



# Sustaining Scholarship in Business Schools

**Report of the  
Doctoral Faculty Commission  
to AACSB International's  
Board of Directors**



# Sustaining Scholarship in Business Schools

Report of the  
Doctoral Faculty Commission  
to AACSB International's  
Board of Directors

**AACSB International – The Association to Advance  
Collegiate Schools of Business**

777 South Harbour Island Blvd., Suite 750  
Tampa, FL 33602-5730 USA  
Tel: +1-813-769-6500  
Fax: +1-813-769-6559  
[www.aacsb.edu](http://www.aacsb.edu)

# Contents

<b>FOREWORD</b>	<b>4</b>
<hr/>	
<b>Executive Summary</b>	<b>6</b>
<b>FINDINGS</b>	<b>6</b>
<b>RECOMMENDATIONS</b>	<b>7</b>
<hr/>	
<b>Introduction</b>	<b>10</b>
<b>DOCTORAL FACULTY COMMISSION CHARGE</b>	<b>10</b>
<b>BACKGROUND</b>	<b>11</b>
<b>THE REPORT</b>	<b>12</b>
<hr/>	
<b>The Problem</b>	<b>13</b>
<b>DEMAND OUTSTRIPS SUPPLY</b>	<b>13</b>
<b>TYPES OF DOCTORAL QUALIFICATIONS</b>	<b>15</b>
<b>DRIVERS OF DEMAND FOR DOCTORAL FACULTY</b>	<b>16</b>
Research mission of business schools	<b>16</b>
Worldwide expansion of MBA programs	<b>18</b>
International quality standards	<b>18</b>
Demographics	<b>19</b>
<b>DOCTORAL FACULTY SUPPLY ISSUES</b>	<b>20</b>
Key findings about doctoral production	<b>20</b>
The incentives are misaligned	<b>22</b>
<b>CONSEQUENCES</b>	<b>23</b>
Rising vacancy rates	<b>23</b>
Market segmentation	<b>24</b>
Salary escalation and inversion	<b>25</b>
<b>THE FUTURE</b>	<b>26</b>
Will the problem persist?	<b>26</b>
<i>If the Problem Persists</i>	<b>26</b>

---

<b>Recommended Actions</b>	<b>28</b>
<b>I. FACILITATE ATTRACTION OF ALTERNATIVE SOURCES</b>	<b>29</b>
Develop “post-doc” and bridge programs for Ph.D’s in other disciplines	<b>29</b>
Introduce or expand doctoral programs for executives	<b>31</b>
Legitimize dual research and non-research tracks	<b>31</b>
Clarify definition of “professionally qualified” faculty	<b>31</b>
<b>II. INCREASE PRODUCTION OF PH.D.’S</b>	<b>32</b>
Initiate new funding sources for business doctoral programs	<b>32</b>
Provide reputational incentives to invest in Ph.D. programs	<b>34</b>
Secure agreement among top producers to increase program intake	<b>34</b>
<b>III. PROMOTE BUSINESS DOCTORAL EDUCATION TO PROSPECTIVE STUDENTS</b>	<b>35</b>
Market doctoral programs and career attractiveness	<b>35</b>
Develop dedicated recruiting channels for doctoral students	<b>35</b>
Attract high quality applicants with special funding	<b>35</b>
Develop and maintain a doctoral program resource site	<b>36</b>
<b>IV. FOSTER INNOVATION IN DOCTORAL EDUCATION DELIVERY</b>	<b>36</b>
Test use of consortia models	<b>36</b>
Use technology to reduce the cost of doctoral education	<b>37</b>
Share information about best practices in doctoral education	<b>37</b>
<b>SUMMARY IMPACT</b>	<b>38</b>
<b>ROLE OF INDUSTRY-LEVEL ASSOCIATIONS</b>	<b>38</b>
<hr/> <b>Appendices</b>	<b>40</b>
<hr/> <b>References</b>	<b>41</b>

## Foreword

The Doctoral Faculty Commission (DFC) was established by the AACSB board of directors to assess widespread concerns related to a significant and worsening doctoral faculty shortage. We needed to have an explicit evaluation backed up by data and indicators of emerging trends. The DFC came back with this report, which clearly describes a potential crisis that calls for action.

It's tempting to put this report aside for now. After all, immediate demand for faculty has temporarily slackened as departments postpone filling open positions due to drastic budget cuts and aging faculty members delay retirement to allow financial markets to catch up. But that would be a mistake. The long-term threat will not go away without intervention to change the course.

Let's be clear about the real doctoral faculty issue. It's not about day-to-day recruiting challenges, escalating faculty salaries, adhering to accreditation standards, or protecting the professoriate. The real threat is to the very core of collegiate business schools and institutions of higher education—scholarship. Doctoral faculty produces the body of knowledge that sustains intellectual inquiry and the ongoing development of a discipline. Any diminishment of our shared objective to advance such knowledge and ground education in solid conceptual frameworks will be a threat to the eventual academic legitimacy of our discipline. At a time when organizations operate in incredibly complex and dynamic environments, when different norms are colliding, and leadership credibility is at the lowest, such a retreat will compromise our ability to serve students and other constituents.

The Doctoral Faculty Commission is chaired by Judy D. Olian, dean, The Pennsylvania State University, and comprised of the following members: Stuart I. Feldman, vice president internet technology, IBM Global Services; Howard Frank, dean, University of Maryland; Daniel R. LeClair, director of knowledge services, AACSB International; Bernard J. Milano, president and trustee of KPMG Foundation; Jone L. Pearce, interim dean, University of California, Irvine; Stephen R. Watson, principal, Henley Management College; and Doyle Z. Williams, dean, University of Arkansas. On behalf of AACSB, I am deeply grateful to them for providing the analysis that clearly describes this threat and recommending school-driven and industry-level actions to deal with it.

I'm convinced that the urgency created by this report will elicit broader support among the higher education, business, and government research communities, but not before business schools themselves take steps to reinvigorate doctoral education. We have begun to see change initiatives resulting from the draft version of this report. Several top schools have pulled together to offer a doctoral student recruitment panel. Associations of business faculty are starting to discuss their responsibilities for doctoral program delivery, recruitment, innovation, and linkages with other disciplines.

AACSB will play a leadership role by facilitating dialogue with university provosts, presidents, and business leaders, assisting faculties and schools to promote doctoral education and academic careers in business, and by exploring reputation incentives to counterbalance the disproportionate influence of MBA rankings. AACSB will work with the Brussels-based European Foundation for Management Education (**efmd**) and other regional associations to better understand faculty markets and doctoral education outside North America. Finally, AACSB will explore the feasibility of implementing the DFC recommendation to motivate additional funding for business research and doctoral education.

We must be mindful that the doctoral faculty issues do not exist in a vacuum. This situation is connected to other serious challenges to management education, such as cutbacks in financial support, rapid growth in weak unaccredited business degree programs, and increasing expectations for accountability. The AACSB International New Issues Committee will continue to scan the environment and facilitate business school efforts to meet these challenges.

Carolyn Woo  
Chair, Board of Directors, AACSB International  
Dean, Mendoza College of Business  
University of Notre Dame

August 2003

## Executive Summary

In August 2002, the AACSB International Management Education Task Force (METF) issued a landmark report, “Management Education at Risk,” which identified and prioritized the most pressing issues facing management education. One of the foremost METF concerns related to an emerging global doctoral faculty shortage in business. The AACSB International Board of Directors responded by creating the Doctoral Faculty Commission (DFC). The DFC was asked to analyze trends related to the supply and demand of business doctoral faculty, assess the magnitude and gravity of the issue, and offer solutions if necessary.

The DFC conducted extensive research. It examined historical data and projected production and demand for doctoral faculty by business schools. Surveys and interviews were conducted among business school undergraduates who might be potential doctoral candidates, and with deans and doctoral program directors. Fairly robust modeling and extrapolation were possible for the US, where data are most accessible. General trends and issues in other countries have been validated through interviews, and commentary alludes to implications for other parts of the world. The DFC also researched a number of doctoral education models around the globe.

### FINDINGS

Unless decisive action is taken to reverse declines in business doctoral education, academic business schools, universities, and society will be faced with an inevitable erosion in the quality of business education and research.

In recent years, the production of new business doctorates has decreased. In the US, for example, business doctorates declined from 1,327 in 1994–95 to 1,071 in 1999–2000, or more than 19 percent. The percentage of doctorates produced by AACSB-accredited institutions also has decreased, to 84 percent in 1999–2000 from 92 percent a decade earlier. Today, the number of doctorates produced by accredited schools is at its lowest level since 1987. Although there are some examples of new programs and marginal increases in enrollment in various parts of the world, local demand has outstripped supply in virtually all countries.

