights of part-timers. Collective bargaining contracts affect the rules governing who teaches and who decides who teaches, as well as how much any one person can teach. All these and other rules may seriously limit institutional ability or undermine institutional motivation to employ part-timers. The influence of regional and professional accrediting agencies represents another powerful external force that affects a school's employment of part-time faculty. Gappa and Leslie (1993) note that the standards of the six voluntary regional accrediting associations vary in the degree of specificity with which they address the use of part-time faculty. At the time of study, the Western, North Central, and New England associations did not have any standards concerning the use of part-time faculty. The Northwestern, Southern, and Middle States associations changed approaches over time. Other large-scale forces that affect part-time faculty employment include faculty unions, national commission reports, and suggestions by governmental and professional groups, such as the Modern Language Association (Gappa and Leslie, 1993).

The second major category of driving forces of part-time employment is *financial factors*. Gappa and Leslie (1993) explain, for example, how state budgeting processes are related to the hiring of part-time faculty in public institutions. This lengthy process, starting with fall budget requests for the following fiscal year, proceeds through the bureaucracy of the state system, the governor's budget office and legislative committee staff, and finishes when the appropriations for the current fiscal year reach the institution shortly before the beginning of the Fall Term. More often than not, appropriations for the current fiscal year fall considerably short of plans while enrollment strikes its highest point. As a result, institutions resort to "flexible," last-minute hiring of part-time faculty

to reconcile the gap between growing enrollment pressures and inadequate funds to support this enrollment. This annual pattern, authors note, has been eradicating the full-time faculty base, stripping the ability of state universities affected by fluctuations in state appropriations to effectively control their staffing policies.

Aside from state budgeting issues, institutions experience one or another type of fiscal pressure. This, combined with fluctuations in student enrollment, leads to two patterns of part-time faculty employment. At times of fiscal stringency and low enrollments, part-time faculty are used as a buffer against hard times. In this case, their numbers go down. This allows full-time faculty teaching loads to be held constant against fluctuating enrollments. On the contrary, when fiscal stringency is present but an institution experiences growing enrollments, schools find it difficult, due to financial limitations, to meet the increase in enrollment using traditional full-time faculty. To keep up with growing enrollment numbers without exceeding their limited financial resources, they tend to substitute part-time faculty for full-time faculty.

The third reason for part-time faculty employment in contemporary academia involves *institutional and educational factors*. Institutional policies, perspectives and values may have a direct impact on the ability and willingness of a school administration to extensively rely on part-timers. For example, in some institutions the faculty staffing process is left at the full discretion of an administrative official, while in others the policy of the board of trustees requires a certain percentage of faculty to be employed full-time via tenure lines. Similarly, some schools have very explicit policies about permissible work loads for part-time faculty, while others leave it unstipulated. Another force that shapes a school's staffing policies with respect to part-timers is that of market factors.

Part-time workers are almost exclusively drawn from a local pool. Variability of the latter depends on the institutional location and the particular mix of academic fields at the institution, and this therefore affects institutional capacity to employ part-time faculty. For example, colleges and universities in urban areas benefit from a surplus of available talent, whereas in rural locations the pool of candidates for part-time positions is much smaller. Similarly, in some disciplines, the market is notoriously abundant. Gappa and Leslie (1993) note that English and the humanities were repeatedly cited as having more people seeking work than there were jobs available.

In addition to institutional reasons, Gappa and Leslie (1993) distinguish a group of educational reasons for employing part-time faculty. These include two main factors: the need for teachers in the basic, lower-division core courses of the undergraduate curriculum and the need for teachers with a certain type of professional expertise (e.g. practitioners from business or the music industry). The first group helps institutions to accommodate large numbers of undergraduates, while the second brings unique combinations of theoretical and practical knowledge into the classroom. The latter also comes with professional ties to the outside world which are valuable to programs that require access to "state-of-the-art equipment or front-of-the-curve ideas and practices" (p. 122). Gappa and Leslie's study is an excellent source of empirically grounded hypotheses for employment externalization in higher education.

Ehrenberg and Zhang's (2004) study utilizes an economic framework to assess the driving forces of OTT full-time faculty employment. Apparently, the main rationale for non-traditional employment assumed here is the need for cost savings. The focal predictor variables in the longitudinal analysis focusing on four-year colleges and

universities are: the average salary per full-time tenured or tenure-track faculty members; the average salary of non tenure-track faculty members; and the funds per full-time equivalent (FTE) student that the institution has available in order to employ faculty. The dependent variable is the number of full-time OTT faculty per FTE student. All models are estimated in logarithmic form and include institutional and year fixed effects to control for the difference in the nature of the curriculum, the research intensity of the institution, and any other omitted variables that might impact the usage of different types of faculty members. The outcome of the study suggests that the declining relative salaries of full-time, non tenure-track faculty members played a role in their increasing relative usage during the period of study (1989-1997). Clearly, the results of this study suggest that colleges and universities use OTT faculty employment as a resource saving mechanism.

Baldwin and Chronister (2001) discuss the social context of contemporary higher education, emphasizing its impact on the growing reliance on OTT full-time faculty. The external factors that promote externalization include: loss of public confidence and trust in and criticism of tenure; the decline in government support; changes in federal legislation eliminating the mandatory retirement age; the rise of new technologies that facilitate and transform the way in which education is delivered; increasing competition for students coming from the new era “convenience institutions”; and growing externalization outside higher education that facilitates public acceptance of externalization in institutions of higher learning. The rising cost of education is one of the central internal factors affecting externalization. In the attempt to keep up with adequate levels of compensation, the labor-intensive sector of higher education does not

experience a comparable increase in productivity. This, combined with growing pressures for quality and research productivity, leads to a devotion to research and scholarship amongst traditional faculty. The employment of full-timers off the tenure line addresses the need for teachers at lower cost. Growing enrollment, changing student demographics, increasing numbers of non-traditional students, and fewer traditional students all create a requirement for more and new kinds of teachers. With a need for more faculty in the face of uncertainty about student demands, non-tenure track appointments become more attractive to colleges and universities. The state of academic labor markets with abundant Ph.D. graduates perpetuates externalization from the supply side.

Overall, employment externalization is driven by a number of complex antecedents ranging from financial factors to institutional factors and inspired by significant shifts in consumer and producer markets. The existing level of our knowledge and understanding of externalization along with conceptual developments by organizational theorists, lays out the foundation for the present study.

CHAPTER III

CONCEPTUAL FRAMEWORK

Placing the phenomenon under study in a conceptual framework allows for systematic hypothesis generation. Although not without its limitations, this approach allows for the organized pursuit of antecedents leading to conceptually informed empirical models. A number of organizational theories are helpful in attempting this task with reference to employment externalization. Pfeffer and Salancik's (1978) analysis of willful organizations depending on their environments for resources along with Thompson's (1967) study of organizations in action help to account for the pressures and constraints created by a technical and task environment. At the same time, Meyer and Rowan's (1977) institutional theory developments account for institutional environments, including, for instance, regulatory professional bodies. Rogers' (1983) ideas regarding the adoption of innovations assist in accounting for internal organizational factors that influence the degree of externalization. In combination these theoretical works create a foundation for the following conceptual framework.

Theoretical Arguments

The conceptual framework for this study is constructed around the model of variation in externalization levels presented in Fig. 1 (p. 9). Environmental pressures create an organizational need to externalize. At the same time organizational and environmental constraints limit the extent of externalization. The interplay of pressures

and constraints brings the system to equilibrium. Facilitators are the forces that make possible the effects of either constraints or pressures and tilt the system in the direction of the interaction. What are the specific environmental and organizational pressures, constraints and facilitators that together shape the level of externalization in a given organization? Three theories that address the what and why of organizational choice are helpful in this pursuit: resource dependency theory (Pfeffer and Salancik, 1978; Thompson, 1967), institutional theory (Meyer and Rowan, 1977) and the theory of organizational innovation (Rogers, 1983).

Organizations are created to pursue goals. They strive to preserve their autonomy and discretion over their goal pursuit. At the same time, organizations require resources for goal pursuit. Usually, resource acquisition presupposes interactions with others, outside the organization, who control those resources. This leads to the organization's dependency on the environment. The constant search for a balance between the two opposing forces of autonomy and dependency fuels organizational development and assures a dynamic struggle for survival.

Because external circumstances are not guaranteed, organizations are constantly faced with uncertainty in their external environment. This leads both institutional and resource dependence perspectives to postulate that organizational choice is limited by a variety of external pressures (Meyer, et. al. 1983; Pfeffer and Salancik, 1978), and that organizations must be responsive to external demands and expectations in order to survive (Meyer and Rowan, 1977; Pfeffer and Salancik, 1978). The two theories view the environment through different lenses, however. Resource dependency theory emphasizes the technical or task environment, whereas institutional theory focuses on the pressures

and constraints of the institutional environment. The pressures and constraints emphasized by resource dependency theory are financial, technical and human (Pfeffer and Salancik, 1978), while those emphasized by institutional theory concern regulatory structures, governmental agencies, laws, courts and professions (Scott, 1987).

Despite the similarities in their view of the connection between organizations and their external environments, institutional and resource dependency theories have opposing views regarding the organizational pursuit of autonomy and influence. Resource dependency theory assumes that organizations exercise some degree of control or influence over their external conditions, defined as their resource or task environment. They undertake a variety of strategies to "somehow alter the situation confronting the organization to make compliance less necessary" (Pfeffer, 1982). For instance, when an organization has a high dependence on a resource that it cannot do without and which it cannot control directly, Pfeffer and Salancik (1978) suggest that organizations are particularly likely to engage in two strategies for handling their resource dependence: 1) develop an alternative source of the resource; or 2) divest themselves entirely of the need for the resource. In contrast, institutional theory emphasizes compliance with the environment defined as institutional environment. Compliance occurs through reproduction or imitation of existing organizational structures, activities and routines in response to state pressures, the expectations of professions, or the collective norms of the institutional environment (DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Meyer and Scott, 1983). Until now, the concept of self-interest has not been well elaborated in institutional theory (Oliver, 2006).

Challenged by their external environments, self-interested organizations are likely to adapt by introducing an organizational innovation (e.g. employment externalization) that would resolve a conflict. However, various organizational characteristics are likely to affect the degree of innovative implementations. Rogers (1983) suggests that a different rate of adoption of an innovative solution to a problem depends on the perceived relative advantage and compatibility of such innovation with the values and needs of the focal organization.

The amalgamation of institutional theory, resources dependency theory and organizational innovation theory yields a set of theoretical propositions that explain inter-organizational variation in the extent of the employment externalization. When organizations are faced with external pressures (e.g. demand growth) that push them to expand their output, the technological base needs to be adjusted accordingly in order to achieve the balance of the organizational components (Thompson, 1967). The choice of how to handle this expansion will vary depending on the set of environmental and organizational characteristics.

Some organizations will choose to simply expand their technology along traditional lines, whereas for others this expansion may be restricted by such obstacles as limited resources. I call this *an obstacle argument*.

In other instances inherent characteristics (e.g. size) may enable organizations to buffer themselves against the pressures of external environments, thus diminishing the need to deal with pressures. I call this a *buffer argument.* An organization's dependence on its environment limits its organizational autonomy. Moreover, if the sources of

dependency are themselves unstable, uncertainty increases for the focal unit and may constrain organizational choices for response strategies.

Units capable of reducing dependency and uncertainty will be more successful in preserving autonomy for coping with external pressures. Thus, organizations maintaining stable and predictable flows of resources may be better positioned to avoid dependency on the unpredictable parts of the environment and will be more willing to undertake risky investments in their technological expansion along traditional lines. By the same token, organizations possessing symbolic power (e.g. via prestige) with respect to external agents may be better able to avoid the common pressures or find other effective ways of coping. I call this a *power/dependency argument*.

When dependence on external factors cannot be avoided, organizations will strive to satisfy the demands of external assessors to assure their survival. The demands of external assessors may come from customers/clients, government, professional associations or legal regulations. Depending on the nature of the assessor's demands, they will constrain or perpetuate the adaptation to contingencies. For instance, if clients' demands are to lower production costs, organizations who comply will lose purchasing power and therefore the potential ability to cope with pressures in an expansive manner. As a way out, they may resort to innovative solutions with a lower cost. In contrast, if a professional association prohibits the use of alternative solutions to cope with pressures, the unit will have more incentive to deal with the technological expansion in a traditional way. I call this *an assessment argument*. In some cases, the external environment may facilitate an innovative solution which provides readily available resources. For instance,

an excessive supply of labor within a particular labor market provides a necessary resource to organizations already seeking externalization. I call this a *supply argument*.

Up to this point, this review has implicitly assumed that traditional technological expansion is a more costly endeavor than an innovative solution. However, for some organizations this may not be the case. Organizations may differ in their perception of the relative financial advantage of innovative solutions as opposed to traditional ones (a *relative advantage argument*).

Some organizations may find the innovative way of expanding technology highly compatible with their internal organizational needs. For instance, depending on the composition of employees and their needs or particular organizational sub-goals, organizations may find that implementing an innovative solution will not only help to address the balance of organizational components but also achieve a better balance in other organizational areas (*compatibility with need argument*).

The forces thus described are the pressures, constraints and facilitators for externalization. They are located either in the organization itself or in the outside environment. Table 1 provides a summary of the above discussion along the six dimensions and indicates the theoretical foundations of each.

Table 1. The Theoretical Framework for the Study of Determinants of Employment Externalization in Academic Institutions

Sources of Pressure / Nature of Driving Force	**Environment**	**Organization**
Pressures to externalize	Growing demand and pressures for expansion (demand argument, resource dependency theory) Client demand for cost reduction (assessment argument, institutional theory)	Limited resources (obstacle argument, resource dependency theory) Relative financial advantage (a relative advantage argument, diffusion of innovation theory)
Constraints on externalization	Suggestions by professional associations (assessment argument, institutional theory)	Size (buffer argument, resource dependency theory)
Facilitators of externalization	High supply of labor (supply argument)	Organizational sub-goals (compatibility with need argument, diffusion of innovation theory)

The arguments and principles developed above will now be applied to the context of higher education organizations. First, I review the state of the higher education environment at the time of the study. Second, I examine some contextual characteristics that may have created pressures for the employment of contingent faculty. Third, I develop specific hypotheses explaining the inter-organizational variation in the degree of externalization in higher education.