Within five years, the US shortage of business Ph.D.’s is expected to be 1,142; and in 10 years, the shortage will reach 2,419. Although considerable uncertainty about these projections must be acknowledged, the findings take into account an in-depth review of current Ph.D. enrollments, projected demand for business education, faculty retirements, and the typical hiring patterns of Ph.D.’s by accredited and non-accredited schools.

The DFC concluded that doctorally trained individuals are the most essential element in assuring the continued rigor of business education and research conducted in academic, business, and public policy institutions. Ensuring adequate supply must, therefore, be a primary concern from an industry-level perspective. From a school perspective, many deans, department chairs, and program directors face unfilled positions after each hiring season. They confront salary escalation that far exceeds market changes or salary trends in other academic fields and must deal with internal management challenges posed by salary inversion.

Demand for doctoral faculty will continue to increase as the number of MBA providers and students expands globally, business schools strive to meet global standards for quality, and demographic trends drive up undergraduate business enrollment and the proportion of faculty likely to retire.

Substantial increases in production are not expected because of funding and incentive issues. A DFC survey of US program directors and deans suggests that about 80 percent of funding for doctoral programs derives from business schools' own resources. Endowments and university sources, such as fellowships and assistantships, constitute the remainder. Federal and corporate funding supports only a small fraction of the costs. In some instances, costs are somewhat offset by assigning teaching responsibilities to Ph.D. students. Funding models are more variable outside the US, but generally doctoral students are more likely to be self-funded or employed in junior faculty positions.

Unlike other business school programs, such as the MBA, there are few financial or reputational incentives to invest in Ph.D. programs. The advantages to enlarging a Ph.D. program are intangible—increased faculty satisfaction, for example.

DFC research suggests that a significant percentage of potential Ph.D. candidates do not fully understand and appreciate the opportunities and rewards of a business doctoral program. These potential candidates are unaware they would likely receive full funding for their studies in the US and appear to have little appreciation for the career opportunities or rewards of a business school Ph.D.

Two additional business doctorate production trends specific to the US were uncovered by the DFC. First, four out of every five of the largest doctoral producers are in public institutions, which will face repeated budget contraction and rescission. Second, today more than half the enrolled doctoral students are on temporary visas and are not immediately eligible for employment in the US after graduation.

This confluence of factors presents a growing gap between production and demand for doctoral faculty. This problem will become more critical in the future, and the effects will be compounded by demand from growing market segments worldwide and the for-profit segment of the education industry.

## **RECOMMENDATIONS**

The most obvious and direct response to the worsening doctoral faculty shortage is to attract more students of high quality to business Ph.D. programs. The action is not quite as simple as it seems, however. While a limited number of research-oriented schools might start new Ph.D. programs, the realities of startup time and cost almost guarantee that increased production must come from the 200 or so schools worldwide that have Ph.D. programs. But since most of the schools self-fund their Ph.D. students, there is little or no incentive to support substantial growth in doctoral programs—which means that production can increase only marginally.

A variety of remedies to the emerging scenario were considered. Ultimately, DFC recommendations were guided by several overarching decisions. First, for any strategy to work, the industry must educate government and corporate decision makers about the importance of research qualified business Ph.D.'s



who contribute scholarship-based teaching and research. Second, strategies with short-term and larger-scale impact should be promoted over alternatives. Third, leveraging existing programs generally provides more proven and cost-effective impact than the creation of new programs. Finally, it is beneficial to preserve variability in doctoral degree “products.”

Several alternative recommendations are offered. Some of these actions would need to occur at the industry level, to be led by AACSB International, partner bodies, and by professional associations in business. Others must be driven by individual business schools.

### **Attract Alternative Sources**

Postdoctoral programs for non-business Ph.D.’s could lure a new pool of candidates into business-related research and teaching. Superior market opportunities in business may provide the incentive for significant numbers of Ph.D.-trained researchers from other fields to invest in the transition. Disciplines that are theoretically or methodologically proximal to business should be targeted, and mentoring and collaborative research opportunities could be provided by the host departments.

To support the transition, AACSB might work with other organizations and selected schools to provide intensive workshops to accelerate learning of the language and frameworks of business. Business schools would benefit from teaching delivery during the post-doctoral program, interdisciplinary research enrichment, and a relatively short-term, inexpensive strategy to produce and evaluate a new source of Ph.D.’s.

Moderate growth should be encouraged for doctoral programs aimed at executives and developing teaching professionals in business.

Alternative career tracks should be legitimized for non-research Ph.D.’s in research-driven business schools. Providing a hospitable and rewarding academic environment for practice professionals can encourage a more vibrant pipeline and protect against a decline in research among doctoral faculty.

AACSB accreditation standards allow for the use of non-doctoral “professionally qualified” faculty where suited to the school’s mission. Since it is inevitable that many faculties will resolve shortages by recruiting more professionally qualified faculty, additional clarification in the standards about how such qualifications are achieved and maintained is recommended.

### **Increase Production of Ph.D.’s**

Creating a public/private funding program, which might be called the “Business Futures” program, could channel a new generation of Ph.D.’s into business schools. In the US, one recourse might be to lobby the National Science Foundation for increased funding for management research. Current NSF funding for key science, engineering, and social science initiatives is more than \$2.2 billion, of which less than \$10 million flows to business schools. Similar government sources can be identified and targeted in other countries. By increasing business research funding by governments and other sources, such as foundations and corporations, the Business Futures program could have a large impact on doctoral enrollment. For example, an infusion of \$55 million to US doctoral research programs could provide direct and indirect support for approximately 220 additional business doctoral students each year. Within 10 years, this program could produce 946 additional doctoral graduates.

The primary role of AACSB International and other management education associations is to make the case—internally to business schools, as well as externally among targeted government and business organizations—for funding business Ph.D.’s by establishing the urgent need to ramp up Ph.D. production. The competitive risks of inaction should be cited. Research faculties and schools should be enlisted and supported in the campaign to motivate additional funding.

Business schools should be encouraged through reputational incentives to invest in Ph.D. programs. Management research already is ranked in some countries, such as the UK. In the US, the addition of business Ph.D. programs to reputable rankings, such as those published by the National Research Council, may provide this incentive. Traditional media outlets also should be educated about research as an important contributor to program quality and the appropriate role of research in rankings.

### **Promote Business Ph.D. Programs to Prospective Students**

An industry-wide marketing program should be developed to educate constituents about the advantages and attractiveness of academic careers in business. Marketing should target high potential groups, starting with outstanding undergraduate business students.

Dedicated recruitment channels for Ph.D.’s in business should be established. One model might be the global recruiting forums developed for the MBA. Talented students should be proactively recruited using Business Futures funds as leverage. Marketing of Ph.D. programs can be enhanced by providing prospective students with convenient online access to information about doctoral education and academic careers.

The Graduate Management Admission Council (GMAC), DocNet (an organization of business doctoral program directors), disciplinary associations, and the Ph.D. Project (a successful initiative to increase minority doctoral faculty) might partner with AACSB International in these marketing efforts.

### **Foster Innovation in Ph.D. Delivery**

Mechanisms that increase cooperation among schools engaged in Ph.D. education should be encouraged. Consortia where schools pool faculty or other resources can increase the number of students served while concurrently reducing costs. Several examples already have emerged in Canada and the European Union. Custom programs delivered by well-established doctoral faculties also might provide a viable option for schools in countries that lack the research traditions required for doctoral education.

Technology can be utilized to expand the breadth and quality of program offerings, concurrently lowering the costs of delivery of small Ph.D. programs. Results could include reduced attrition and shortened time to degree.

## Introduction

“The scholarship role of business faculty is an essential and irreplaceable function because societies and markets turn to business schools for knowledge advances that reflect academic traditions of theory and method. Yet recurring shortages of new Ph.D.’s and the expectation that these shortages in academia will be an ongoing condition for business schools, threaten the essence of business scholarship as schools burden a shrinking number of research faculty to cope with growing demands in other professorial areas.”

*From Management Education at Risk: Report of the Management Education Task Force to the AACSB International Board of Directors (2002, p. 13).*

Doctoral faculty are the lifeline of academic business schools. However, unless the production of business faculty stays abreast of the exploding growth of business schools across the globe, this lifeline will atrophy, leading to inevitable decline in the quality of business education and research. An active pipeline of rigorous and relevant research output is especially crucial at this moment as business practitioners seek independent, proven methods and ideas to shape their strategies and practices, and to improve the functioning of markets globally. In fact, independent, scholarly research is the essential distinction of business schools versus other entities that produce business writings, and the reason business schools maintain their legitimacy within the research university community.

### **DOCTORAL FACULTY COMMISSION CHARGE**

To address rising concerns about the industry's capacity to replenish and grow the size of business doctoral faculty, the Board of Directors of AACSB International formed the Doctoral Faculty Commission (DFC). The DFC is an outgrowth of the Management Education Task Force (METF), which published its report in August 2002.

The AACSB Board specified the following objectives for the work of the DFC:

- Delineate the root causes of the observed decrease in doctoral degree production (e.g., program cuts made by institutions and/or decline in interest from prospective students). Examine trends going back at least 10 years.
- Project future demand and supply taking into consideration market adjustments to the current shortage. The current situation also must be studied carefully.
- Specify the potential consequences of a continuing shortage (e.g., declining quality of management education, stifling development of management knowledge, etc.).
- Summarize innovative and effective degree program designs (e.g., partnerships, electronic, for-profit, part-time, etc.).
- Describe cost effective and feasible strategies and programs for dealing with doctoral faculty issues.
- Identify best practices (e.g., how other organizations have dealt with similar issues, strategies for attracting doctoral students, etc.).

- Consider issues related to diversity (race/ethnicity, gender), international models and experiences, and differences across fields/disciplines while pursuing the objectives of the DFC.

## BACKGROUND

Business schools and industry observers are significantly preoccupied with the supply of doctorally qualified faculty:

- A recent survey of AACSB deans by Najdawi and Stumpf of Villanova University found that the doctoral faculty shortage was the most prominent driver of change at their institutions (“Drivers,” 2002).
- Zimmerman (2001) notes the decline since 1991 in Ph.D. education among US schools. He questions whether business schools can survive given the decreases in Ph.D. program output, pressures to emphasize MBA rankings, and a shift in faculty emphasis to teaching and practice.
- The UK Council for Excellence in Management and Leadership concludes that “If business schools are to be able to continue to serve the constituency they do, a special initiative is needed which will both create new business and management teachers and also provide opportunities for developing existing staff to keep pace with the changing business environment” (Williams, p. 3).
- A Canadian study of demand for business school doctoral faculty concludes that “38 percent of positions in Canadian business schools were filled with candidates (both new Ph.D.’s and experienced faculty...) from outside of Canada. It is unclear that this is sustainable given the building level of demand and suppressed supply in the US” (Feltham, Pearson, & Ford, 2001, p. 6).
- An American Council of Education report on the “new professoriate” shows that in 1998 among all academic programs, with the exception of medical schools, business schools had the highest percentage of full-time non-tenure track faculty and the largest growth since 1992, from 4 percent to almost 8 percent (Anderson, 2002). The study also found that part-time business faculty made up close to 50 percent of the total. Doctoral qualifications and publication levels were significantly lower among non-tenure track and part-time faculty than full-time faculty. This profile of business faculty is at odds with the image of traditional academic faculties populated by doctorally qualified scholars

In the words of the Management Education Task Force (2002),

Leaders of AACSB member business schools view doctoral shortages as a critical concern... because such shortages negatively affect the research productivity and intellectual vibrancy of existing faculty. Faculty that are not being replenished cannot devote as much of their collective attention to research, and do not benefit from the stimulating intellectual environment stirred by new doctoral students and junior faculty colleagues. Many top schools are attempting to alleviate these shortages by recruiting experienced doctoral faculty from other schools—a raiding strategy that creates domino effects across the industry (p. 14).

These observations, which will be expanded below, suggest a deep worry shared by various segments of the industry. Universities as well as business schools bear responsibility in producing the next generation of leading thinkers in business. Failure to do so will diminish the quality of business advances and analytical thinking among the next generation.

## **THE REPORT**

This report is intended to engage business schools and colleagues in the broader academic and corporate communities toward:

- Recognition of business faculty supply and demand trends across the globe.
- Provision of recommendations for alternative courses of action to secure an adequate, stable supply of qualified faculty into the foreseeable future.
- Mobilization of business schools to initiate industry-wide and local solutions.
- Engagement of professional/disciplinary associations to support in implementing solutions.
- Recruitment of leading corporate and higher education groups to assist in stabilizing and augmenting the supply of business school faculty.

This report attempts to capture the worldwide dimensions of the business Ph.D. market since the drivers of supply and demand for business doctoral faculty are truly global. However, data are most comprehensive and readily available for US schools. For example, of the 125 doctoral programs that responded to a global survey of doctoral programs, 85 are in the US, 10 are in Canada, and six are in the UK. Accordingly, the data included in this report are excessively US-centric. General trends and issues in other countries have been validated through interviews, and commentary alludes to implications for other parts of the world.

The report and recommendations are based on analysis of data gathered from primary and secondary sources. Some of these data are included in the main body of the report. Additional data are provided in separate appendices, which are available to download at the DFC Web site ([www.aacsb.edu/dfc](http://www.aacsb.edu/dfc)).

# The Problem

## DEMAND OUTSTRIPS SUPPLY

The production of new business doctorates has declined. For example, total production of business doctorates in the US, the worlds largest producer, decreased 19 percent to 1,071 in 1999–2000 from 1,327 in 1994–1995. Total doctoral production stayed about the same in these two years. In another comparison, the number of business and management doctorates decreased 6.9 percent from 6,302 in the first half of the 1990s to 5,865 in the second half, while, as shown in Table 1, most other fields experienced increases or only slight decreases.

**Table 1. Doctorate Production by Field in the 1990s**

Field	Total Doctorates 1991–1995	Total Doctorates 1996–2000	Percent Change
Business and Management	6,302	5,865	-6.9%
Education	33,177	32,877	-0.9
Engineering	28,180	29,004	2.9
Humanities	22,829	27,144	18.9
Life Sciences	37,099	41,747	12.5
Physical Sciences	32,908	32,488	-1.3
Social Sciences including Psychology	32,161	35,085	9.1

Source: National Science Foundation

The decline in business doctorate production is especially noticeable among the 50 largest (by the total number of business doctorates produced between 1960 and 2000) accredited doctoral producers in the US. Comparing the latter half of the 1990’s with the first half, these schools collectively produced 18 percent fewer Ph.D.’s and among the five largest producers shown in Table 2, Ph.D. output declined by almost 30 percent combined.

**Table 2. Business Doctorate Production in the 1990s (Five Largest Producers of Business Doctorates)**

Institution	Total Business Doctorates 1991–1995	Total Business Doctorates 1996–2000	Percent Change
1 Indiana University-Bloomington	116	85	-26.7%
2 The University of Texas at Austin	151	102	-32.5
3 Harvard University	76	64	-15.8
4 University of Illinois at Urbana-Champaign	96	80	-16.7
5 Ohio State University-Main Campus	119	76	-36.1
Total	558	407	-27.1

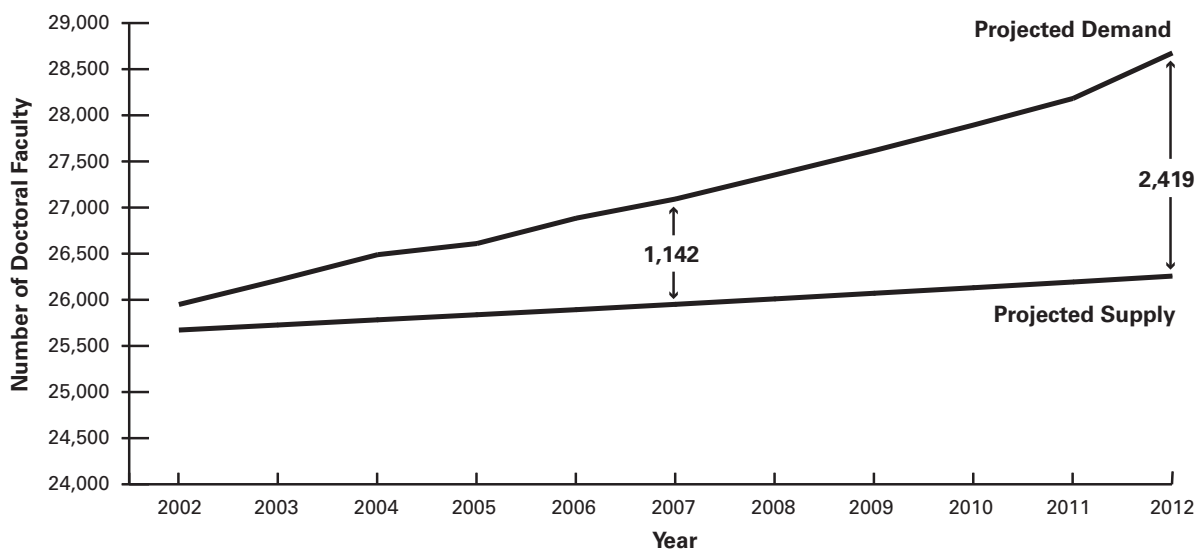
Source: National Science Foundation

Substantial increases in production are not expected. The US Department of Education projects that the total number of doctoral degrees awarded across all fields will increase to 46,800 in 2011–2012, only a 4 percent increase from 1999–2000 (Gerald & Hussar, 2002). Assuming that the business share of Ph.D.’s produced stays at its current 2.7 percent, only about 52 more business doctoral degrees will

be awarded in 2011–2012 than in 1999–2000. That number—1,264 degrees—also includes non-research doctorates, which are not included in the National Science Foundation database. An additional factor suggesting continuing limits on doctoral production is that 40 of the 50 institutions producing the most business doctorates are public and are facing budget contraction and rescission (see Appendix D).