Higher Education: Context and Driving Forces of Externalization

As with other organizations, colleges and universities face increasing environmental uncertainty. When environmental uncertainty threatens their ability to rely on a particular resource and they lack the ability to control the uncertainty directly, they will then employ adaptive strategies to allow themselves to reduce their dependence on a critical resource. If the reliance on traditional faculty is threatened by external pressures, externalization of academic employment may be an acceptable solution. In the next section, I discuss some specific factors that may be fueling the externalization of employment in higher education institutions.

The central environmental contingency facing higher education in the U. S. in the 20th century is the growing demand for the baccalaureate diploma. The number of college students has grown from slightly below 2 million in the 1940s to over 12 million in the 1980s (Schofer and Meyer, 2005), to 17.5 million in 2004 (IPEDS, 2004). Virtually all higher education institutions, guided by the norms of organizational rationality, attempted to respond to the growing interest by admitting more students and consequently increasing their enrollments. Logically, enrollment growth has produced pressures to

expand the “technological base” by requiring more faculty in order to attend to the needs of the growing student body. On the other hand, higher education suffers from a rising costs problem (Massy and Wilger, 1992). This, combined with a dramatic withdrawal of federal and state support for higher education led to rapid increases in tuition levels which in turn provoked much public dissatisfaction and criticism (Breneman and Finney, 1997). As higher education institutions draw their legitimacy from public recognition of their purpose and function, they are forced to respond to such criticisms. The clash between rising costs and growing public dissatisfaction on the one hand and attempts to satisfy growing demand for higher education on the other prompts colleges and universities to find cheaper than traditional ways of expanding their capacity. Externalizing employment is a way to resolve this issue. The specific years this study focuses on are from 1987 to 2003. The policy environment in these years provides a colorful illustration of the tensions between demand and costs.

Although the late 1980s were characterized by economic upheaval and stability for higher education, the 1990s saw the most dramatic changes in the financial structure of higher education. Much of the change is linked to the business cycle of the 1990s and the shifting financial commitments of the state. The decade started with a recession (Breneman and Finney, 1997) followed by an economic boom starting at about the middle of the decade (Kane, 2003). Real GDP growth per capita had fallen dramatically short in 1990, reaching its lowest level in 1991 at -1.5 percent and crawling back up slowly after 1992, reaching its highest levels in 1997-1999 at 3.2 percent. The unemployment rate mirrored the trend by rising to its highest level of 7.5 percent in 1992-1993 and decreasing to 4 percent in 2000.

As a consequence of the recession, state and federal governments decreased their spending on higher education (Gold, 1995; Callan, 1994). Moreover, the economic downturn coincided with a surge in other state expenditure priorities. Higher education had been forced to compete with other sectors of state government, such as prisons, K-12 education, welfare and Medicaid, for an increasingly smaller portion of state discretionary funds (Breneman, 1997). As a result, state appropriations fell relative to personal income and as a share of total state spending in the course of the 1990s.

As competition for state dollars increased and higher education appropriations as a share of total institutional revenue declined, colleges and universities turned to student tuition and fees for revenues. The amount of tuition at public institutions grew from 15 percent of total revenues in the late 1980s to about 18 percent by the mid 1990s. State appropriations as a share of total revenue in public colleges and universities fell from over 40 percent in the late 1980s to 32 percent by the mid 1990s (Digest, 2003). The situation did not improve with the arrival of the economic boom in the mid 1990s. Due to growing Medicaid expenses, state governments were not able to substantially increase financial flow into higher education and the share of state appropriations in school revenues stagnated at 32 percent, while tuition levels stayed the same as during the recession. These trends, combined with the increasing cost of education per student, had put public universities in a situation of financial stringency.

Private institutions were also faced with rising costs pressures and had followed the trend by increasing their tuition charges (Breneman and Finney, 1997). Cost per student rose by approximately the same amount as the net tuition paid per student- over 40 percent (Kane, 1997). The revenue share from tuition charges at private schools

increased from 40.4 percent to 42.5 percent between 1990 and 1995 and continued to grow for the rest of the decade (Digest, 2003). Although the sources of those cost increases are not well understood, the main suspects include the rising costs of inputs, an expansion in the level or quality of activities being performed and an increase in inefficiency (Clotfelter, 1996).

However, despite the dramatic growth in tuition charges, enrollments across the higher education spectrum continued to grow in the 1990s (Heller, 1999). In the period between 1980 and 1990 the enrollment in 4-year colleges and universities had increased from over 6 million to almost 9 million students.

The combination the of dramatic increase in tuition sticker prices (by 91 and 83 percent in public and private four-year colleges respectively) and the growing interest in the baccalaureate diploma had quickly translated into a public dissatisfaction with the high cost of college education. Many private schools failed to fill the spaces at the posted prices and were forced to implement financial discounts (Breneman and Finney, 1997). In a study of 147 private colleges and universities conducted in the mid 1990s, tuition discounts increased by more than 28 percent between 1990 and 1995. In some small private colleges only about 10 percent of the freshman paid the published tuition price (Breneman and Finney, 1997). To keep up with the increasing demand for places, while at the same time controlling the cost of education, colleges and universities continued an already existing trend of employment externalization. During the period between 1987 and 2003, the average share of part-time faculty in all degree-granting higher education institutions grew from 34 percent to 46.2 percent.

In addition to the financial and demand pressures, other major changes have been occurring in the higher education system over the course of the last century that may have contributed to the need for organizational flexibility. Specifically, as the system of higher education rapidly moves into the era of mass higher education (Trow, 2005), more and more students are drawn from non-traditional populations (Baldwin and Chronister, 2001). This leads to several consequences: demand for a diverse and flexible "menu" of career-oriented courses and programs that in turn require faculty with corresponding training; unpredictability of enrollment patterns due to high rates of "drop in" and "drop out," which require flexible staffing arrangements; and the increasingly weak academic preparation of both traditional and non-traditional students, which requires faculty with a distinct set of pedagogical expertise. Technological changes have led to fierce competition from new types of higher education providers termed by Finn (1998) as "convenience institutions" and further contributed to the already high environmental pressures. Such institutions provide training in popular subjects at a bargain tuition price. Notwithstanding the quality of such education, as their numbers grow they put increased competitive pressure on traditional institutions.

Contextual pressures are many and they exert a powerful influence on higher education institutions, shaping their policies, values, choices and strategies. However, not all schools are equally susceptible to these pressures, with some being able to better cope or buffer themselves. Accordingly, if the pressures lead higher education institutions to externalize faculty, the ability to cope with such pressures will result in higher or lower levels of externalization. What are the sources of inter-organizational variation? Do all schools face similar pressures? Or do some schools face higher pressures due to cost and

demand pressure than others? Once the pressures are considered, do all schools have an equal ability to cope with or buffer themselves from the pressures? What are the characteristics of the schools and their environments which explain the difference? The factors that explain inter-organizational variation among academic institutions form the central question of inquiry in this study.

Sources of Inter-College/University Variation

Although contextual pressures prompt "technological base" expansion in academic institutions via an expansion in the number of faculty members, such expansion may encounter several organizational and environmental constraints. For example, as the constraint argument suggests, financial stringency may restrict organizational capacity to expand because expansion is a costly endeavor. The buffer argument suggests that some schools may be well-buffered from the demand pressures and hence avoid the pressing need for an expansion of the faculty body. For instance, larger schools may find it easier to sustain such pressures without dramatically changing their structures. The dependency argument postulates that some schools may be less dependent on their environment – especially on its less predictable components—and may thus avoid following the course of action dictated by common pressures. For example, they may possess enough power (prestige) or draw their resources from sufficiently stable and predictable sources to allow them to simply ignore the pressures or deal with them effectively. The assessment argument suggests that an institution's coping strategies will depend on the related preferences of the external assessors. For instance, students' and parents' concerns with the rising cost of higher education (Kane, 1999) may lead colleges and universities to

avoid costly methods of expanding their technological base. On the other hand, preferences and recommendations of accrediting associations with respect to faculty employment may limit a school's alternatives for cheaper expansion via externalization (Elman, 2003). .

Colleges and universities that are not able to avoid or buffer the pressures of growing demand, but find themselves too constrained to grow along traditional lines, may choose to rely on an alternative solution of employing non-traditional faculty. This tendency will be facilitated as suggested by the need argument if employing non-traditional faculty to address environmental pressures also helps to address internal organizational needs that were already there. For instance, the presence of large numbers of female traditional faculty may generate the need for short-term or flexible substitutes to cover maternity leaves or other absences due to family commitments. Equally, the need of particular disciplines (e.g. business) to attract faculty to teach "real life" courses may facilitate and even encourage employment externalization. In addition, as the supply argument posits, access to Ph.D. graduates in the labor market will further facilitate externalization in academic institutions as they have large pools of well qualified but unemployed faculty to draw from. The surplus of course varies substantially between academic disciplines. As a result, different institutions (and the fields within them) face different labor markets when acquiring faculty, with some, e.g. humanities, (Gappa and Leslie, 1993; Baldwin and Chronister, 2001) being more oversupplied with qualified candidates than others. Therefore, field composition in a given institution will affect the level of externalization.

Study Hypotheses

Tentative evidence exists to support these conceptual ideas and arguments in studies of institutions' employment of OTT part-time and full-time faculty (e.g., see Gappa and Leslie, 1993; Baldwin and Chronister, 2001). However, a large-scale empirical study which attempts to understand the driving forces of the dramatic changes in faculty employment is still missing. Clearly, multivariate modeling across large numbers of institutions is an important and necessary next step. Accordingly, on the basis of the conceptual arguments and considering the range of empirical information available, I have identified ten hypotheses that explain the institutional variation in the proportion of part-time faculty used by four-year baccalaureate colleges. The choice of hypotheses is guided by the conceptual framework and a set of developed theoretical arguments as well as the available empirical data. However, some of the variables (size of business program, selectivity index and student demand) appeared to be of low quality due to the large proportion of missing values or the non-random nature of missing pattern. These variables were excluded from the analysis. Hypotheses and variables that are not empirically tested or used in the models are preserved for consistency but are marked with an asterisk in later text to indicate their special status. All in all the following theoretical arguments will be tested in this study: obstacle, buffer, power/dependency, assessment, relative advantage, need, supply. Pressure argument will not be tested due to incomplete data.

The implicit assumption in the theoretical argument and consecutive hypotheses is that higher education institutions prefer traditional faculty over contingent faculty in order to preserve the quality of the education they provide, unless the opposite is

explicitly discussed. The time hypothesis reflects the general belief that the share of contingent faculty has been increasing in the higher education institutions. The remaining hypotheses are theoretically or empirically grounded and are supported by the existing literature.

Hypothesis 1 (Growth hypothesis): The share of externalized faculty has been increasing over time, all other things being equal. Given empirical data the share of non-traditional faculty has been increasing over time since 1970s.

**Hypothesis 2: Schools experiencing high student demand may employ more non-traditional faculty*. Colleges and universities are facing growing student demand that creates a pressure to expand. As they grow and employ more faculty some of the new faculty may be employed off the traditional track.

Hypothesis 3: Schools with a low core educational revenue per student may tend to employ more non-traditional faculty. Following the logic of the constraint argument I propose that lower-revenue institutions will be more financially constrained in their ability to respond to outside demand pressures in a traditional expensive way via employment of traditional faculty. Therefore, they will resort to a cheaper coping mechanism by employing non-traditional faculty.

Hypothesis 4: Schools with a larger enrollment size will tend to employ a smaller proportion of non-traditional faculty. The logic of the buffer argument leads us to suppose that larger institutions may be able to better buffer themselves from the pressures of the outside environment and thus, avoid employment externalization.

Hypothesis 5: Stability of revenues will be negatively related to the share of OTT part-time and full-time faculty. This hypothesis logically follows from the

power/dependency argument. Institutions faced with pressures to deliver educational services beyond their historic capacities and possessing stable core sources of revenue from student tuition, governmental support and traditional private giving will be less dependent on more unstable elements of organizational environment such as markets for auxiliary products and financial markets. As a result, they will be more prone to make long term commitments to traditional faculty and less inclined to employ non-traditional faculty.

**Hypothesis 6: Institutions with higher prestige will tend to employ fewer non-traditional faculty.* The power/dependency argument further posits that institutions whose environment needs them more than they need the environment or institutions with high prestige will have more freedom to choose a way to respond to pressures or ignore them altogether. Consequently, such schools will prefer to employ traditional faculty and avoid externalization as much as possible.

Hypothesis 7: Institutions whose sticker tuition prices are higher will employ more non-traditional faculty. The assessment argument suggests that schools advertising high tuition prices may be subject to higher cost pressures expressed through parent pressure and other external agents to reduce the cost of education. Faced with external pressure for expansion but constrained by an external assessor's demands to keep the cost low, such schools will be more likely to resort to a cheaper form of faculty expansion—employing non-traditional faculty.

Hypothesis 8: *Institutions that belong to accrediting associations that make explicit suggestions on how to manage contingent faculty employment will employ fewer such faculty.* This hypothesis emerges from the assessment argument but goes in the

opposite direction. Institutions subject to the influence of bodies potentially affecting vital organizational functions may be reluctant to move toward contingent employment if such bodies make explicit suggestions related to the handling of non-traditional faculty employment. This may occur despite growing demand pressures and possible constraints on expansion along traditional lines because non-traditional employment may lose financial significance otherwise associated with it and lead to a loss of normative approval by the environment. Indeed, some regional associations (New England Association of Schools and Colleges, Middle States Association of Colleges and Schools, and Southern Association of Colleges and Schools) include specific suggestions on part-time faculty conditions of employment. Suggestions implying a caring attitude towards part-timers may conflict with the intent to make financial savings which are typically associated with their hiring. Schools ignoring these suggestions in a highly institutionalized environment may lose their legitimacy. Schools subject to such assessments will have less of a financial and institutional rationale for employing contingent faculty.

Hypothesis 9: Institutions paying higher assistant-professor salaries will employ more part-time and full-time OTT faculty. As a relative advantage argument postulates, institutions with higher assistant professors' salaries will find a bigger financial advantage in employing low cost non-traditional faculty than schools with comparatively lower salaries.

Hypothesis 10: Institutions paying higher benefits will employ more OTT part-time and full-time faculty. Once again, following the logic of the relative advantage argument, I hypothesize that in the face of high benefits cost for tenure-line faculty, the

fact that low-cost part-timers and off tenure full-timers typically are not offered or offered lower benefits (Gappa and Leslie, 1993; Anderson, 2002; Baldwin and Chronister, 2002), means that their use will offer a substantial financial gain. The financial advantage of adopting the innovation in question will be higher for such institutions as they will be able to free more resources than others.

Hypothesis 11: *Institutions with a higher proportion of female faculty will employ more non-traditional faculty.* Due to the nature of the career tracks of female faculty, which may include maternity leaves, institutions with larger numbers of female full-time faculty will experience a higher need for short-term substitutes for temporary absent faculty and the need argument suggests will employ more part-time and full-time OTT faculty.

Hypothesis 12: Institutional field composition will be related to the level of non-traditional employment. Clearly, beyond all the broader institution-level factors noted in earlier hypotheses, institutional reliance on non-traditional faculty will depend on the institutions' respective academic field compositions. This hypothesis is backed up by both the need and supply arguments. Some fields will employ more non-traditional faculty because they need them for educational reasons. This argument is particularly pertinent to part-timers who are able to teach a course and at the same time work in their main field of interest, thus bringing real life expertise into the classroom. Other fields will employ more OTT part-timers and full-timers simply because there is a large pool from which to draw such candidates. Yet another set of fields will limit contingent faculty employment and keep it low.

The specific fields for the analysis and designation for high and low categories were chosen on the basis of Gappa's and Leslie's (1993) and Baldwin's and Chronister's (2001) observations of part-timers and full-timers off the tenure track employment and data availability. The fields are business, sociology and English. Three sub-hypotheses related to each field are the following:

*Hypothesis 12a: *Institutions with large business programs (high need) will employ more non-traditional* faculty.

Hypothesis 12b: *Institutions with large social and natural science programs (low need) will employ fewer non-traditional faculty.*

Hypothesis 12c: *Institutions with large humanities programs (high supply) will employ more non-traditional faculty.*

Theoretical propositions, hypotheses and corresponding variables are presented in the Table 2 below. Most hypotheses refer to all non-traditional faculty, while hypothesis 6, which is related to the influence of accrediting associations, applies exclusively to part-timers. The reason for this is the absence of any kind of regulation of OTT full-time faculty employment conditions in the accreditation standards for accrediting associations.

Table 2. Theoretical Propositions, Arguments and Hypotheses

Proposition	**Argument**	**Hypothesis**	**Variable**
High student demand generates external pressure for faculty expansion.	Pressure	*Schools with high student demand will employ more non-traditional faculty	Student demand

Some organizations may not be able to expand their technological base in response to external pressures due to limited resources (Thompson, 1967).	Obstacle	Schools with a low core educational revenue per student will tend to employ more *non-traditional* faculty.	The core revenue per FTE student
Some organizations due to their inherent characteristics (size) may be able to buffer themselves from the pressures of external environment. (Thompson, 1967).	Buffer	Schools with a large size schools will tend to employ a smaller proportion of *non-traditional* faculty.	FTE enrollment
Organizations avoiding resource dependency on unstable element of the environment by maintaining a stable flow of resources from reliable sources will be better able to buffer themselves from the common pressures.	Power/ Dependency	Share of stable/core educational revenues in total revenues will be negatively related to the intensity of employment of *non-traditional* faculty.	Share of core educational revenue in total revenue

(Thompson, 1967).			
*Organizations possessing symbolic power (e.g. prestige) with respect to external agents may be better able to avoid the common pressures or more easily find effective ways of coping (Thompson, 1967).	Power/ Dependency	*More selective institutions will tend to employ fewer *non-traditional* faculty.	*Selectivity index
When dependence avoidance is not an option, an organization will strive to satisfy the demands of external assessors to assure its survival. Depending on the nature of the assessor's demands, this will inhibit or perpetuate the adaptation to contingencies (Thompson, 1967).	Assessment	Institutions whose tuition sticker prices are higher will experience higher cost reduction pressures and employ more *non-traditional* faculty. Institutions which belong to accrediting associations that make explicit suggestions on	Tuition sticker price Accreditation

		how to manage part-time faculty will employ fewer *part-timers* than other institutions.	
The extent to which a particular innovation will be adapted depends on organization's perception of the relative financial advantage brought about by such innovation (Rogers, 1978).	Relative advantage	Institutions paying higher assistant professor salaries will employ more *non-traditional* faculty. Institutions paying higher benefits will employ more *OTT part-time and full-time* faculty.	Assistant professors' average salary Assistant professors' average benefits
Some organizations may have a greater need for innovative solution than others (Rogers, 1978).	Need	Institutions with a higher proportion of female full-time faculty will employ more *non-traditional* faculty Institutions with	Proportion of female full-time faculty Number of

		large business programs will employ *more non-traditional* faculty Institutions with large social and natural science programs will employ *fewer non-traditional* faculty	graduates in the field of business per FTE enrollment* Number of graduates in the field of sociology per FTE enrollment
Some organizations may face labor markets that allow easier access to innovative resources (Rogers, 1978).	Supply	Institutions with large humanities programs will employ *more non-traditional faculty*	Number of graduates in the field of English per FTE enrollment

CHAPTER IV

RESEARCH DESIGN AND METHODS

This is a study of the determinants of externalization of faculty employment in baccalaureate institutions over the period of 1987 to 2003. The study focuses on two types of externalized academics: OTT full-time and part-time faculty. The study examines a number of organizational and environmental characteristics that are hypothesized to either serve as constraints or as propagators of externalization.

Data Sources and Variable Operationalization

The data in this study is publicly available data from a variety of secondary sources. The largest share of the data for the study comes from the Integrated Postsecondary Education Data Systems (IPEDS) provided by NCES. Other sources include secondary data sources such as the standards for accreditation of regional accrediting associations: Western (2004), New England (1992), Southern (2001), and Middle states (2002) Barron's profiles of American colleges (2005, 2001, 1999, 1997, 1995, 1993, 1991, 1989, 1987) have been used to collect data on student demand and selectivity, which ultimately could not be used due to high number of missing values.

The study's *dependent variables* are the proportion of part-time and full-time OTT faculty in a given institution. They are calculated as a ratio of the number of part-time and full-time OTT faculty to the total number of faculty employed in the institution. The *independent variables* included in this study correspond to each of the ten

hypotheses presented earlier. They include: full-time equivalent enrollment; tuition sticker price; non-tuition educational revenue per FTE student; core revenue stability (including tuition revenue); selectivity index, the proportion of full-time female faculty; average weighted assistant professor salary; average assistant professor benefits to salary outlays ratio; size of academic fields in two distinct categories: size of the sociology program and size of the English program; and accrediting associations' regulations over part-time faculty employment.

Full-time equivalent undergraduate enrollment (IPEDS) is the natural logarithm of the FTE undergraduate enrollment. IPEDS does not contain data on FTE enrollment for the focal years. In order to obtain these values, I make use of information on full- and part-time enrollments by applying the weights for calculating FTE enrollment provided by IPEDS. The weights are estimated by IPEDS staff using the reported full-time equivalence of part-time enrollments by colleges and universities in the enrollment section of Higher Education General Information System (HEGIS) over the years 1967-1986. Individual weights are averaged across schools and years. As a result of this effort, the recommended weights are: 0.403543 for public four-year institutions and 0.392857 for not-for-profit private four-year schools. Consequently, to obtain FTE enrollment figures I use the following formulas:

Number of full-time students+ number of part-time students*0.403543 for public four year institutions

Number of full-time students+ number of part-time students*0.392857 for not-for-profit private four year institutions

I take a natural logarithm of these numbers to obtain the variable of interest.

Logged tuition sticker price is the natural logarithm of the reported in-state-tuition sticker price for undergraduate studies.

Core educational non-tuition based revenue per FTE student is the natural logarithm of the ratio of the sum of traditional non-tuition educational revenues to total FTE undergraduate enrollment. For public baccalaureate institutions, I define traditional or core educational non-tuition based revenues as state government appropriations and grants; for private not-for-profit baccalaureate institutions, I define revenues in questions as private gifts, grants and contracts. Traditionally, these types of institutions have relied on the specified sources to derive the largest share of their total revenues (excluding tuition revenue) and were directed towards educational process as opposed to auxiliary activities. For example, in the academic year 1995-96, public institutions derived 31.32 percent of revenue from tuition and 42.83 percent from state appropriations and grants, while private not-for-profit institutions derived 58.56 percent from tuition and 9.38 percent from private gifts, grants and contracts (NCES, 1999). Tuition revenue is excluded from this measure in order to avoid multicollinearity problems in the model where tuition sticker price is present.

Stability of educational revenues is computed as the sum of core revenues over total current fund revenue.

Both revenue and stability variables are computed using necessary adjustments for the fact that IPEDS collected financial information differently in the period including and following year 1995. The adjustments were based on the recommendations of the NCES manual (NCES, 2000). It is the important to note that although the NCES manual offers a convenient system of cross-walk from financial data collected before 1995 to

data collected after 1995, the formulas do not perfectly compensate for discrepancies, thus introducing unavoidable noise in the data.

Selectivity index is the index based on the original index computed by Barron's profile of American Colleges. Barron's profile uses the following quality categories to develop an index: the median entrance examination scores for the freshman class; the percentage of freshmen scoring 500 and above on verbal reasoning and 600 and above on mathematics reasoning sections of the SAT I; the percentage of freshman scoring 21 and above and 27 and above on the ACT; the percentage of freshmen who ranked in the upper fifth and upper two-fifths of their high school graduating class; the minimum class rank and GPA required for admission (if any). Based on these characteristics Barron's profile develops an index that includes six categories: most selective, highly competitive, very competitive, competitive, less competitive, noncompetitive. The index for this study takes the form of a dummy variable and equals 1 for most selective, highly competitive, very competitive and competitive institutions; and 0 for less competitive and noncompetitive institutions.

Proportion of full-time female faculty is calculated as a ratio of full-time female faculty to total full-time faculty.

Assistant professors' salary is calculated as natural logarithm of the assistant professors' salaries averaged across men and women for faculty on nine-month contract length.

Assistant professors' benefits ratio variable is calculated as follows. The total amount spent on benefits by the institution yearly is multiplied by the proportion of assistant professors in total full-time faculty. This approximates the amount of total

benefits paid to the assistant professors. Then this number is divided by assistant professors' salary outlays. Only faculty on the nine-month contract length are included in these calculations.

Size of academic field in business, humanities and social sciences are variables represented by the natural logarithm of the number of completions per FTE student at the undergraduate level in various disciplinary fields. These variables correspond to the three categories of fields discussed in hypothesis 10: supply high (English), need high (business) and social sciences.

Accrediting association is a dummy variable that marks schools likely to be affected by regulations of regional accrediting associations in the years when they had explicit regulations regarding employment of part-time faculty. Similar information was not available for OTT full-timers and as a result this variable is only applicable to part-time faculty analysis. This variable is manually created based on my analysis of aforementioned guidelines for accreditation issued by regional accrediting associations. Regional associations are matched with institutions based on the location of the institution and the regional designation of the association by state. An institution is assigned a value of 1 if the corresponding association had a clause in the policy statement in a given year that suggested how to handle part-time faculty, and 0 otherwise. The institutional membership in the six accrediting associations is defined as follows:

1) Western Association of Schools and Colleges—California and Hawaii.

All schools in my dataset located in these states are considered to be under the influence of the accrediting standards of this association. The standards of the Western Association do not have any specific guidelines on part-time faculty policies (Gappa and

Leslie, 1993; Western Association of Schools and Colleges, 2004). As a result schools in this category received 0 for accrediting association variable for all years.

2) New England Association of Schools and Colleges—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont.

All schools located in these states receive a value of 1 on the variable of interest for the years 1993-1999 and a value of 0 for all other years. This corresponds to the fact that the standards for accreditation for years 1992-2005 have explicit suggestions on developing clear policies regarding part-time faculty and the necessity to avoid excessive reliance on part-timers (New England Association of Schools and Colleges, 1992). Gappa and Leslie (1993) have indicated the absence of such regulations in the previous years.

3) North Central Association/ The Higher Learning Commission - Arkansas, Arizona, Colorado, Iowa, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, North Dakota, Nebraska, New Mexico, Ohio, Oklahoma, South Dakota, West Virginia, Wisconsin, Wyoming.

According to the accrediting standards issued in 2001 (North Central Association, 2001) and prior conclusions of Gappa and Leslie (1993), this organization does not have specific regulations regarding part-time faculty. As a result, all schools in the aforementioned states get a 0 for the corresponding variable.

4) Northwest Association of Accredited Schools—Alaska, Washington, Oregon, Nevada, Idaho, Montana, Utah.

This organization accredits only post-secondary non-degree-granting institutions among higher education organizations. Since the institutions in my dataset are not in this

category, the assumption is made that its regulations won't affect decision-making strategies of four-year degree-granting baccalaureate colleges and universities. All the schools located in the above listed states are given a value of 0 for the accreditation variable.

5) Southern Association of Colleges and Schools—Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia.

This accrediting association had explicit suggestions concerning part-time faculty for all the years I consider in the dataset (Gappa and Leslie, 1993; Southern Association of Colleges and Schools, 2001). Consequently, institutions located in these states all get a value of 1 for the accreditation variable for all years in the dataset.

6) The Middle States Commission on Higher Education—Washington DC, Delaware, Maryland, New Jersey, New York, Pennsylvania, US Virgin Islands.