Taking into account current Ph.D. enrollments, projected demand for business education, faculty retirements, and the typical hiring of Ph.D.’s by accredited and non-accredited schools, **we conclude that in the US there will be a shortage of approximately 1,142 Ph.D.’s within five years, and 2,419 Ph.D.’s within 10 years** (see Appendix B). The worst case scenario is that the shortages will reach 3,043 in five years, and 5,689 in 10 years. More optimistic assumptions about supply and demand lead to less grim results, a nominal shortage of 21 business Ph.D.’s within five years and 334 in 10 years. Note that the three cases do not take into account two contingencies—that growth in Ph.D. production might occur because of new entrants into the industry (for-profit, distance, and global developers of Ph.D. programs), or conversely, that growth in the number of schools hiring Ph.D.’s within North America and across the globe will impose substantial additional pressure on existing sources.

**Figure 1. Projected US Doctoral Faculty Shortages**



Source: Doctoral Faculty Commission

Doctoral degree production in Canada experienced a slight dip in late 1990s, but has risen back to its 1995–1996 level of about 80 graduates (Feltham et al., 2001). Enrollment in postgraduate research programs in business and administrative studies in the UK grew from 3,792 to 4,667 in the same period (Association of Business Schools [ABS], 2002). However, the growth in post-graduate research has not kept pace with the growth in post-graduate teaching enrollment. There also has been some growth in Australian doctoral enrollment, the average full-time doctoral program enrollment rose to 6.2 students in 1999 from 3.3 students in 1997, and the average part-time enrollment increased to 13.4 students from 8.5 students in the same period (Soutar, 2000).

Foreign student enrollment in US and UK doctoral programs has been increasing. The proportion of non-resident aliens in US business doctoral programs has grown significantly from earlier periods.

Among enrolled Ph.D. students, 51.2 percent are foreign students without permanent visas (AACSB, 2002a). Compare that with the 27.3 percent of the graduates in 1999–2000 on temporary visas. Similar patterns appear in UK programs. For example, the increase in UK postgraduate research enrollment can be explained entirely by increases in students from outside the UK (ABS, 2002).

It is difficult to predict how global enrollment and production trends will precisely interact with US shortages. Some of the non-US students enrolled in US programs will return to their home countries, and there will be growth over time in production of Ph.D. graduates outside the US. It is conceivable, though not likely, that some non-US production of Ph.D.'s will help alleviate US shortages. It is most probable that Ph.D.'s produced outside of the US will be attracted first by demand for Ph.D.'s in their own countries.

## **TYPES OF DOCTORAL QUALIFICATIONS**

Doctoral qualifications are a product of many variants of training and requirements. Most doctoral programs are residential, requiring intensive onsite learning (formal coursework is not always required in Europe), demonstrated performance, and interaction between students and their faculty over an extended period, typically four to six years.

The prototypical form of business doctoral qualifications is the Ph.D., a result of a residential, research-oriented graduate education and the dissertation process, akin to graduate education in the traditional sciences and liberal arts. Most Ph.D. degrees are delivered and awarded by single universities, though a small percentage are consortium based—awarded jointly by several partner universities to the program.

The D.B.A. (Doctorate in Business Administration), offered by less than 10 percent of AACSB member business schools (see Appendix A), was used in the past to denote differences between business as a professional field from traditional academic disciplines. In some instances, the D.B.A. educational program was more applied and did not require a research-based dissertation at its culmination, while in others the D.B.A. program was identical to a Ph.D. in all but degree designation. Some schools merely used the D.B.A. designation to avoid inflexible institutional rules (e.g., language requirements) for doctoral degree programs. In Europe, the D.B.A. program does differ from the Ph.D., but is often just as demanding, involving extensive competency development as well as original research on an applied problem (Bareham, Bourner, & Stevens, 2000).

The executive or professional doctorate (e.g., Executive Doctor of Management) is geared toward practicing professionals seeking a theoretical foundation and analytical framework to address business problems. Executive programs are usually shorter in duration than research-based programs and usually culminate in an applied thesis or case study.

Distance education is also spawning non-residential forms of doctoral programs, some correspondence-based and others that include Internet-based learning. The requirements for learning and demonstrated performance vary widely, with some degrees awarded almost indiscriminately on the basis of minimum learning and performance requirements.

One additional wrinkle concerns professionally, rather than doctorally qualified faculty. Given the professional and practice orientation of business education, various accreditation bodies, including AACSB International, recognize the stature of high-level professional experience when accompanied by field-specific certifications (e.g., CPA, CFA) for teaching faculty in business schools.



Business faculty qualifications are therefore far from monolithic, and any discussion of trends and solutions regarding supply and demand in this market segment must be mindful of this range of options and variability in requirements and quality.

## **DRIVERS OF DEMAND FOR DOCTORAL FACULTY**

The level of doctoral faculty demand is fueled by:

- The mission of academic business schools;
- Global growth and fragmentation of the industry, as detailed in the METF Report and below;
- Accreditation requirements specifying ratios of doctorally qualified faculty relative to the full complement of teaching staff;
- Demographic trends in student enrollments and faculty retirements;
- The culture of the broader university context with which business schools interact, placing varying pressures on doctoral qualifications and research productivity.

Because of the broad range of drivers of demand for doctoral faculty, there is variability among business schools in the pressures they experience for doctoral faculty. Although research-oriented schools with doctoral programs have the largest demand for doctorally trained faculty, other segments of the business school market confront shortages. Teaching faculty with Ph.D.'s—in demand at many research and non-research oriented schools—are also in short supply because few doctoral programs are driven in their mission to focus on such graduate education.

### **Research mission of business schools**

Collegiate schools of business occupy a unique and important position among management education organizations and practitioners. Although other organizations (e.g., corporate universities and for-profit education providers) share with business schools the purpose of developing managerial talent, they are not centered on research. Research and scholarship in business schools inform teaching and learning, and provide a theoretical and empirical foundation for translation into business models and practices. Even though there are other sources for business research reports, the role of academic business schools as independent providers of business knowledge and information based on scholarly research is unique. In addition, as constituents in the university community, business schools draw on the research of other disciplines to inform and enhance their scholarship.

While the nature of research is quite diverse across schools, all schools seeking international business accreditation must include research in their mission. EQUIS accreditation criteria specify that the “school should have a clearly defined research and publication policy, through which faculty are encouraged to develop distinctive areas of expertise” (efmd, 1998, p. 2) and AACSB International accreditation standards specify that the schools mission must include “the production of intellectual contributions that advance the knowledge and practice of business” (AACSB, 2003a, p. 16). Business school rankings also reinforce the need to support quality research. National rankings of research output can be found in many countries, including the UK, China, and Australia. Business Week and Financial Times now include “intellectual capital” elements in their rankings formulas.

Zimmerman (2001) documents examples of breakthrough business thinking emanating from academia. For example, key advances in agency problems, corporate governance, capital asset pricing, capital budgeting, decision analysis, risk management, queuing theory, and statistical audit analysis can be traced to basic academic research. Although seminal articles were initially written for academic peers, after a translation period, many have influenced practice through education and broader readership. Michael Porter, Philip Kotler, and Myron Scholes are a few obvious examples of business faculty members who have been responsible for academic research that ultimately influenced market behavior and permeated organizations.

As Pfeffer and Fong (2002) admit in an article often critical of business schools:

The research capabilities, and particularly the rigorous thinking and theoretical grounding that characterizes business school scholars and their research, actually offer an advantage over the casual empiricism and hyping of the latest fad that characterizes much, although not all, of the research that comes out of non-academic sources. And business school faculty have spent years honing the craft of preparing and delivering educational material in ways that are at once accessible and intellectually sound (p. 93).

Universities and business schools afford faculty the freedom to pursue original ideas, including those that might lead to unpopular, unintuitive, or contrarian conclusions. Other environments may be encumbered with considerations that do not allow unfettered scholarly pursuits, limiting the independence and range of research subjects and results.

No other institutional model offers as effective a mix of conditions that stimulates and protects independent and innovative scholarship in business. Research in business schools is enriched by the heterogeneity of faculty representing a broad range of functional expertise that stimulates collaboration and cross-pollination across fields. Business researchers also reach out to other fields in the academic community, such as psychology, sociology, computer sciences and engineering, and biotechnology. The academy self polices, through strict peer review, to protect the rigor of its research output.