According to Gappa and Leslie, this association had some regulations in 1990. Whether or not regulations on part-time faculty existed before that year remains unclear and a "no" is assumed for the purposes of this research. According to the standards publication issues in 2002, the association had specific suggestions on part-timers' policies. Based on this information, I assign a value of 0 to the accreditation variable for years 1987-1989 and value of 1 for years 1991-1999. A summary of the above information is presented in Table 3.

Table 3. Accrediting Association Variable Values by Years

Accrediting Association	Accrediting association=1	Accrediting association=0
Western	———————	1987-2003
New England	1993-2003	1987-1991
North Central	———————	1987-2003
Northwest	———————	1987-2003
South	1987-2003	———————
Middle States	1991-2003	1987-1989

Data Structure and Time Period

The analysis is concerned with the organizational and environmental factors that impact upon the variation in the extent of employment externalization in baccalaureate colleges and universities. Specifically, I employ two models to address my research question. The dependent variables for the two models are the proportion of OTT part-time and full-time faculty employed by an institution. Since my interest lies in examining organizational behavior across different schools and over time, my investigation demands a dataset that would accommodate both the spatial and temporal dimensions of the phenomenon. To meet this goal, I have developed two panel datasets that incorporate annual indicators of the relevant organizational and environmental characteristics over a significant period of time.

For two different models, I created a dataset for the population of baccalaureate colleges and universities as presented in the IPEDS dataset. The dataset includes eight years over the focal period of 1987, 1989, 1991, 1993, 1995, 1997, 1999 and 2003 for part-timers and five years over the period of 1993, 1995, 1997, 1999, 2003 for OTT full-timers. The time period which covers mainly the 1990s is of special interest because the main environmental characteristics that create pressures for externalization were especially pronounced in the higher education policy environment as discussed earlier.

The two datasets for OTT part-time and full-time faculty models are also different in the variables that they include. Specifically, the dataset for OTT full-timers does not contain the accreditation variable due to the absence of relevant information in the accreditation requirements documents. In addition, a dummy variable to represent each year reflects the difference in the time coverage of the datasets. Table 4 summarizes the differences in the two datasets.

Out of a total of 3808 observations for the part-timer's dataset, 559 (13%) observations correspond to public colleges and 3,249 (87%) to private nonprofit institutions. 2,632 (71%) schools are baccalaureate colleges and universities, and 1,176 (29%) are baccalaureate liberal arts institutions according to the Carnegie classification. The number of unique institutions in this dataset is 612. Out of a total of 2533 observations for the OTT full-timers dataset, 359 (13%) observations correspond to public colleges and 2,174 (87%) to private nonprofit institutions. 1,744 (70%) schools

Table 4. Comparison of OTT Part-time and Full-time Faculty Original Datasets.

Independent Variables	**Dependent Variables**	
N	3808	2533

	Proportion of part-time faculty	**Proportion of full-time OTT faculty**
Full-time equivalent enrollment	Yes	Yes
Tuition price (logarithm)*	Yes	Yes
Educational revenues per FTE student (logarithm)*	Yes	Yes
Stability of core revenues	Yes	Yes
Proportion of female faculty	Yes	Yes
Assistant professor salary (logarithm)*	Yes	Yes
Benefits ratio	Yes	Yes
Accreditation dummy	Yes	No
Size of supply high field (logarithm)	Yes	Yes
Size of a need high field (logarithm)	Yes	Yes
Size of low fields (logarithm)	Yes	Yes
Dummy for year 1989	Yes	No
Dummy for year 1991	Yes	No
Dummy for year 1993	Yes	No
Dummy for year 1995	Yes	Yes
Dummy for year 1997	Yes	Yes
Dummy for year 1999	Yes	Yes
Dummy for year 2003	Yes	Yes

are baccalaureate colleges and universities, and 789 (30%) are baccalaureate liberal arts institutions according to the Carnegie classification. The number of unique institutions in this dataset is 606.

Unfortunately, the original IPEDS dataset is missing a large number of data. After listwise deletion of available institution-year data points in part-timer dataset case, the dataset with complete cases retains only 2163 observations comprised of 457 institutions (55% of the entire dataset missing). Similarly, the full-time OTT faculty dataset retains 1410 (48% of the dataset is missing) complete cases comprised of 438 institutions. Table 5 presents descriptive statistics for the complete case datasets for OTT full-time and part-time faculty. Table X and Y present descriptive statistics on original complete cases datasets for part-time and OTT full time faculty.

Table 5. Descriptive statistics for original complete cases dataset.

	Part-timers N=2546	**OTT Full-timers N=1694**
Full time equivalent enrollment (log)	7.14	7.18
	(0.57)	(0.56)
Tuition sticker price* (log)	4.04	4.12
	(0.52)	(0.51)
Educational revenues per FTE* (log)	2.53	2.74
	(1.03)	(0.99)
Stability of traditional revenues	0.72	0.77
	(0.14)	(0.14)
Proportion of female faculty	0.37	0.38

	(0.13)	(0.12)
Average assistant professor salary* (log)	5.25	5.26
	(0.16)	(0.16)
Benefits ratio	0.26	0.28
	(0.10)	(0.10)
Accreditation	0.48	
	(0.50)	
Size of English Program	-4.01	-3.98
	(1.04)	(1.04)
Size of Sociology Program	-4.75	-4.73
	(0.96)	(0.94)
Dependent Variable	0.31	0.25
	(0.18)	(0.29)
Year 1989	0.09	
	(0.29)	
Year 1991	0.16	
	(0.37)	
Year 1993	0.16	
	(0.37)	
Year 1995	0.16	0.23
	(0.36)	(0.42)
Year 1997	0.12	0.19
	(0.32)	(0.39)
Year 1999	0.12	0.18
	(0.32)	(0.38)
Year 2003	0.11	0.17
	(0.31)	(0.38)

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

St. Dev. is shown in parenthesis

Table 6. Descriptive statistics for minimum and maximum for original complete datasets

	Part-timers N=2546		**OTT Full-timers N=1694**	
	min	max	min	max

FTE enrollment (log)	3.87	9.48	3.87	9.46
Tuition sticker price* (log)	-0.49	5.08	-0.49	5.08
Educational revenues per FTE* (log)	-9.24	5.73	-1.99	5.73
Stability of traditional revenues	0.22	1.00	0.22	1.00
Proportion of female faculty	0.00	0.89	0.03	0.87
Average assistant professor salary* (log)	4.09	5.67	4.26	5.67
Benefits ratio	0.00	0.79	0.00	0.59
Accreditation	0.00	1.00		
Size of English program	-7.48	-1.72	-7.48	-1.86
Size of sociology program	-8.81	-2.28	-8.81	-2.28
Dependent Variable	0.00	0.90		
Year 1989	0.00	1.00		
Year 1991	0.00	1.00		
Year 1993	0.00	1.00		
Year 1995	0.00	1.00	0.00	1.00
Year 1997	0.00	1.00	0.00	1.00
Year 1999	0.00	1.00	0.00	1.00
Year 2003	0.00	1.00	0.00	1.00

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

Complete case analysis is generally inappropriate, however, since it allows inferences to be made only about the proportion of the population that would provide responses for all relevant variables in the analysis (Little and Rubin, 2002). Since the aim of the project is to make inferences about the entire population, it is critical to address the problem of the missing data in a satisfactory manner.

Procedures and Method

Addressing the missing data problem

First, it is necessary to take a look at the pattern of missing data to assure its random nature (MAR-missing at random). I identify the percentage of missing cases in the dependent and independent variables by year, control type, Carnegie classification and revenue category. Revenue category was generated by dividing the dataset into five groups with equal number of observations, where the first group represented the poorest schools and the last the richest. For part-time faculty share, the proportion of missing data ranges from 12.1 percent in 2003 to 23.2 percent in 1999, but is approximately the same in each year. The exception is 1991, when only 6.9 percent of cases had missing values. Public schools have 16.8 percent missing, while private schools settle on a similar value of 14.7 percent. Baccalaureate colleges have data missing in 16.9 percent of cases, while liberal arts baccalaureate ones are missing 10.2 percent. The share of missing cases by revenue groups fluctuates between 15.58 percent and 10.54 percent with a slight tendency for wealthier schools to have fewer missing data. Similarly, for the OTT full-timers dataset, the share of missing data from year to year ranges between 8 and 18 percent, with 2003 having the lowest share. Public schools are missing 9 percent of cases, while private schools suffer from a slightly higher value of missing data at 16 percent. Baccalaureate colleges have 18 percent of missing cases, while liberal arts baccalaureate colleges have 8 percent of missing values.

The pattern of missing data on the dependent variables suggests a similar picture. Most variables have a roughly similar number of cases regardless of the category of the

institution they fall into. The exception is the number of graduates in the field of business. In both datasets, 45 percent of data are missing for liberal arts colleges, whereas only about 10 percent are missing for other baccalaureate institutions. It is possible that the high rate of non-response is due to liberal arts colleges not having business departments. This violates the assumption of the data being missing at random. For this reason it is best to exclude this variable from the analysis. Table 7 summarizes the extent of missing data in each of the relevant variables for both datasets. Clearly, addressing the missing data problem in a satisfactory manner is required.

Table 7. Patterns of missing data.

Variable	Percent of missing cases. (PT)	Percent of missing cases. (OTT FT)
Dependent Variable	17	15
Full time equivalent enrollment	6	4
Tuition sticker price	5	2
Revenue	19	12
Stability of traditional revenues	4	5
Proportion of female faculty	4	3
Average assistant professor salary	16	13
Benefits ratio	20	14
Size of business field	23	21
Size of English field	23	18
Size of field of sociology	19	16
Accreditation dummy	0	N/A

Little and Rubin (2002) provide a taxonomy of missing-data methods. Based on the review of the literature they generate four non-mutually exclusive methods of handling missing data. Two categories of particular interest here are imputation-based

procedures and model-based procedures. In imputation-based procedures, the missing values are filled in and the resultant completed dataset is analyzed by standard methods. Commonly used procedures for imputation include hot deck imputation, where recoded units in the sample are used to substitute values; mean imputations, where means from sets of recoded values are substituted; and regression imputation, where the missing variables for a unit are estimated by predicted values from regression on the known variables for that unit. Model-based procedures are a broad class of procedures generated by defining a model for the observed data and basing inferences on the likelihood or posterior distribution under that model, with parameters estimated by procedures such as maximum likelihood.

To address the missing data problem in this study, I use a model-based procedure termed multiple imputations. The logic for multiple imputations is derived from a more widely used imputation-based method of regression imputation. The latter computes the regression of Y_k on $Y_1 ... Y_{k-1}$ based on the R complete cases, and then fills in the missing values with the predicted Y_k obtained from this regression. The regression might include various kinds of variables and take on any parametric form to improve the predictions. Multiple imputation refers to the procedure of replacing each missing value by a vector of D>= 2 imputed values. The D values are ordered in the sense that D completed data sets can be created from the vectors of the imputations. Replacing each missing value by the first component in its vector of the imputations creates the first complete dataset; replacing each missing value by the second component in its vector creates the second completed data set, and so on. Essentially, it is a regression method repeated multiple times and generating multiple datasets. Standard complete data methods are used to

analyze each data set. When the random draws from the predictive distribution of the missing values under a particular model of non-response are used as D sets of imputations are repeated, the D complete data inferences can be combined to form one inference that properly reflects uncertainty due to non-response under that model. The model of non-response assumed in this analysis is MAR. The specific mathematical formulae utilized to combine inferences from several imputed datasets are discussed by Carlin et. al. (2003). Statistical software "Stata 9" or higher provides tools for researchers to generate imputed datasets as well as produce estimates based on combined data. As in regression imputation, each variable is imputed based on a specific statistical model. Table 8 presents a series of models for imputation of each variable. Five independent datasets are produced at the end of the process.

$$IMPUTED_{s,t} = \alpha + \beta E_{s,t} + YD_t + \varepsilon_{s,t},$$

where $IMPUTED_{s,t}$ is the variable that is being imputed, $E_{s,t}$ is the vector of variables used to fit the model, D is the set of dummy variables for years and $\varepsilon_{s,t}$ is a random term with standard properties. Table 8 lists the variables included in vector E for each imputed variable.

After performing multiple imputations and deleting outliers, the part-time faculty data set contains a total of 3,796 observations. The following description is based on the first imputed dataset. There are between 413 and 550 colleges and universities in each year repeated over eight years. Out of all the observations 3,239 correspond to private universities and 557 to public. In terms of the Carnegie classification employed at the time the data were collected, 1,176 observations are those of liberal arts baccalaureate colleges and 2,620 are those of baccalaureate colleges and universities. The mean college

Table 8. Imputation models for multiple imputations.

Imputed var/predictive vars	Year dummies	Control type	Carnegie category	Total number of full time faculty	Part-timers share	Full time OTT faculty	Tuition sticker price	Revenue	Stability of traditional revenues	Proportion of female faculty	Average assistant professor salary	Benefits ratio	Size of English field	Size of field of sociology
Part-timers share	X	X	X	X		X	X	X	X	X	X	X	X	X
Full time OTT faculty	X	X	X	X	X		X	X	X	X	X	X	X	X
Full time equivalent enrollment	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tuition sticker price	X	X	X	X	X	X		X	X	X	X	X	X	X
Revenue	X	X	X	X	X	X	X		X	X	X	X	X	X
Stability of traditional revenues	X	X	X	X	X	X	X	X		X	X	X	X	X
Proportion of female faculty	X	X	X	X	X	X	X	X	X		X	X	X	X
Average assistant professor salary	X	X	X	X	X	X	X	XX	X	X		X	X	X
Benefits ratio	X	X	X	X	X	X	X	XX	X	X	X		X	X
Size of English field	X	X	X	X	X	X	X	X	X	X	X	X		X
Size of field of sociology	X	X	X	X	X	X	X	X	X	X	X	X	X	

Note: X presents a variable in the linear form and XX refers to quadratic form.

size in the data set is 1,206 students (exp(7.09)) ranging between the minimum of 48 students (exp(3.87)) and the maximum of 15,197 students (exp(9.52)). The mean non-tuition revenue per FTE student expressed in constant dollars of 1982 is $13 (exp(2.58)) ranging from the minimum of $.03 (exp(-3.31)) to the maximum of $309 (exp(5.73)). The mean proportion of part-time faculty is 0.33, ranging from nearly zero to 0.89.

The full time OTT faculty dataset contains 2,522 complete observations after multiple imputations have been performed. For each of the five years of data there are from around 460 to almost 530 schools. Out of the total number of observations 2,164 correspond to private and 358 to public colleges and universities. Most schools are classified as baccalaureate by the Carnegie classification employed at the time (1,732), while a smaller number are classified as liberal arts baccalaureate (790). The mean school size is 1,163 students (exp 7.06) ranging from the minimum of 62 (exp (4.14)) to the maximum of 12,843 students (exp(9.46)). School mean non-tuition revenue per student expressed in constant dollars of 1982 is $52 (exp (3.96)) with a minimum of $.61 (exp (-0.49)) and a maximum of $149 (exp (5.01)). For further information on the datasets, refer to Tables 9 and 10. Descriptive statistics do not vary substantially across imputed datasets.

Table 9. Descriptive Statistics for Key Variables for Selected Datasets

	Dataset 1	**Dataset 2**	**Dataset 3**	**Dataset 1**	**Dataset 2**	**Dataset 3**
	Part-timers N=3697			**OTT Full-timers N=2522**		
Full time equivalent enrollment (log)	7.10 (0.61)	7.10 (0.61)	7.10 (0.61)	7.11 0.61	7.12 (0.61)	7.11 (0.61)
Tuition sticker price* (log)	3.97 (0.52)	3.98 (0.52)	3.98 (0.52)	4.04 (0.52)	4.05 (0.52)	4.04 (0.52)

Educational revenues per FTE* (log)	2.58	2.58	2.57	2.77	2.60	2.79
	(1.01)	(1.02)	(1.01)	(1.02)	(1.04)	(1.07)
Stability of traditional revenues	0.72	0.72	0.72	0.75	0.77	0.75
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Proportion of female faculty	0.37	0.37	0.37	0.39	0.39	0.39
	(0.13)	(0.13)	(0.13)	(0.12)	(0.12)	(0.12)
Average assistant professor salary* (log)	5.24	5.24	5.24	5.24	5.24	5.24
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Benefits ratio	0.27	0.27	0.27	0.29	0.29	0.29
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)
Accreditation	0.47	0.47	0.47			
	(0.50)	(0.50)	(0.50)			
Size of English Program	-4.88	-4.87	-4.87	-4.72	-4.84	-4.95
	(0.98)	(0.97)	(0.97)	(0.96)	(0.94)	(0.97)
Size of Sociology Program	-4.13	0.33	-4.14	-3.92	-4.25	-4.28
	(1.05)	(0.18)	(1.06)	(1.09)	(1.10)	(1.15)
Dependent Variable	0.33	0.11	0.33	0.27	0.37	0.27
	(0.18)	(0.31)	(0.18)	(0.30)	(0.37)	(0.30)
Year 1989	0.11	0.11	0.11			
	(0.31)	(0.31)	(0.31)			
Year 1991	0.13	0.13	0.13			
	(0.34)	(0.34)	(0.34)			
Year 1993	0.14	0.14	0.14			
	(0.34)	(0.34)	(0.34)			
Year 1995	0.14	0.14	0.14	0.21	0.21	0.21
	(0.35)	(0.35)	(0.35)	(0.41)	(0.41)	(0.41)
Year 1997	0.14	0.14	0.14	0.21	0.21	0.21
	(0.35)	(0.35)	(0.35)	(0.41)	(0.41)	(0.41)
Year 1999	0.12	0.12	0.12	0.19	0.19	0.19
	(0.33)	(0.33)	(0.33)	(0.39)	(0.39)	(0.39)
Year 2003	0.12	0.12	0.12	0.18	0.18	0.18
	(0.33)	(0.33)	(0.33)	(0.39)	(0.39)	(0.39)

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

St. Dev. is shown in parenthesis

Table 10. Descriptive statistics for minimum and maximum for selected datasets.

	Dataset 1		**Dataset 2**		**Dataset 3**		**Dataset 1**		**Dataset 2**		**Dataset 3**	
	Part-timers N=3697						**OTT Full-timers N=2522**					
	min	max	min	max	min	max	min	max	min	max	min	max
FTE enrollment (log)	3.87	9.63	3.87	9.63	3.87	9.63	3.87	9.63	3.87	9.63	3.87	9.63
Tuition sticker price* (log)	-0.49	5.08	-0.49	5.08	-0.49	5.08	-0.49	5.08	-0.49	5.08	-0.49	5.08
Educational revenues per FTE* (log)	-3.31	5.73	-3.31	5.89	-3.31	5.73	-3.18	5.73	-3.18	5.73	-3.18	5.73
Stability of traditional revenues	0.19	1.00	0.19	1.00	0.19	1.00	0.19	1.00	0.19	1.00	0.19	1.00
Proportion of female faculty	0.02	0.89	0.02	0.89	0.02	0.89	0.03	0.95	0.03	0.95	0.03	0.95
Average assistant professor salary* (log)	4.09	5.74	4.09	5.74	4.09	5.74	4.26	5.74	4.26	5.74	4.26	5.74
Benefits ratio	0.00	0.97	0.00	0.97	0.00	0.97	0.00	0.98	0.00	0.98	0.00	0.98
Accreditation	0.00	1.00	0.00	1.00	0.00	1.00						
Size of English program	-8.81	-2.28	-8.81	-2.28	-8.81	-2.28	-8.81	-2.28	-8.81	-2.28	-8.81	-2.28
Size of sociology program	-7.61	-0.99	-7.61	-0.99	-7.61	-0.99	-7.61	-1.64	-7.61	-1.64	-7.61	-1.64
Dependent Variable	0.00	0.90	0.00	0.90	0.00	0.90	0.00	1.00	0.00	1.00	0.00	1.00

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

Multicolinearity

Multicolinearity in this study is address by extracting tuition-based revenue from the measure of core educational revenues. In the original design, the educational revenue variable included tuition revenue in addition to other core sources. This, however, has caused high correlation between revenue measure and tuition sticker price (0.7). To avoid multicolinearity issues, the final version of the variable excludes tuition revenue and preserves non-tuition sources of core revenues. Presently, the correlation matrices for

both datasets exhibit relatively low correlations among the variables employed in a single regression equation. The maximum correlation found in the part-time faculty dataset is 0.54 - between average assistant professor salaries and FTE enrollment. For the full-time OTT faculty dataset, the maximum correlation is 0.55 - between assistant professor average salary and FTE enrollment. Refer to Table 11 and 12 for more details on correlations.

Method of Data Analysis

The analytic methodology employed in this study is called advanced-panel data methods. Given the continuous nature of the dependent variables, I employ a pooled time-series linear regression approach [PTSA] to analyze the data. The PTSA technique is well-suited to the examination of patterns of variation across several units observed over a period of time with a continuous dependent variable (Sayrs, 1989). In contrast with cross-sectional designs, where the *institution* is the unit of analysis, this statistical approach has *institution-year* as its unit of analysis.

Panel data estimation: fixed vs. random effects

Although my models include a number of explanatory variables, it is likely that some unobserved time-invariant institutional characteristics are correlated with the explanatory variables. Some of these characteristics could be included in the model and controlled for. For instance, they may include control type or religious orientation. However, there are likely to be many others that are not easily measured or are simply unavailable in the current data set. A good example of such a variable is organizational

culture. Each institution has a unique set of unspoken rules and traditions that affect its decision-making process. Institutional culture is likely to be related in unique ways to all the variables included in the model, implying a non-zero correlation between unobserved effects and explanatory measures. Statistical tools applicable to these kinds of situations in panel datasets include estimators for fixed and random effects.

Table 11. Correlation Matrix for Part-time Faculty Model (Imputed Dataset #1)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
FTE enrollment (log)	1																	
Tuition sticker price* (log)	0.02	1.00																
Educational revenues per FTE* (log)	-0.07	0.01	1.00															
Stability of traditional revenues	0.13	0.35	0.33	1.00														
Proportion of female faculty	-0.10	0.04	-0.02	0.16	1.00													
Average assistant professor salary* (log)	0.54	0.32	0.10	0.13	-0.05	1.00												
Benefits ratio	0.16	0.39	0.12	0.26	-0.19	0.21	1.00											
Accreditation	0.00	0.03	0.01	0.01	0.12	0.01	-0.05	1.00										
Size of English Program	-0.01	0.49	0.21	0.11	-0.05	0.36	0.34	0.07	1.00									
Size of Sociology Program	0.08	0.45	0.19	0.01	-0.14	0.41	0.30	0.11	0.66	1.00								
Dependent Variable	-0.05	-0.04	-0.29	0.12	0.24	-0.13	-0.01	0.03	-0.21	-0.27	1.00							
Year89	-0.02	-0.10	-0.12	-0.22	-0.09	0.00	-0.10	-0.15	-0.02	0.00	-0.05	1.00						
Year91	-0.03	-0.05	-0.13	-0.21	-0.05	0.00	0.01	0.00	0.04	0.02	-0.05	-0.13	1.00					
Year93	-0.02	-0.01	-0.14	-0.19	-0.02	0.00	0.05	0.06	0.05	0.05	0.02	-0.14	-0.15	1.00				
Year95	-0.01	0.04	-0.13	-0.16	0.02	-0.01	0.02	0.06	0.01	0.03	0.00	-0.14	-0.16	-0.16	1.00			
Year97	0.00	0.07	0.23	0.33	0.06	-0.01	0.03	0.06	-0.02	0.02	0.03	-0.14	-0.16	-0.16	-0.16	1.00		
Year99	0.06	0.06	0.20	0.31	0.08	0.04	0.02	0.04	-0.01	0.01	0.05	-0.13	-0.14	-0.15	-0.15	-0.15	1.00	
Year03	0.06	0.11	0.17	0.32	0.10	-0.06	0.12	0.06	-0.01	-0.10	0.04	-0.13	-0.14	-0.15	-0.15	-0.15	-0.14	1.00

Table 12. Correlation Matrix for OTT Full Time Faculty Model (Imputed Dataset #1).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FTE enrollment (log)	1													
Tuition sticker price* (log)	0.02	1.00												
Educational revenues per FTE* (log)	-0.08	0.02	1.00											
Stability of traditional revenues	0.11	0.38	0.29	1.00										
Proportion of female faculty	-0.08	0.03	-0.05	0.08	1.00									
Average assistant professor salary* (log)	0.55	0.34	0.12	0.18	-0.01	1.00								
Benefits ratio	0.15	0.33	0.12	0.24	-0.17	0.19	1.00							
Size of English Program	-0.08	0.39	0.25	0.16	-0.01	0.30	0.26	1.00						
Size of Sociology Program	-0.02	0.35	0.19	0.06	-0.07	0.33	0.20	0.60	1.00					
Dependent Variable	-0.22	-0.18	-0.11	-0.09	0.13	-0.26	-0.16	-0.08	-0.11	1.00				
Year95	-0.03	-0.02	-0.25	-0.32	-0.03	0.00	-0.05	0.00	0.00	-0.02	1.00			
Year97	-0.02	0.01	0.22	0.18	0.01	-0.01	-0.04	-0.05	-0.01	-0.02	-0.27	1.00		
Year99	0.05	0.01	0.17	0.25	0.04	0.06	0.00	0.02	0.02	0.01	-0.25	-0.25	1.00	
Year03	0.05	0.08	0.12	0.27	0.08	-0.07	0.12	0.01	-0.04	0.04	-0.24	-0.24	-0.23	1.00

The error term in the linear regression equation applied to the panel data sets has two distinct components: institution-specific but time-invariant (e.g. control, religious affiliation) and randomly varying across institutions and time. The fixed effects estimator allows arbitrary covariance between institution effects and the explanatory variables, while the random effects estimator does not. The benefits of the random effects estimator over the fixed effects estimator are such that the RE estimator is generally more efficient than FE, but tends to be inconsistent when covariance between the unobserved time-invariance and observed independent variables is zero. If it is not, applying the FE estimator will produce unbiased and consistent, thought inefficient, estimates. Due to the high value placed on lack of bias and consistency, FE is the preferred approach, unless it can be shown that there is no systematic difference between the RE and FE estimators. The Hausman test allows us to formally verify this hypothesis for any particular dataset. The rule of choice then is that one uses the random effects estimator unless the Hausman test rejects the zero correlation hypothesis. Otherwise, the FE estimator is preferred. In the case of the present study, the Hausman test rejected the hypothesis, leading me to adopt the fixed effects estimator.

Model

The linear regression model used to test the theoretical hypotheses in this study is specified as below:

$$PROPORTION_{s,t} = \alpha + \beta E_{s,t} + \delta T_{s,t} + \gamma ER_{s,t} + \eta STAB_{s,t} + \lambda F_{s,t} + \pi SAL_{s,t} + \nu BEN_{s,t} + \psi AC_{s,t} + DISE_{s,t} + DISS_{s,t} + YD_t + \omega_t + \varepsilon_{s,t},$$

where $PROPORTION_{s,t}$ refers to the share of part-time or full-time OTT faculty in school "s" in the year "t"; $E_{s,t}$ is the log of total full-time equivalent enrollment; $T_{s,t}$ refers to

logged tuition sticker price; $ER_{s,t}$ presents non-tuition educational revenue per student calculated as a logged sum of government appropriations at the federal, state and local levels over total full-time equivalent enrollment; $STAB_{s,t}$ is an indicator of stability of revenues computed as the sum of tuition revenue and state government subsidy for public schools and tuition revenue and private gifts and grants for privates over total current fund revenue; $F_{s,t}$ stands for the number of full-time female faculty as a proportion of the total full-time faculty; $SAL_{s,t}$ is a weighted average salary of assistant professors on the 9- to 10-month contract length across male and female faculty; $BEN_{s,t}$ is the benefits ratio of assistant professors, $AC_{s,t}$ 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 (for part-time model only); and $DISE_{s,t}$ is the logged number of completions in English, $DISS_{s,t}$ is the logged number of completions in sociology; YD_t are a set of year dummy variables, where 1987 is the omitted category. And ω_t is school fixed effects and $\varepsilon_{s,t}$ is an error term with the usual properties.