Rigorous research cannot occur without research training, hence the demand for doctorally trained faculty is strongly correlated with the research mission of business schools. Doctoral programs are virtually the only pipeline for business research faculty, and they are the essential ingredient for the continued vitality of business research. Dialogue over research comes alive in environments inhabited by young scholars seeking mentoring and learning opportunities as part of their training. Accordingly, a decline in doctoral education will inevitably cause the stock of knowledge to deteriorate in the short term and for the foreseeable future.

There also are broader social and economic risks if business research wanes. Pfeffer and Fong (2002) write that “management and managerial skill has been identified as a core competence required for economic prosperity and possibly even economic development” (p. 92).

Concern about maintaining world-class business practices prompted the UK’s Council for Excellence in Management and Leadership to recommend the establishment of a separate council for research in business and management. Driven by concerns about national economic competitiveness, the Council recommends urgent actions to reverse shrinking staff to student ratios, declining research-active staff, and growing shortages of research students (Williams, 2000).

This sense of urgency is higher among developing countries. For example, according to a study by CEEMAN, the Central and Eastern European Management Development Association, management schools in these countries should allocate more resources to research projects. The report reveals that only six of the 46 CEEMAN member schools budgeted more than \$100,000 on research in 2001 (Anderson & Eddy, 2002).

### **Worldwide expansion of MBA programs**

Spurred by economic reforms and globalization, the number of MBA programs has expanded dramatically in the last decade all over the world. For some countries, the expansion has been driven by economic reforms. For example, World Trade Organization accession and growth-oriented reform has motivated the Chinese Ministry of Education to accredit more than 60 new MBA programs in the last decade. Close to 40,000 of the 460,000 students that took the National Postgraduate Entrance Exam applied to these MBA programs in 2001—yielding more applications for the MBA than for any other post-graduate discipline (Yu, 2001).

Shifting business models might explain MBA growth in other countries. For example, graduate business degrees seemed unnecessary in a Japanese economy that stressed lifetime employment and wage increases according to seniority. But as traditional Japanese business models have been challenged, more than 17 Japanese universities have introduced new MBA programs (Shamatsuka 2002).

Business education also has expanded to support emerging democracies in central and eastern Europe. The Russian Association of Business Education (RABE) recently celebrated its 10th anniversary with more than 50 business school members, all created in the last 15 years. More than 100 business schools now belong to CEEMAN, up from 13 in 1989.

Globalization has stimulated MBA growth in developed western European countries. More than 100 business schools offer at least 170 MBA programs in the UK. The MBA market that cuts across Austria, Germany, and Switzerland now includes about 120 providers and 150 programs. Continuing growth is expected as a result of the 1999 Bologna Agreement, which has the EU working toward a single system for awarding degrees. The goals are to encourage educational mobility, enhance employability of graduates, and increase global competitiveness/attractiveness of European universities. Under the proposed system, degrees would follow the Anglo-American undergraduate and masters style of degree programs (Haug & Tauch, 2001).

The Americas, of course, are no exception. Close to 900 institutions awarded more than 111,664 business masters degrees in 1999–2000. That is up from less than 80,000 a decade earlier. This growth is expected to continue. For example, the total number of masters degrees awarded across all disciplines in the US is projected to increase to 501,000 in 2011–2012, a 10 percent increase (Gerald & Hussar, 2002). Assuming the business share remains constant at 25 percent, the number of business masters awarded is expected to rise to 125,250 in 2011–2012 (see Appendix B).

Canadian executive MBA programs have experienced substantial growth. Close to 30 percent of all MBA students are enrolled in executive programs, comprising a larger percentage than those in traditional full-time programs (AACSB, 2002b). Similar growth has occurred among Latin American institutions, especially among the privates.

### **International quality standards: accreditation and rankings**

The global expansion of MBA degrees does not necessarily increase the demand for doctoral faculty. Not unlike the US experience that began in the 1960s, doctoral faculty demand is driven more directly

by the quest to elevate the quality of management education. Business schools all over the world aspire to meet international standards. The challenge is especially difficult for schools in some countries. For example, some Chinese programs have been openly criticized because most of their faculty members have formal training (Masters and Ph.D.'s) in economics—with theories that are no longer applicable. Students complain that most have no practical domestic or international business experience and merely “parrot” western textbooks, stressing memorization over problem solving skills (Beech, 2000).

Similar complaints are expressed in India where, according to a representative of the Association of Management Development Institutions in South Asia (AMDISA), “For about 834 Business Schools in the country, there are hardly 2000 faculty with doctoral degrees in business. The rest are either MBAs or Ph.D.'s in the social sciences, statistics or other disciplines. Some of the top schools have 60 Ph.D.'s in business but most others have barely two of them” (D. P. Sinha, personal communication, October 30, 2002).

The internationalization of accreditation by AACSB International and *efmd*'s EQUIS provides opportunities for schools to demonstrate comparable quality. AACSB, for example, now has 45 accredited members based outside of the US and another 70 are involved with some part of the initial accreditation process. Both accreditations have mission-driven standards that require schools with global aspirations for their graduate programs to exceed minimum standards set for faculty qualifications. The standard is high—among US accredited institutions, 86.7 percent of full-time faculty members have earned doctoral degrees (AACSB, 2002a).

Highly visible international MBA program rankings by media organizations add pressure to hire doctoral faculty for programs competing in the global environment. *Financial Times*, *Asia Inc.*, and *América Economía*, for example, apply formula to program rankings, including the percent of faculty with doctoral degrees.

### **Demographics: enrollments and retirements**

Undergraduate business education demand is demographically driven. Traditional college age populations have grown worldwide. Although the requirements for doctoral faculty to support this growth are less pressing, many schools must support growing numbers of domestic undergraduates while pushing for global competitiveness.

Enrollment in tertiary education more than doubled in the last 25 years in the European Union, where business and management studies represent an important and growing part of higher education among many member and candidate countries (European Commission, 2002). In the UK, for example, business and management remains the most popular subject across degree levels and new enrollments in 2001 increased 6.9 percent from the previous year (ABS, 2001). The number of undergraduate business and management programs and enrollments are expected to grow as EU members respond to the Bologna Declaration, increase higher education participation rates, and enhance the attractiveness of their universities in a global environment.

In the US, the number of business bachelors degrees awarded rebounded to 253,000 in 1999–2000, from a low of 226,000 in 1994–1995. The baby boom echo will increase the number of high school graduates to 3.1 million and bachelors degrees awarded to 1,437,000 by 2011–2012, increases of 9 and 16 percent, respectively, from 1999–2000 (Gerald & Hussar, 2002). Assuming that the business share of the total stays constant at 21 percent, the number of business bachelors degrees will rise to 301,770 in 2011–2012 (see Appendix B). Similar stories of swelling undergraduate enrollments are common throughout the rest of the Americas.

Demand for business faculty will also be driven higher by increases in retirements. European business schools are facing their first major round of retirements, since the inception of graduate business education in the 1970s. In the UK, the percent of business instructional staff 55 or older increased from 8.7 percent in 1994 to 14.0 percent in 1998 (Williams, 2000). The percent of staff 45 or younger decreased from 59.0 percent to 50.7 in the same period. In the US and Canada, the proportion of faculty 55 and older now exceeds 30 percent—up from less than 20 percent a decade ago (Feltham et al., 2001; Higher Education Research Institute, 2001). The 292 schools responding to the 2001 AACSB Survey of Faculty Demand expect 11.4 percent of their full-time faculty to retire in the next five years. And, with rising faculty salaries, it often costs up to 50 percent more to replace each retiring faculty member.

## **DOCTORAL FACULTY SUPPLY ISSUES**

The DFC conducted four research projects to understand trends in doctoral degree programs and delineate the causes for the declining production. First, it conducted a survey of 220 AACSB member business schools that were known to award business doctoral degrees. The survey focused on admissions trends, program changes, and partnerships. Respondents from 125 schools, including 40 from outside the US, provided information about 129 programs—91.5 percent Ph.D., 7.0 percent D.B.A., and 0.8 percent executive doctorates in management. This project was capped by a focus group discussion with doctoral program directors from 20 US business schools.

Second, the DFC surveyed 61 US business honors students attending the Beta Gamma Sigma Leadership Conference in Baltimore about their perceptions of academic careers and business doctoral programs. Third, it carefully analyzed historical data from the US National Science Foundation (2002) Doctoral Records File. Fourth, it met with the AACSB affinity group of deans from large public universities, which are responsible for a large share of business Ph.D.'s produced in the US.

### **Key findings about doctoral production**

*Doctoral program applications have increased, but are not likely to translate into substantial growth in production.* In the doctoral programs survey, 74.6 percent indicated that the number of applications to their program has increased in the last five years. Yet, only 42.7 percent indicated that the number of offers of admission increased. Moreover, 58.4 percent expect increases in the number of applications over the next five years, but only 28.3 percent expect the number of offers of admission to increase. More than 60 percent indicated that intake will remain the same or decrease (see Appendix A).