CHAPTER V

FINDINGS

This study has utilized publicly available data sources to test theoretically and empirically grounded hypotheses for what determines the variation in employment externalization in academic institutions over the period of 1987 to 2003 (part-time faculty model) and 1993 to 2003 (OTT full-time faculty model). The descriptive statistics below supply insight into the nature of the datasets. The results section reports the outcomes of the regression analyses and connects them to the hypotheses.

Descriptive Statistics

The part-time faculty dataset contains yearly between 63 (years 1987 and 2003) and 75 (year 1993 and 1995) public institutions and between 310 (year 1987) and 460 (year 1997) private colleges and universities. This is a total of 3796 observations with 475 colleges per year on average. During the period of the study, the size of an average institution has grown from 1,139 students (exp(7.04)) to 1,324(exp(7.19)) from 1987 to 2003. The average tuition sticker price per FTE student increased in absolute dollars from $42 (exp(3.75)) to $62 (exp(4.13)) in constant dollars and non-tuition revenues per FTE student increased from $10 (exp(2.29)) to $20 (exp(3.03)) in constant dollars. Schools relied more heavily on traditional sources of revenue at the end of the period (84 percent of revenue came from traditional sources in 2003) than at the beginning (64 percent in 1987). The average proportion of female faculty grew by 8 percentage points, from 33

percent to 41 percent, and the share of part-time faculty by 5 percentage points, increasing from 30 percent to 35 percent over 17 years. Salaries for assistant professors have slightly decreased on average in constant dollars from $191 (exp(5.26)) to $183 (exp(5.21)), while the share of benefits relative to salary has increased from 23 percent to 30 percent.

The full-time faculty dataset contains a total of 2522 observations, with 504 colleges per year on average. There are between 63 (year 2003) and 75 (years 1993 and 1995) public institutions and 398 (year 2003) and 459 (year 1995) private colleges and universities. During the period of the study, 1993-2003, the size of an average institution grew from 1,284 students (exp(7.16)) to 1,163 (exp(7.05)). Tuition sticker price per FTE student increased in constant dollars from $52 (exp(3.96)) to $62 (exp(4.12)) and non-tuition revenues per FTE student increased from $10 (exp(2.27)) to $21 (exp(3.03)) in constant dollars . Schools relied more heavily on traditional sources of revenue at the end of the period (84 percent of revenue came from traditional sources in 2003) than at the beginning (66 percent in 1993). The average proportion of female faculty grew slightly from 36 percent to 41 percent as did the share of full-time OTT faculty, which increased from 26 percent to 29 percent over 11 years. Salaries for assistant professors slightly decreased on average, from $189 (exp(5.24)) to $184 (exp(5.21)), while the share of benefits relative to salary increased from 29 percent to 31 percent.

Table 13 and 14 present yearly descriptive statistics for the imputed dataset #1 for both models.

Table 13. Descriptive Statistics for Key Variables for Selected Years for Dataset #1.

	1987	**1993**	**1997**	**2003**	**1993**	**1997**	**2003**

	Part-timers				OTT Full-timers		
n	415	520	534	460	520	533	461
FTE enrollment (log)	7.06	7.07	7.10	7.19	7.06	7.09	7.18
	(0.59)	(0.63)	(0.62)	(0.59)	(0.64)	(0.62)	(0.59)
Tuition sticker price* (log)	3.75	3.96	4.06	4.13	3.96	4.05	4.12
	(0.47)	(0.52)	(0.49)	(0.49)	(0.52)	(0.51)	(0.48)
Non-tuition Educational revenues per FTE* (log)	2.29	2.24	3.16	3.03	2.27	3.20	3.03
	(0.94)	(0.95)	(0.86)	(0.97)	(1.00)	(0.84)	(0.94)
Stability of traditional revenues	0.64	0.65	0.83	0.84	0.65	0.80	0.84
	(0.09)	(0.09)	(0.12)	(0.12)	(0.09)	(0.15)	(0.13)
Proportion of female faculty	0.33	0.36	0.39	0.41	0.36	0.39	0.41
	(0.13)	(0.13)	(0.13)	(0.10)	(0.13)	(0.13)	(0.11)
Average assistant professor salary* (log)	5.25	5.24	5.23	5.21	5.24	5.23	5.21
	(0.13)	(0.18)	(0.17)	(0.16)	(0.18)	(0.17)	(0.16)
Benefits ratio	0.23	0.28	0.27	0.30	0.29	0.28	0.31
	(0.07)	(0.08)	(0.08)	(0.09)	(0.08)	(0.08)	(0.09)
Accreditation dummy	0.25	0.55	0.54	0.55			
	(0.43)	(0.50)	(0.50)	(0.50)			
Size of English Program	-5.00	-4.77	-4.93	-4.90	-4.67	-4.81	-4.70
	(0.96)	(0.99)	(0.95)	(0.94)	(1.02)	(0.95)	(0.95)
Size of Sociology Program	-4.25	-4.00	-4.09	-4.42	-3.85	-3.95	-4.01
	(1.07)	(1.03)	(0.98)	(1.14)	(1.08)	(1.02)	(1.25)
Dependent variable	0.30	0.34	0.34	0.35	0.01	0.26	0.29
	(0.15)	(0.19)	(0.19)	(0.19)	(0.90)	(0.30)	(0.31)

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

St. Dev. is shown in parenthesis

Table 14. Descriptive Statistics for Minimum and Maximum for Key Variables for Selected Years (Dataset #1).

	1987		**1993**		**1997**		**2003**		**1993**		**1997**		**2003**	
	Part-timers								**OTT Full-timers**					
n	415		520		534		460		520		533		461	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max
FTE enrollment (log)	5.51	9.32	4.14	9.46	3.87	9.46	4.90	9.63	4.14	9.46	3.87	9.46	4.90	9.63
Tuition sticker price* (log)	1.40	4.70	-0.49	5.01	-0.21	5.07	1.24	4.86	-0.49	5.01	-0.21	5.07	1.24	4.86
Educational revenues per FTE* (log)	-1.85	4.77	-1.99	5.22	0.29	5.73	-1.20	5.73	-1.99	5.73	0.29	5.73	-1.20	5.73
Stability of traditional revenues	0.31	0.91	0.19	0.98	0.34	1.00	0.19	1.00	0.19	0.98	0.34	1.00	0.19	1.00
Proportion of female faculty	0.10	0.81	0.03	0.87	0.04	0.85	0.13	0.75	0.03	0.87	0.04	0.85	0.13	0.95
Average assistant professor salary* (log)	4.88	5.73	4.31	5.67	4.44	5.62	4.70	5.66	4.31	5.67	4.44	5.62	4.70	5.66
Benefits ratio	0.02	0.51	0.04	0.97	0.04	0.72	0.00	0.97	0.02	0.79	0.02	0.64	0.00	0.98
Accreditation	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00						
Size of English program	-8.13	-2.91	-7.79	-2.76	-7.72	-3.03	-7.74	-2.86	-7.79	-2.76	-7.72	-3.02	-7.74	-2.86
Size of sociology program	-7.43	-1.72	-7.34	-1.89	-7.32	-1.64	-7.61	-1.72	-7.34	-1.89	-7.32	-1.64	-7.61	-2.16
Dependent Variable	0.01	0.74	0.01	0.87	0.00	0.88	0.01	0.90	0.01	1.00	0.01	1.00	0.01	1.00

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

From 12 theoretically- and empirically-grounded hypotheses, three were supported in the part-time faculty model and none was supported in the full-time OTT faculty model.

Part-time faculty model

Growth hypothesis: The share of externalized faculty has been increasing over time, all other things being equal.

Model 1 (Table 15) shows strong empirical evidence of growth of in part-time faculty share. Dummy variables for 1993, 1995, 1997, 1999, and 2003 are highly significant and have a large practical impact ranging from 0.03 in 1993 and 1995 to 0.05 in 1999 and 2003. Clearly, relative to the base year of 1987 the share of part-time faculty employed by baccalaureate colleges and universities has increased. However, once additional control variables are introduced in Model 2 (Table 15) the significance of year dummy variables nearly disappears. Year 1991 shows a marginally significant decrease in the share of part-timers, years 1997 and 1999 preserve their marginally positive significant impact, whereas the remaining years show no significant change relative to 1987. Clearly, changes in organizational and environmental characteristics account for most of the growth over time.

Model 3 (Table 15) supplies almost no support for the growth hypothesis. Only year 1999 has a positive significant evidence for OTT full-time faculty share growth since 1993 (the base year for this model), which disappears entirely once additional variables are introduced in Model 4 (Table 15).

**Demand hypothesis: Schools experiencing higher student demand will be subject to greater pressures to expand and therefore will employ more non-traditional faculty.*

Unfortunately, this hypothesis could not be tested due to poor data quality on student demand.

Hypothesis 1: Schools with a low core educational revenue per student will tend to employ more non-traditional faculty. Originally, I proposed that lower-revenue institutions will be more financially constrained in their ability to respond to outside demand pressures in a traditional, expensive way by employing traditional faculty. Therefore, they would resort to a cheaper coping mechanism by employing non-traditional faculty. Empirical results have confirmed this hypothesis. A one-percent increase in non-tuition core educational revenues per FTE student leads to 10^{-4} decrease in the part-time faculty share employed by the institution. Although the practical impact is very small, theoretically this is an important finding.

Hypothesis 2: Schools with a larger enrollment size will tend to employ a smaller proportion of non-traditional faculty. The logic of the buffer argument leads us to suppose that larger institutions may be able to better buffer themselves from the pressures of outside environment and thus, avoid employment externalization. However, empirical analysis has proved the opposite to be the case. Schools with larger FTE enrollments tend to employ more part-time faculty. Specifically, a one-percent increase in FTE enrollment leads to 0.0004 increase in part-time faculty share. As suggested by some university administrators, larger schools are likely to be in greater need of part-time faculty to staff lower-level undergraduate courses on an ad hoc basis. Although this explanation is not foreseeable within the theoretical framework employed in the study, it factors in with the practical realities of college and university administrators. Alternatively, larger schools are more likely to follow a decentralized model of power distribution. Under this model,

central administration is more likely to reduce control over the departmental units, which in turn may lead to high departmental flexibility and a decreased sense of an agency in the entire organization. Departments subject to financial constraints and pressures of student demand will find more freedom to engage in non-traditional employment.

Hypothesis 3: Stability of revenues will be negatively related to the intensity of employment of OTT part-time and full-time faculty. Originally, I proposed that institutions faced with pressure to deliver educational services beyond historic capacities and possessing stable core sources of revenue from student tuition, governmental support and traditional private giving will be less dependent on the more unstable elements of an organizational environment such as markets for auxiliary products and financial markets. As a result, they will be more prone to make long-term commitments to traditional faculty and less inclined to employ non-traditional faculty. No empirical support was supplied for this hypothesis in the part-time faculty model. The impact of revenue stability is nearly zero according to Model 2 (Table 15). One possible explanation for the lack of any significant impact is that the stability of revenue is likely to be strongly correlated with student demand, as a large portion of school revenue for baccalaureate institutions is derived from tuition. Schools with higher demand may view their revenue flows as stable and predictable and choose their employment choices accordingly. Ideally, the model would include a measure of student demand as well as an interaction of demand and revenue stability. However, as previously noted, a good quality measure of the student demand was not obtained and therefore, the possibility of testing the hypothesis on revenue stability is greatly diminished. A second possible explanation for this non-significant result is the inadequacy of the measure itself. Clearly, a better way of

measuring the financial stability of a school is to consider its endowment. However, endowment measures were not available across time. Future studies should incorporate endowment as a measure of financial stability for better accuracy of the model.

Hypothesis 5: Institutions whose tuition sticker prices are higher will employ more non-traditional faculty. The assessment argument suggests that schools advertising high tuition prices may be subject to higher cost pressures expressed in parental and governmental criticisms. Faced with the external pressures for expansion but constrained by the external assessor's demands to keep costs low, such schools will be more likely to resort to a cheaper form of faculty expansion—employing non-traditional faculty. Contrary to the theorized relationship, empirical results did not show any significant impact of the tuition sticker price variable on part-time faculty proportion. Although tuition sticker price is a good measure of external pressures for cost reduction, it is also likely to be highly correlated with institutional selectivity and prestige. The selectivity variable, however, had been dropped from the analysis due to the low quality of data. Therefore, it is not possible to test this hypothesis with the presently obtainable data. Future inquiry is necessary once data becomes available.

Hypothesis 6: *Institutions that belong to accrediting associations that make explicit suggestions on how to manage contingent faculty employment will employ fewer such faculty.* Institutions subject to the influence of bodies potentially affecting vital organizational functions may be reluctant to move toward contingent employment if such bodies make explicit suggestions related to the handling of non-traditional faculty employment. This hypothesis was not empirically supported. The accreditation dummy variable has a positive impact, which is not statistically significant. The positive

coefficient on this variable is possible due to the following. When an accrediting agency creates a set of specific guidelines on part-time faculty employment and treatment, it creates an institutional framework which reinforces the legitimacy of such employment. If schools feel they have been given an implicit permission, they may more easily resort to part-time faculty services. It is also possible that the effect of accrediting associations is so mild that regulations on part-time faculty may not have any noticeable effect, which would explain the lack of significance. Also a number of omitted variables may interfere in the relationship between part-time faculty share and the accreditation variable, thus diminishing its impact.

Hypothesis 7: Institutions paying higher assistant-professor salaries will employ more part-time and full-time OTT faculty. Institutions with higher assistant professors' salaries will find a bigger financial advantage in employing low-cost, non-traditional faculty than schools with comparatively lower salaries. Contrary to the hypothesized relationship, the empirical model shows that a school's proportion of part-time faculty is unrelated to salary levels. The impact of the salary variable is positive but not significant. Assistant professor salary levels vary substantially across disciplines. It was not possible to fully account for the disciplinary composition of the institutions in this study and thus test the hypothesis. Omitted measures of size of different departments and disciplines may have led to a downward bias in the salary coefficient. Further inquiry is needed to test this hypothesis when better measures on disciplinary composition become available.