*Quality of doctoral applicants may limit program intake.* The doctoral programs survey and discussions with deans indicate that for a notable portion, the quality of the applicant pool is a limiting factor in growing the size of doctoral programs. Among schools that restrict the size of their doctoral program, 68 percent indicated that the “quality of doctoral program applicants” is a limiting factor. In addition, 54 percent indicated that “improved quality of doctoral program applicants” would induce them to increase the number admitted (see Appendix A).

*Funding for business doctoral students appears to be an important barrier to doctoral degree production.* Three quarters of the programs indicated no change in the percent of new entrants receiving a fellowship or assistantship of any kind in the last five years. In the US, over 80 percent of new doctoral students are funded according to respondents to the DFC survey. Almost 90 percent of the programs indicated no change in the typical duration of financial aid support in the last five years (see Appendix A). An analysis of NSF data shows increasing debt burdens to business doctoral graduates: 56 percent of 2000 graduates had less than \$10,000 in debt, down from 67 percent in 1990, and 18 percent of

the 2000 graduates reported more than \$20,000 in debt compared to less than one percent in 1990 (see Appendix D).

**Table 3. Indebtedness Upon Completion of Business Doctorate**

Debt	1990	1995	2000
None	46.1%	45.7%	44.3%
Low (\$10k or less)	21.1	16.7	11.6
Mid (\$10,001–\$20,000)	10.6	19.4	17.1
High (more than \$20,000)	0.6	10.9	16.1
Missing	21.5	7.5	11.0

Source: National Science Foundation

In the student survey, 37.7 percent of students expect they will have to incur substantial debt to pursue a doctorate. They also indicated the “ability to support myself and family while studying” and “monetary cost of doctoral programs” as the two most important factors in their decision about whether to pursue a doctoral degree in business in their careers (see Appendix C).

Doctoral study funding models vary outside the US. In some countries, doctoral studies are primarily self-funded. In others, funding for doctoral work may come from a variety of institutional, governmental, and private sources. More research is required to fully understand the extent to which funding is a barrier to business doctorate production in various countries.

*Candidate perceptions and expectations regarding doctoral studies and academic careers appear inconsistent with reality.* Students rank the financial rewards of academic careers in business extremely low compared with a practicing career in management (see Appendix C). Although the average US academic year (nine-month) salary for new doctorates in 2001 was \$85,900 and more than 75 percent earned more than \$72,000 (AACSB, 2002c), one in three respondents expected new doctorates in business to earn less than \$70,000 annually, which is pro-rated to \$52,500 for the academic year. That's about 39 percent lower than real earnings for business Ph.D.'s in academia. And more than half the student respondents indicated majors in accounting or finance, fields in which new doctorate academic year salaries are \$95,000 and \$101,500, respectively, far above the average professorial salary. Finally, although about half the students don't think it will take more than five years to earn a Ph.D., 67.2 percent of graduates in 2000 took six or more years, which is up from 60.9 percent among the 1995 graduates (see Appendix D).

Conclusions in the UK are consistent with the key findings above. For example, the Council for Excellence in Management and Leadership concludes from interviews that “people in business were not seen to be sufficiently aware of what can be earned at the top business schools (taking into account extras like consultancy work), or of the potential for interesting work and creativity, which might encourage them into academic life.” The report also concludes that the “particularly hard to retain groups were young people in the 28–34 age bracket who were offered high salaries by consultancies and corporates” (Williams, 2000, p. 40).

The report also concludes that “the conditions of academic life were seen to have worsened considerably and become less attractive (more regulation and accountability, more pressure, less freedom, fewer holidays)” (Williams, 2000, p. 40). Although similar changes have occurred in the US, it is not clear that interest in academic careers has been affected. For example, students rate the general attractiveness of academic careers highly, and rate academic careers high relative to practicing careers in business in terms of “lifestyle flexibility” and “work/family” balance (see Appendix C).

*Postgraduate employment in industry is increasing, while postgraduate employment in four-year educational institutions is declining.* NSF data show that 60.5 percent of 2000 graduates accepted postgraduate employment in four-year educational institutions, down from 75.5 percent in 1990. Private industry captured 14.8 percent of business doctorates in 2000, more than double the 1990 statistic of 7.3 percent. Employment for the remaining graduates was either unknown or divided among government, not-for-profit, self-employment, and community college categories (see Appendix D). The honor students surveyed seem to understand the employment opportunities available to business doctorates—73.8 percent disagree with the statement that “teaching is the only career option after earning a doctorate in business” (see Appendix C).

**Table 4. Planned Employment After Doctorate**

Employer Type	1990	2000
Education: 4-year (US and foreign)	75.5%	60.5%
Private: Industry/Business	7.3	14.8
Other (government, education, private)	3.6	8.1
Unknown	13.6	16.6

Source: National Science Foundation

*Retention of doctoral students does not appear to be a major issue.* Although the methodology for measuring retention varies across schools, most programs appear to have high levels of retention. Most commonly cited reasons, voluntary or involuntary, that students fail to complete the program appear to be unsatisfactory performance/progress, personal reasons, and the reality of the program does not match expectations (see Appendix A). As indicated earlier, the quality of input may drive attrition.

*Costs of providing financial support to students and the availability of faculty resources are the most significant barrier to increasing doctoral student intake.* The top two reasons why schools limit the number of doctoral students admitted are “cost of financial support for doctoral students” and “cost of faculty resources to support the doctoral program.” Similarly, the top two changes that would cause programs to increase intake are “external funding available to support doctoral students” and “larger pool of research faculty” (see Appendix A).

Different regions or countries may face unique barriers to increasing doctoral degree production. Developing countries without research traditions in universities don't have a foundation to build doctoral programs in business and can't afford to recruit Ph.D. faculty in the global market. In other countries, regulations may limit opportunities to build doctoral programs. For example, the French business school system is divided between the Grande Ecoles and the universities. While the Grandes Ecoles are professional schools with high academic standing and the ability to attract students of great ability, French law limits them in awarding doctoral degrees. Furthermore, the qualification to become a Ph.D. supervisor is available primarily from the university sector.

#### **The incentives are misaligned**

There is inconsistency between the culture of US business schools and the funding and incentives for doctoral education. As we have noted, at most schools almost the entire support for Ph.D. students comes from the general funds of the business school. On the other hand, the school will usually not hire its graduates. Furthermore, the ratings, rankings, and the general stature of business schools depend much more on MBA program metrics than on service to the field through research or Ph.D. production.

The disconnect is that schools in the generally recognized top tier reward faculty for their breakthrough thinking and results. They grant tenure for significant research publications, but rarely for MBA contributions. Schools aspiring to top rank act similarly. However, there is very limited external support for most research done in business schools; money comes from general school funds, from project-related grants, and only occasionally from government sources or foundations. Reputation within the field is significantly affected by the faculty members research output, and less so by student output. Desirability to students and employers is affected by rankings that are almost entirely dependent on MBA programs.

Thus, the advantages to producing Ph.D.'s are intangible—faculty satisfaction, possible research collaboration with faculty, and reputational benefits through association with well placed Ph.D. graduates. Unlike other programs in business schools or Ph.D. programs in other disciplines, there are no financial incentives to grow the business Ph.D. program and, given the funding structure, they represent a cost without a built-in revenue stream since most Ph.D. students receive significant financial subsidies.

Other fields are organized differently, and generally have a clearer alignment between institutional incentives and Ph.D. funding. For example, in the sciences, doctoral students are supported through grant money, most of which comes from competitive applications to government agencies. Advanced students are generally funded as research associates. Thus, Ph.D. support is roughly proportional to research output; the more research a school does, the more funds it has to support students who assist the research. This is true not just for the “big science” model (large labs with many post-docs, graduate students, and junior faculty working under the supervision of a very senior professor, common in biomedical science and high energy physics), but also the more traditional “small science” (single investigator-disciple) model. The standing of departments and individual faculty is closely correlated with the size of grants and published results. Thus, there is far clearer alignment between incentives for Ph.D. training and the funding mechanisms.

Incentives provided by funding models in some countries also may be more aligned to research objectives. For example, in Germany where research assessments of universities are the norm, a large portion of German doctoral candidates are employed in junior positions on staffs guided by full professors. These staffs are an important factor in attracting accomplished research professors in competitive markets. An increasing proportion of doctoral students may instead obtain funding through competitive research grants by the Deutsche Forschungs Gemeinschaft (DFG), which was created to implement reform in doctoral education (Bartelse, Beerkens, & Maassen, 1998).

## **CONSEQUENCES**

### **Rising vacancy rates**

In a fall 2001 AACSB Survey of Faculty Demand, 292 US schools reported that they were actively recruiting to fill 1,100 (eight percent of the total) doctoral degree positions. The DFC conservatively estimates that there are about 35,000 full-time business faculty members among US institutions and about 26,000 of those have earned doctorates (see Appendix B). This means that US institutions were trying to fill more than 2,000 doctoral degree positions in 2001. In our doctoral faculty gap analysis, we conservatively estimate that about 260 of these open positions will go unfilled, growing to about 1,000 unfilled positions in 2006. Also in the Survey of Faculty Demand, 292 schools expected a 3.3 percent net increase in doctoral faculty positions for which they will recruit in 2002–2003.

Especially dramatic are shortages of minority and women faculty in the US. The tables below show substantial differences in the composition of full-time business faculty relative to students among US



business schools surveyed by AACSB. Minority and women full-time faculty also are less likely to have a Ph.D. According to the Ph.D. Project (2002), only 621 (2.5 percent) of US business doctoral faculty are minority group members. According to AACSB (2002a), 89.2 percent of male full-time faculty have Ph.D.'s compared to 76.3 percent among female full-time faculty.

**Table 5. Race/Ethnicity in US AACSB Member Business Schools**

Race/Ethnicity	Full-time business faculty	Bachelors enrollment	MBA enrollment	Doctoral enrollment
American Indian or Alaskan Native	0.3%	0.5%	0.4%	0.4%
Asian or Pacific Islander	10.4	8.3	8.1	9.4
Black, Non-Hispanic	3.2	9.2	5.7	7.3
Hispanic	1.2	7.6	4.2	3.1
White, Non-Hispanic	83.1	69.5	71.3	77.3
Race/Ethnicity Unknown	4.7	4.9	10.3	2.5

Source: AACSB International

**Table 6. Gender in US AACSB Member Business Schools**

Gender	Full-time business faculty	Bachelors enrollment	MBA enrollment	Doctoral enrollment
Male	76.5%	54.7%	63.6%	63.1%
Female	23.5	45.3	36.4	36.9

Source: AACSB International

The demand for CIS/MIS faculty is strongest, with 292 schools recruiting to fill 206 open doctoral positions (14.5 percent of all doctoral positions), close to 2.5 times the number of MIS doctoral graduates in 1999–2000. In the UK, marketing, finance, information systems, strategy, and accounting are listed among the subjects for which faculty are most difficult to recruit (Williams, 2000).

### **Market segmentation**

The shortage of doctoral faculty has affected schools differently depending on market segment, mission, education system, and resources. For example, a handful of elite private schools with global reputations have sought research oriented professors with earned doctorates from other schools in their peer set, and they have been able to respond to shortages with above market salaries. Although deans in this group would hardly notice that there is a shortage, they are somewhat concerned that a “superstar” model has emerged in the market.

While a handful of elite private business schools are immune to the market shortages for doctoral faculty because of their strong financial position and superior brand name, such an advantageous market position is a rare exception. Business schools in research-based universities serving large numbers of students must make difficult choices to hire expensive research faculty. Most of the rest of the business schools in the US are edged out of the primary marketplace for doctoral faculty because they cannot afford the starting salaries, or because of the reverberating effects such starting salaries will inflict on the remainder of the faculty salary structure.

These shortages and distinct market segments have spawned a rise in alternative, non-accredited Ph.D. programs in the US. In 1990, 5.6 percent of doctoral graduates were produced by six non-accredited

programs. By 2000, there were 17 non-accredited institutions producing 16.1 percent of the doctoral graduates. Some of these are distance doctoral programs, which change the cost of delivering and consuming doctoral education.

**Table 7. AACSB Accreditation Share of US Doctorates**

	1990	2000
Total US business doctorates awarded	1,036	1,071
AACSB accreditation share	94.4%	83.9%
Non-accreditation share	5.6%	16.1%

Source: National Science Foundation

Outside the US, most business schools have found it difficult to compete with rising US salaries. In the UK, although some schools now manage to pay well above university rates and provide opportunities for salary supplements by allowing consultancy work and participation in executive education, salaries still are well below those in the US (AACSB, 2003b). In most countries, additional funding sources such as endowments are also less available than in the US.

As described above, business schools with global reputations have been able to pay escalating salaries. For example, four Hong Kong business schools are among the top 25 in Asia and have professor salaries among the highest in the world. Although tied to Hong Kong Civil Service pay, the average annual salary for Associate Professors is around \$150,000 (US) and is much higher for full and chaired professors. In fact, many American Chinese professors have been recruited to come back to Hong Kong. The consulting opportunities in Hong Kong for business school professors are also important for prospective faculty (Anonymous, personal communication, September 17, 2002). Not surprisingly, the experience of Hong Kong schools has been quite different than the new programs on mainland China. The future shows no sign of relief for all but a few most well-funded business schools in Asia, Latin America, and Africa.

### **Salary escalation and inversion**

Salaries for new doctorates hired in US schools of business have risen dramatically in recent years (AACSB, 2002c). Between 2000–2001 and 2001–2002, the average salary of new doctorates increased by 11.3 percent to \$85,900, more than the average salary for associate professors. In computer information systems, the average salary for new doctorates increased 40 percent (average annual increase of 8.5 percent) between 1997 and 2001. In some fields, the average starting salary for newly minted Ph.D.'s exceeds all but the highest paid full or endowed professors at the university, and that of many senior faculty in the hiring department (LeClair, 2003). Most business schools experience salary inversion of an extreme magnitude because of such galloping starting salaries for new Ph.D.'s. Intense competition for new faculty is also reflected in increases in non-salary compensation (e.g., research funds and overload teaching). Finally, senior faculty who retire are replaceable only at a significant premium over their current salaries, even if their successors are far more junior.

The consequences described above are short term, with an immediate effect on business schools and on institutions of which they are a part. The longer term threat concerns the continuing impact of scholarship on teaching and research. This impact has intellectual and reputational consequences to research universities. And, as argued earlier, it affects the extent to which business practices and market behavior can continue to improve through the translation of business research.

## THE FUTURE

### **Will the problem persist?**

The sources of the shortages are largely structural. Given the cycle time to degree, even with increases in doctoral market production it will take several years until there is any notable impact. Financial constraints, academic traditions of research, tenure and promotion, and applicant perceptions are not amenable to quick-fix strategies. Forced standardization of salaries, mandated in many countries, and other constraints on reward packages, (e.g., unions, concerns about salary compression) interfere with business schools' capacity to demonstrate the requisite market responsiveness. Few of these drivers can be altered through the actions of any single organization or school. Though some of these constraints are a product of the national economic or market traditions and beyond the control of business schools, other constraints have been institutionalized by the schools themselves and will require collaborative systematic change efforts. At the same time, demand is not constant—it is growing because of explosive global expansion of the business education industry, and the aging of current faculty. These trends will exacerbate current shortages.

Any proposed solutions must be mindful of changes in the number of global programs offering doctoral education and new delivery options that may significantly alter market trends. New doctoral programs are materializing, especially in Asia, and non-accredited and for-profit doctoral degrees are a relatively new product entering the marketplace. Given lags in this market, careful planning is necessary to meet, but not exceed, demand in the marketplace.

### **If the problem persists**

In an influential report published in 1959, Gordon and Howell concluded the chapter on business faculty with this call to action:

While there is need for improvement in all the dimensions of quality, the primary needs are clear. They are to create in the business schools a more stimulating intellectual atmosphere, to bring the less progressive faculty members up to date with the latest scientific literature and business practice in their own and related fields, and to generate the capacity and desire to ask more probing questions and to engage in more significant research. In this sort of environment, academic standards will necessarily be high, the achievement of more effective teaching should not be difficult, and the ability of the business schools to serve the business community and society at large will be enormously increased (p. 357).

In the more than 40 years since, US-based collegiate business schools used funding from the Ford Foundation and Carnegie Council to transform themselves into the vibrant intellectual centers envisioned by Gordon and Howell. And, despite differences in education systems and business environments, business schools around the globe generally shared this growing commitment to scholarship. Now business schools are at a critical juncture. Mounting financial pressures, competition from low-quality providers of management training, and declining doctoral production could severely erode the substantial intellectual and practice advances accomplished in the last few decades.

Inaction will lead to the following consequences:

- Business doctoral production will fail to meet the growing global demand.
- All business faculty—research and teaching—will be increasingly burdened by teaching and service requirements and will be forced to concentrate less on their research mission.
- A smaller percentage of business faculty will successfully meet the research requirements for tenure in research-based universities because of the diversions away from research, leading to even higher percentages of non-tenure track faculty relative to other academic units on campus.
- Business school faculties, already comprised of about 50 percent part-time deliverers, will further increase their percentage of adjunct faculty.
- The quality of learning by business students will suffer with the erosion of the research mission of the business professoriate.
- The respectability of business schools in academia will decline because of their reduced research activities and contributions to scholarship.