Hypothesis 8: Institutions paying higher benefits will employ more OTT part-time and full-time faculty.

I hypothesized that in the face of high benefits costs for tenure-line faculty, the substitutability of low-cost, part-timers and off-tenure full-timers, who are typically offered no or lower benefits (Gappa and Leslie, 1993; Anderson, 2002; Baldwin and Chronister, 2002), will represent a substantial financial gain. The financial advantage of adopting the innovation in question will be higher for such institutions as they would be able to free more resources than others. This hypothesis finds strong empirical support in Model 2 (Table 15). A one percentage-point increase in the benefits ratio leads to 0.21 increase in part-time faculty share. This is a practically large and theoretically important finding. Clearly, the savings of financial resources on benefits serves as a powerful motivator for institutions when it comes to decisions on part-time faculty employment.

Hypothesis 9: *Institutions with higher proportions of female faculty will employ more non-traditional faculty.* Due to the nature of the career tracks of female faculty, which may include maternity leaves, institutions with larger numbers of female full-time faculty will experience a higher need for short-term substitutes for temporary absent faculty and, as warranted by the need argument, will employ more part-time and full-time OTT faculty. Although the coefficient of the share of female faculty is positive, it is not statistically significant. This hypothesis was originally based on the assumption that female faculty are likely to take maternity leaves, which may be inaccurate in contemporary academic institutions. The average age of faculty has been increasing. This suggests that most leaves may be taken outside of academia. Given the increasingly rigorous nature of the tenure-track career, it is also possible that many women who choose academic careers prefer not to have children at all, therefore divesting themselves of the need for leave.

Hypothesis 10: Institutional field composition will be related to the level of non-traditional employment. Clearly, beyond all the broader institution-level factors noted in earlier hypotheses, institutional reliance on non-traditional faculty will depend on the institutions' respective academic field compositions.

Hypothesis 10b: Institutions with large social science fields will employ fewer non-traditional faculty.

Hypothesis 10c: Institutions with large humanities programs (high supply) will employ more non-traditional faculty. None of the field hypotheses was empirically supported for the part-time faculty model. The size of academic fields was measured in this study as a number of graduates in a particular discipline per FTE students. This measure is not comprehensive as it does not capture the university-wide demand for certain disciplines. For instance, although the English field may have relatively few graduates, students from all majors are likely to take a composition course, thus increasing the need for faculty. Future studies should approach this matter in a way that would account for a university-wide demand for various disciplines and expand the number of disciplines incorporated in the model.

OTT full-time faculty model

Neither of the hypothesized relationships were supported in the OTT full-time faculty model.

Growth hypothesis: The share of externalized faculty has been increasing over time, all other things being equal. There is a mild support of this hypothesis in Model 3 (Table 15), where 1999 has a positive significant coefficient suggesting that the share of OTT

full-time faculty has increased in that year relative to 1993 (the reference year). However, once all other variables have been included in the model (Model 4, Table 15) the support for the growth hypothesis disappears entirely. Clearly, the proportion of OTT full-time faculty has not increased significantly in baccalaureate institutions between 1993 and 2003.

All other hypotheses: None of the hypothesized relationships was supported for the OTT full-time faculty model. There are several possible explanations for this lack of significance. Institutions may employ full timers off the tenure track to gain long-term flexibility rather than to save resources. First, flexibility is not a part of the explanatory variables in this study and therefore an omitted variable bias may be affecting the coefficients. Future studies should consider the incorporation of flexibility measures into the model. Secondly, other theories of organizational change and choice should be employed to scrutinize the phenomenon in question, and it must be examined in a variety of contexts, including research universities.

Regression Results

Table 15. Fixed Effects Regression Results for Determinants of Contingent Employment[1].

	Proportion of Part-time Faculty				**Proportion of full-time OTT faculty**			
	Model 1	**Sig**	**Model 2**	**Sig**	**Model 3**	**Sig**	**Model 4**	**Sig**
N	**3697**		**3697**		**2522**		**2522**	
Full-time equivalent enrollment (log)			0.04	*			0.04	
			(0.02)				(0.03)	
Tuition price (log)[2]			0.00				0.01	
			(0.01)				(0.02)	
Non-tuition educational revenues per FTE			-0.01	*			0.00	

student (log) [2]								
			(0.01)				(0.01)	
Stability of core			0.00				-0.01	
revenues			(0.05)				(0.10)	
Proportion of female			0.08				0.11	
faculty			(0.06)				(0.10)	
Assistant professor			0.04				-0.01	
salary (log) [2]			(0.06)				(0.06)	
Benefits ratio			0.21	**			-0.06	
			(0.06)				(0.10)	
Accreditation			0.02					
			(0.01)					
Size of English Field			0.00				0.01	
			(0.01)				(0.01)	
Size of Sociology Field			0.00				-0.01	
			(0.01)				(0.01)	
Dummy for year 1989	0.00		0.00					
	(0.01)		(0.01)					
Dummy for year 1991	0.00		-0.02	+				
	(0.01)		(0.01)					
Dummy for year 1993	0.03	***	0.00					
	(0.01)		(0.01)					
Dummy for year 1995	0.03	***	0.00		0.00		-0.01	
	(0.01)		(0.01)		(0.01)		(0.01)	
Dummy for year 1997	0.04	***	0.03	*	-0.01		-0.01	
	(0.01)		(0.01)		(0.01)		(0.02)	
Dummy for year 1999	0.05	***	0.03	+	0.02	*	0.02	
	(0.01)		(0.02)		(0.01)		(0.02)	
Dummy for year 2003	0.05	***	0.03		0.01		0.00	
	(0.01)		(0.02)		(0.03)		(0.05)	
Constant	0.30	***	-0.23		0.29	**	-0.03	
	(0.01)		(0.27)		(0.06)		(0.36)	
F (degrees of freedom)	(7, 4426) = 15.09	***	(17, 5934)=12	***	(4, 50) = 36.86	***	F(13, 471) = 3.42	** *

***p<0.001, **p<0.01, *p<0.5 +p<0.1

[1]A selectivity index and student demand have been originally included in the analysis as independent variables. However, they were omitted due to poor data availability.

[2]These indicators were divided by price index with the base year of 1982.

School Fixed Effects and Observable Characteristics Regression

Fixed effects estimation does not allow isolation of the effects of characteristics that do not change over time across institutions. In order to identify the effects of time-invariant characteristics, I use a second-stage regression, which uses estimated school fixed effects coefficients as a variable to examine the ability of observable school characteristics to predict the overall school effects. The dataset offers a limited number of such observable school characteristics. They include the Carnegie classification, the control type and the degree of urbanization of the location, the religious status of the institution, whether in institution owns or shares a library, and whether an institution offers remedial services.

The model for this second stage regression is

$\theta_j=\alpha+X_j\beta+e_j$

Here, θ_j is the true measure of the school fixed effect for school j for either type of faculty, X_j is the vector of observable school characteristics held constant over time, α is an intercept, β is the matrix of coefficients measuring the impact of individual school characteristics on overall school fixed effects and e_j is the unobserved error term.

Table 16 contains the robust coefficients for the above equation for both faculty types.

Table 16. Regression Results of Fixed Effects on Fixed Characteristics.

Independent Variables	Part-time	Sig.	Full-time OTT model	Sig.
Ownership Type				
Public school	-0.10	***	-0.25	***
	(0.02)		(0.04)	
Private (omitted)				
Carnegie				
Baccalaureate I Liberal Arts	-0.14	***	-0.24	***
	(0.01)		(0.03)	
Baccalaureate II (omitted)				
Religious affiliation				
Religious	-0.04	**	-0.10	***
	(0.01)		(0.03)	
Independent (omitted)				
Institution offers remedial services				
Yes	0.01		0.03	
	(0.02)		(0.03)	
No (omitted)				
Institution owns or shares a library				
Yes	0.02		-0.36	**
	(0.05)		(0.11)	
No (omitted)				
Degree of Urbanization				
Middle size city	-0.06	**	0.01	
	(0.02)		(0.04)	
Town	-0.05	***	-0.02	
	(0.01)		(0.03)	
Rural	-0.05	**	0.01	
	(0.02)		(0.04)	
Large city (omitted)				
Constant	0.07		0.50	***
	(0.05)		(0.11)	
R^2 adjusted	0.21		0.1565	
F-statistics	21.41	***	15.26	***

The overall power of observable constant school characteristics in these regressions is quite low. The part-time faculty model accounts for 21 percent of the total variance, whereas the full-time OTT faculty model accounts for 16 percent of the total variance. Both models have a statistically significant overall fit as indicated by the F test. Public institutions on average employ fewer part-time and full-time OTT faculty, other things being equal; similarly baccalaureate I (liberal arts) colleges and universities and religiously affiliated colleges externalize less in both directions than baccalaureate II institutions or independent schools. The presence of remedial services at the institution does not make any difference to the extent of non-traditional employment according to these results. Ownership or access to a shared library has a negative impact in the full-time OTT faculty model, meaning that the average level of such employment is lower in schools that have a library. Clearly, institutions in large cities employ more part-timers than any other location type, which supports Gappa's and Leslie's empirical findings (1993). The degree of urbanization of the locale does not make any difference to the extent of employment of full-time OTT faculty.

CHAPTER VI

DISCUSSION

This chapter provides a brief summary of the study, discusses the results and advances ideas on implications of the findings and suggestions for future research.

This study started with the premise that there is a growing trend of non-traditional faculty employment or increasing employment externalization in the academic institutions of the United States. Although the trend is clearly supported by simple statistical graphs, the existing literature so far has supplied very few explanations for the antecedents and driving factors for such employment. Several quantitative and qualitative studies in higher education and industrial organizations have raised the issue and attempted to provide some empirical explanations for why schools employ part-timers and OTT full-timers and why some schools employ more of them than others. Montgomery (1988) and Houseman (2001) have found a positive relationship between benefits provided by the company and part-time employment. Other studies have shown that job complexity, degree of firm bureaucratization and the presence of governmental oversight reduce employment externalization (Davis-Blake and Uzzi, 1993). Lemak, Alexander and Roy (2003) provided empirical support for reduced externalization as a result of the influence of institutional rules and regulations for the hospitals. Ehrenberg and Zang (2004) showed using multiple regressions with fixed effects that colleges and universities increased their reliance on contingent faculty as their relative salaries gradually declined.

This study has addressed the question of the antecedents of employment externalization expressed as part-time and OTT full-time faculty employment, basing its theoretical arguments mainly on resource dependency theory with some elements of institutional theory and theory of organizational innovations. Similarly to previous studies of externalization, the present one has found that financial variables play a key role in organizational choice to employ non-traditional employees. Benefits paid to traditional professors affect positively the employment of part-timers, while educational revenues affect it negatively. However, it remains unclear what factors affect OTT full-time faculty employment. Umbach (2007) has addressed the issue of the quality of student engagement when students are taught by contingent faculty. Although his findings suggested that both part-timers and OTT full-timers are less likely to engage students in "good practices," the latter's interactions with students were much more similar to those of traditional faculty. Is it possible that antecedents of this type of faculty's employment are in fact very similar to traditional faculty? In this case the theory hypothesizing about antecedents of externalization would not apply. Apart from this, OTT full-timers increase organizational flexibility as schools are not bound by the contract of tenure, but instead employ professors on multiple-year contracts. Although flexibility is articulated as an important variable in this study, it has not been measured empirically and therefore an important driving factor has been omitted from the model. Future studies might include various measure of flexibility gains in the empirical model to test this proposition.

The effect of fixed organizational characteristics on the share of non-traditional professors turned out to be quite predictable. Public schools, liberal arts colleges (as

opposed to less prestigious baccalaureate colleges) and religious schools employ fewer such faculty for both part-timers and OTT full timers. Public schools are more likely to be affected by anti-externalization governmental regulations. Liberal arts institutions are more likely to preserve traditional employment due to their organizational culture that puts a premium on preserving traditional academic values. Religious institutions may be inclined to employ traditionally to preserve a strong sense of community originally fostered by the common religious beliefs. The degree of urbanization had an expected effect on part-time faculty employment. Larger cities tend to employ more than any other locale. Cleary, institutions in larger cities take advantage of a large pool of applicants available in the area, which supported the findings Gappa and Leslie (1993) reported in their qualitative study of part-time faculty employment. Locale makes no difference for OTT full-time faculty employment, meaning that urban, rural and all in-between areas employ at the same rate. Once again, this finding points towards the fact that OTT full-time faculty employment follows the path of the traditional academic employment. After all, 2- or 3-year contracts for off-the-tenure-track positions advertised nationally and offering competitive benefits are likely to attract candidates willing to relocate.

Limitations of the Study

When considering the results, it is important to understand that this study is not without its limitations.

First, it is possible that the sample of the institutions used for the study is biased. A large amount of missing data and the need for multiple imputations could have produced

a more homogenous sample than otherwise. Also, it is possible that institutions that did not supply complete information are systematically different from those that did.

Second, although the panel data approach is helpful for tracing the trend in employment externalization and engaging a massive amount of data to test the hypotheses, it also limits the variety of variables that can be included in the analysis. For instance, such an effective measure of financial stability and health as endowment is present for only the more recent years of the study and therefore, could not be used for the whole dataset. Additionally, it proved impossible to collect good quality data for all the years of the study for such variables as selectivity of the institutions and student demand. Selectivity is likely to interact with an institution's posted tuition prices and, therefore, bias its effect. Student demand is related to educational revenue and its stability and, therefore, the absence of this variable is likely to cause further bias.

Third, the study focuses only on baccalaureate institutions. Although it helps to keep the sample relatively homogeneous in terms of large-scale institutional factors, it does not allow accurate generalizations to be drawn beyond this institutional type. Future studies may look at other types of institutions and also replicate this analysis across a number of settings looking for further clues.

Directions for Future Research

This study is a small step forward in our efforts to understand how and why non-traditional faculty employment comes to exist, what benefits its brings to the institutions and at what cost and why some colleges and universities embrace it while others choose

and are able to stay away from it. While some questions were answered, there are many more that are raised by this study.

Although the current literature clearly views part-time and OTT full time faculty as qualitatively similar types of contingent faculty, the results of the current analysis may be leading us towards the idea of them being two distinct categories whose functions and basis for existence differ with respect to the focal organization. The specific question that arises from this is: why do part-time and OTT full-time faculty models have qualitatively different results although in the current literature they are often considered similar types of non-traditional employment? The study is based on the assumption that higher education institutions favor traditional mode of employment and employ contingent faculty out of need rather than preference. The theoretical framework based on this assumption explains some variation in the part-timers' employment, however, it fails to account for any variation in the OTT full time faculty model. Does the logic behind OTT full time faculty employment is based on different assumptions than that of part-time faculty employment? Is it indeed a form of labor externalization? If financial savings are not a benefit of non-traditional full time faculty employment, is flexibility the main motivating force? Do different institutions have differing needs for flexible labor?

Future research might find it fruitful to approach these questions with the tools offered by constructivist research methods oriented towards grounded theory construction. Colleges and university administrators may share valuable insights regarding organizational motivation for OTT full time faculty employment, changes in the power structure associated with it and gains in institutional adaptability to the external environment. Additionally, future studies may explore these questions in depth by

developing and quantitatively testing the conceptual framework that explicitly accounts for the benefits of flexibility. Such conceptual framework may be grounded in ideas gathered through interviews as well as existing literature on organizational adaption. Data for such studies would need to come from specially designed surveys, as to my knowledge IPEDS data does not allow to account for gains in organizational flexibility.

Moreover, the assumption of preference for traditional employment may be questioned and tested. Has the value structure that puts a premium on traditional labor arrangement changed? A study of values and perceptions existing among faculty, administration, government and higher education clientele (students and parents) could improve our understanding of the intricate transformation processes taking place in American academia. Both in-depth interviews, meeting observations and survey data could be helpful in getting insights about the value structure stemming from explicit believes as well as actions and choices exercised by various constituencies. IPEDS and Faculty and Staffing survey data may be helpful in answering these questions, however purposefully and thoughtfully designed instruments would be able to penetrate to the core of the matter as they allow greater degree of flexibility in variable construction.

In a more narrow set up of the driving forces of employment externalization, future studies should expand the number of hypotheses. Factors that may influence the reliance on part-timers and OTT full timers include racial composition of the organization, presence of part-time students, ability of the institutions to assure completion, institutional long term wealth (endowment), more careful measures than those used in the present study of disciplinary structure of the institution, external environmental changes such as economic cycles, fluctuations in investment gains and losses, and changes in the

investments into the fun and health services at the university (recreation, student services). A number of these variables are available through IPEDS database, however most of them are not present for a number of years employed in this study. Although a cross-sectional study would not allow to account for any time trends, it would, however permit to account for a greater number of institutional characteristics including endowment, graduation rates and measures of disciplinary composition.

Beyond the narrow focus of the study, inquiry into driving forces of employment externalization makes one wonder about issues of power distribution and the future image of the university. Who is in charge? Who makes the decisions impacting the long term nature of these complex organizations? What do the power shifts that are inevitable with increased reliance on contingent workforce imply for the quality of undergraduate education, research and community service? In this sense research on part-time and OTT full time faculty employment is tightly related to the big questions modern academia faces at on the beginning of the 21st century. Investigation of these questions would require thorough thinking and theorizing, literature exploration and possible empirical studies focused on a selected aspect.

Additionally, future research should look at the contingent faculty phenomenon in its connection to value set we choose for higher education. How is it linked to the ever growing pressure for research productivity? Is putting the higher premium on research as opposed to teaching justified once we assess the costs of this choice? In this connection, more studies are needed that measure the impact of contingent faculty usage on the quality of undergraduate education, graduation and persistent rates, long term college

influence on students, and student satisfaction. Faculty's satisfaction is another important component of the health of nation's education system. How do all the changes in employment policies affect faculty? How do faculty selection and socialization into the academic profession affect employment choices and values?

REFERENCES

AAUP (2003). Contingent appointments and the academic profession. Policy statement. Retrieved on January 26, 2006. http://www.aaup.org/statements/SpchState/Statements/contingent.htm

Baldwin, R. G. and J. l. Chronister. (2001). Teaching Without Tenure. Policies and Practices fro a New Era. The John Hopkins University Press: Baltimore, MA.

Barry, B. and J. Grant. (1994). Labor force externalization in growing firms. The International Journal of Organizational Analysis, 2(4), 361-383.

Barron's profile of American colleges. (2005). New York: Barron's.

Barron's profile of American colleges. (2001). New York: Barron's.

Barron's profile of American colleges. (1999). New York: Barron's.

Barron's profile of American colleges. (1997). New York: Barron's.

Barron's profile of American colleges. (1995). New York: Barron's.

Barron's profile of American colleges. (1993). New York: Barron's.

Barron's profile of American colleges. (1991). New York: Barron's.

Barron's profile of American colleges. (1989). New York: Barron's.

Barron's profile of American colleges. (1987). New York: Barron's.

Benjamin, E. (1998). Variations in the Characteristics of Part-time Faculty by General Fields of Instruction and Research, The Growing Use of Part-time Faculty: Understanding Causes and Effects. (pp. 45-60). San Francisco: Jossey-Bass Publishers.

Bettinger, E., B. T. Long. (2005). Help or Hinder? Adjunct Professors and Student Outcomes? In R. G. Ehrenberg (Ed.) What's Happening to Public Higher Education? (Westport Ct: ACE Praeger Series on Higher Education, forthcoming).

Breneman, D. W., J. E. Finney. (1997). The Changing Landscape. Higher Education Finance in the 1990s. In (P. M. Callan and J. E. Finney (Eds.) Public and Private Financing of Higher Education. Shaping Public Policy for the Future. The Oryx Press: Phoenix, Arizona.

Callan, P. M. (1997). Reframing Access and Opportunity: Problematic State and Federal Higher Education. In (P. M. Callan and J. E. Finney (Eds.) Public and Private Financing of Higher Education. Shaping Public Policy for the Future. The Oryx Press: Phoenix, Arizona.

Cruise, R. J., Furst, l. G., & Klimes, R. E. (1980). A Comparison of full-time and part-time instructors at Midwestern Community College. Community College Review, 8 (Summer), 52-56.

Curtis, John. (May 26, 2005). Trends in Faculty Status, 1975-2003. Retrieved March 23, 2006. http://www/aaup.org/research/FacstatTrends.htm.

Davis-Blake, A. and B. Uzzi, (1993). Determinants of employment externalization: a study of temporary workers and in contractors. Administrative Science Quarterly, 38 (1993): 195-223.

Ehrenberg, R.G. (2000). Tuition rising: Why college costs so much. Cambridge, MA: Harvard University Press.

Ehrenberg, R.G. (2005). The Changing Nature of the Faculty and Faculty Employment Practice. Retrieved on April 27, 2006. http://www.ilr.cornell.edu/cheri/wp/cheri_wp78.pdf.

Ehrenberg, R. & Zhang L. (2004). The changing nature of faculty employment. Revised Draft. Retrieved at http://www.ilr.cornell.edu/cheri/wp/cheri_wp44.pdf on April 25, 2005.

Elman, S. E. A regional accreditation perspective on contingent faculty appointments. New Directions for Higher Education, 123, 71-78.

Finkelstein, M. (1996). From tutor to specialized scholar: Academic professionalization in eighteenth and nineteenth century America. In Z. Gamson (Ed.), Faculty and faculty issues in colleges and universities. Boston, MA: Pearson Custom Publishing.

Finkelstein, M., Seal, R. K., & Schuster, J. H. (1998). The new academic generation: a profession in transformation. Baltimore: Johns Hopkins University Press.

Finn, C. (1998). Today's academic market requires a new taxonomy of colleges. Opinion. Chronicle of Higher Education, January 9.

Friedlander, J. (1981). Instructional Practices of Part-time Faculty. In M. H. Parsons (Ed.), Using Part-time Faculty Effectively. San Francisco : Jossey-Bass.

Gappa, J. (1984). Part-time faculty: Higher education at a crossroads. (ASHE-ERIC Higher Education Research Report no.3). Washington DC: Association for the Study of Higher Education.

Gappa, J. M., & Leslie, D. W. (1993). The invisible faculty: Improving the status of part-timers in higher education. San Francisco: Jossey-Bass Publishers.

Gold, S. D. (1995). The Fiscal Crisis of the States: Lessons for the Future. Washington, DC: Georgetown University Press.

Haeger, J. D. (1998). Part-time faculty, quality programs, and economic realities. In D. W. Leslie (Ed.), The growing use of part-time faculty: Understanding causes and effects. (pp. 81-88). San Francisco: Jossey-Bass Publishers.

Houseman, S. (2001). Why employers use flexible staffing arrangements from an establishment survey. Industrial and Labor Relations Review, 55 (1), 149-170.

Kalleberg, A. (2000). Nonstandard employment relations: part-time, temporary and contract work. Annual Review of Sociology, 26, 341-365.

Kalleberg, A., J. Reynolds and P. Marsden. (2003). Externalizing employment: flexible staffing arrangement in US organizations. Social Science Research, 32, 525-552.

Kane, T. (1999). The price of admission: rethinking how Americans pay for college. Washington: Brookings.

Lemak, C., J. Alexander and J. Roy. (2003). Why do drug treatment organizations use contingent staging arrangements? An analysis of market and social influences. *Journal of Health and Social Behavior, 44* (2), 180-196.

Masters, J. and G. Miles. (2002). Predicting the use of external labor arrangements: a test of the transaction costs perspective. *Academy of Management Journal, 45* (2), 431-442.

Massy, W. and A. Wilger. (1992). Productivity in postsecondary education: a new approach. Educational Evaluation and Policy Analysis 14 (4), 361-376.

Meyer, J. and B. Rowan. (1978). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology, 83*, 440-463.

Middle States Association of Colleges and Schools. (2002). Characteristics of excellence in higher education. Retrieved on January 24, 2006 http://www.msache.org/msache/content/pdf_files/characteristicsbook.pdf.

Mitchell, T. R. (1997). Border Crossings: Organizational Boundaries and Challenges to the American Professoriate. *Daedalus, 126, issue 4*, 265-291.

Montgomery, M. (1988). On the determinants of employer demand for part-time workers. *The Review of Economics and Statistics, 70 (1),*112-117.

National Center for Educational Statistics. (June, 2000). IPEDS finance data comparisons under the 1997 Financial Accounting Standards for private not-for-profit institutes: a

concept paper. NCES Working paper. Retrieved on January 2, 2005. http://www.nces.ed.org/pubs2000/200014.pdf

National Center for Educational Statistics. (1999). Digest of Educational Statistics. Retrieved on October 24, 2006. http://nces.ed.gov/programs/digest/d99/d99t336.asp

New England Association of Schools and Colleges. (1992). Standards for accreditation. Retrieved on January 24, 2006. http://www.neasc.org/cihe/standards.PDF.

North Central Association of Colleges and Schools/The Higher Learning Commission. (2001). Accreditation of higher education institutions. Retrieved on April 12. 2006.

http://www.ncahlc.org/download/2001Overview.pdf.

Pfeffer, J. and J. Baron. (1988). Taking the workers back out: recent trends in the structuring of employment. In B. M. Staw and L. L. Cummings (eds.), *Research in organizational behavior. An annual series of analytical essays and critical reviews*. (pp. 257-303), Vol. 10. London: Jai Press Inc.

Pfeffer, J., & G. Salancik. (1978). *The External Control of Organizations*. New York, NY: Harper & Row, Publishers.

Rhoades, G. (1996). Reorganizing the workforce for flexibility: Part-time professional labor." *Journal of Higher Education, 67*,6 (1996):626-59.

Rhoades, G. (1998). *Managed professionals: Unionized faculty and restructuring academic labor*. Albany: State University of Press, 1998.

Rogers, E. (1983). *Diffusion of innovations*. New York: The Free Press.

Sayrs, L. (1989). *Pooled time series analysis.* From the series Quantitative Applications in the Social Sciences. Newbury Park, CA: Sage Publications.

Schofer, E. and J. Meyer. (2005). The world-wide expansion of higher education. CDDRL working papers. Retrieved on April 13, 2006.

http://iis-db.stanford.edu/pubs/20801/Schofer-Meyer_No32.pdf.

Southern Association of Colleges and Schools. (2001). Principles of accreditation: foundations for quality enhancement. Retrieved on January 24, 2006. http://www.sacscoc.org/pdf/PrinciplesOfAccreditation.PDF.

Strauss, G. (1974). Job satisfaction, motivation, and job redesign. In G. Strauss, R. Miles. C., Snow. and A. Tannenbaum (Eds.), *Organizational behavior: research and issues* (pp. 10-49). Belmont, CA: Washington.

Thompson, J. (1967). *Organizations in action*. New York: McGraw-Hill Book Company.

Trow, M. (2005). Reflections on the transition from elite to mass to universal access: forms and phases of higher education in modern societies since WWII. Forthcoming in P. Altbach (Ed.), *International handbook of higher education*, Kluwer.

Tuckman, H. P. (1981). Part-time Faculty: Some Suggestions for Policy. *Change, 13* (Jan/Feb), 8-10.

Tuckman, H. and J. Caldwell. (1979). The Reward Structure for Part-timers in Academe. *Journal of Higher Education, 50* (Nov/Dec), 745-760.

Umbach, P. (2007). How effective are they? Exploring the impact of contingent faculty on undergraduate education. The Review of Higher Education, 30(2), 91-123.

Uzzi B. and Z. Barsness. (1998). Contingent employment in British establishments: organizational determinants of the use of fixed term hires and part-time workers. *Social Forces, 76* (3), 967-1007.

Western Association of Schools and Colleges. (November 2004). How to become accredited: procedure manual for eligibility, candidacy, and initial accreditation. Retrieved on Jan 24, 2006. http://www.wascsenior.org/wasc/Doc_Lib/Howpercent20topercent20Becomepercent20Accreditedpercent20(11.04).doc.