## Recommended Actions

This Commission considered a variety of remedies to these disturbing scenarios. Guiding the recommendations were several overarching decisions.

- Among government policy and corporate decision-makers, the industry must provoke recognized value to research qualified business Ph.D.'s who contribute scholarship-based teaching and research.
- All else being equal, strategies with the potential for shorter-term and larger-scale impact are to be promoted over alternatives.
- Leveraging existing Ph.D. programs generally provides more proven, cost-effective, and short term impact on the production of business Ph.D.'s than would the creation of entirely new Ph.D. programs. There are exceptions where a "research-ready" faculty could launch a Ph.D. program with relatively low startup effort or costs without unduly taxing the resource base.
- It is useful to have variability in doctoral degree "products," e.g., more teaching doctorates versus research-oriented Ph.D.'s, so that global business schools with different missions can effectively recruit doctorates from differentiated segments of the market.

To augment the supply of business Ph.D.'s, some recommendations require industry-level intervention led by AACSB International and other business school and discipline-based associations. In other instances, suggested actions will yield results only if business schools implement change at the local level, in concert with the university governance and funding systems in which they operate. A summary of the recommendations is presented below, followed by a more detailed description.

**Table 8. Summary of Recommendations**

Recommendation	Industry Level	School Driven
<b>I. Attract Alternative Sources</b>		
Develop post-doc and bridge programs	X	X
Expand doctoral programs for executives		X
Legitimize alternative faculty tracks		X
Clarify "professionally qualified" standards	X	
<b>II. Increase Production of Ph.D.'s</b>		
Initiate new funding from federal, corporate, and joint sources	X	
Recommend NRC rankings of business schools	X	
Grow size of Ph.D. programs		X
<b>III. Promote Business Ph.D.'s to Prospective Students</b>		
Market Ph.D. programs	X	
Develop dedicated recruitment channels	X	
Attract high quality applicants with special funding	X	X
Develop doctoral program resource site	X	
<b>IV. Foster Innovation in Ph.D. Delivery</b>		
Test use of consortia models	X	X
Use technology to reduce costs	X	X
Share information about best practices	X	

## I. FACILITATE ATTRACTION OF ALTERNATIVE SOURCES

### Develop ‘post-doc’ and bridge programs for Ph.D.’s in other disciplines

Doctoral faculty can be attracted from sources other than doctoral programs in business. Almost half of the faculty at the University of Chicago's Graduate School of Business have doctoral degrees from fields outside of business, and many other schools attract and promote faculty with training in other fields.

The sciences have a long established tradition of ‘post-doc’ training where newly minted Ph.D.’s spend up to three years at the start of their careers in non-tenure track research and teaching positions at other universities, launching their own research projects, advancing their skills by working with seasoned researchers, and getting initiated into some teaching. In the physical and life sciences, 39.3 percent and 53.8 percent, respectively, of 1999–2000 doctoral graduates planned to extend their studies through fellowships, research associations, or traineeships. In the social sciences, 20.6 percent have post-graduate study plans. In business and management, only 3.3 percent have post-graduate plans for additional study (see Appendix D).

Post-doctoral training salaries are typically somewhere in between graduate assistantship and starting faculty levels. The rationale for these post-doc systems is in part to continue learning and provide opportunities to establish a research stream, but more pragmatically reflect limited academic employment opportunities for research faculty in these fields. Combining all fields, 26.0 percent of 1999–2000 doctorate recipients were still seeking post-doctoral study opportunities or employment at the time of graduation. Business and management graduates fared much better (15.6 percent) than graduates in the physical sciences (23.6 percent), engineering (27.4 percent), life sciences (25.4 percent), and social sciences (26.6 percent).

**Table 9. Study and Employment After Doctorate**

Field	Definite Postdoc Study	Seeking Postdoc Study	Definite Employment	Seeking Employment	Total Seeking Postdoc Study or Employment
All Fields	18.4%	6.6%	45.8%	19.4%	26.0%
Physical Sciences	30.4	8.9	36.7	14.7	23.6
Engineering	13.2	6.7	49.2	20.7	27.4
Life Sciences	40.5	13.3	26.4	12.1	25.4
Social Sciences incl. Psychology	15.1	5.5	47.3	21.1	26.6
Humanities	4.8	3.1	51.3	31.4	34.5
Education	3.2	1.5	63.7	20.6	22.1
Business & Management	2.6	0.7	71.0	14.9	15.6

Source: National Science Foundation

Some new faculty can be attracted into post-doc positions in business from fields that are especially relevant to business research, and where the transitional costs are reduced. Sociology and industrial psychology Ph.D.’s have some theory overlap with management, and economics shares some theory

and analytical methods with finance and accounting. Physics and mathematics Ph.D.'s are methodologically prepared for some finance research, statistics Ph.D.'s often apply their analytical methods in marketing, and electrical engineering and computer science Ph.D.'s share problems and methods with management science and information systems faculty. The conceptual and methodological transition from these adjacent fields may not be large, and may be seen by both sides as an intellectual opportunity to stretch the research agenda through inter-disciplinary collaboration. Moreover, the attractiveness of market opportunities in business may serve as a significant inducement for non-business Ph.D. graduates to invest in a business post-doc as a career bridge.

In most instances, some acculturation to the language of business is required to increase the relevancy of taught materials in business and facilitate application of research to the problems in business. Non-business doctorates also may benefit from special orientation to the culture of business schools. We recommend that schools develop post-doc opportunities for these non-business Ph.D.'s for one to two years, at competitive salaries below the cost of starting business faculty. The expectation would be for limited teaching in business in subjects closest to the post-doc's field of expertise, and opportunities for collaborative research with faculty.

Key advantages of sourcing doctoral faculty from other disciplines are that they represent fields with less favorable market conditions, are well trained in the scientific method, and can enrich the substance or methods of research in business. The post-doc as a bridge program offers an extended period for the business school to preview the caliber and fit of the post-doc, and to apply the post-doc to the schools teaching program at a cost below that of starting business faculty.

The success of this sourcing strategy depends on the flexibility of post-docs to adapt to the issues in business, and the openness of traditional business faculty to research from other fields. Over the longer term, this will also require a willingness to promote and tenure individuals whose research records are at least partially built outside the boundaries of traditional business disciplines.

Of course, non-business faculty can be recruited directly without the benefit of a post-doc program. At the moment, the transition of non-business faculty into the theoretical frameworks, cultures, and pedagogical approaches of business is left up to the idiosyncrasies of individual faculty members and their departments. However, a post-doc business program would institutionalize the transition phase and achieve relatively immediate results if business faculty are willing to invest in the transition and in mentoring the post-doc.

There is a role for the professional associations and/or selected schools to conduct intensive bridge workshops for post-docs. AACSB as an umbrella organization can provide indirect support for these endeavors, such as marketing or meeting support. Depending on the discipline, international associations of business academics (e.g., Academy of Management or various marketing or finance associations), could offer intensive workshops for post-docs transitioning into the field. The focus could be a primer of the dominant research streams and methodologies in the discipline.

The number of post-docs accepted annually across major business schools can be significant, achieving meaningful short term results. If each of the major doctoral producers accepted two to three post-docs annually, the annual pipeline would grow by 100 to 150 graduates per year, with results from the third year on. That can potentially reduce the five-year projected gap by 15 percent under the mid-case projections.

### **Introduce or expand doctoral programs for executives**

Executive or professional doctoral programs typically attract employed mid- to senior-level executives with a penchant for business theory as a lens for critical thinking in the practice of business. In some instances these executives also harbor a desire to teach. The programs are practice oriented, provide in-depth exposure to the foundations of business, and involve case study or consulting-type projects as theses rather than original research. For that reason they are shorter than typical research-oriented Ph.D. programs.

Examples of institutions offering such programs are Case Western Reserve University and Pace University in the US, and Henley Management College in the UK. These programs have potential as alternative sourcing strategy, as they attract executives who might otherwise lack the theoretical grounding for rigorous teaching or the channels for entry into academia. However, professional doctoral programs are quite rare and seem to lack visibility among the populations that would most likely benefit from such degrees. For executives attracted into second careers in academia, these programs can serve as an efficient bridge program into teaching. Even small changes in this segment of the doctoral degree market could have an impact—20 more graduates produced annually beginning in 2006 (the average time to graduation in such programs is three years) would add 150 doctorates by 2012.

### **Legitimize dual research and non-research tracks**

The scenario laid out earlier described the inevitable drift—in all but the most elite schools—toward a faculty that is not afforded the luxury to invest in research because of teaching overload and/or because it is not research trained. Faculties in other disciplines that do not confront such shortages, and are absent a practice focus, may not yet encounter a dual track professoriate. In business schools, the dual track is fast becoming a reality as many schools engage qualified non-research teaching faculty and executives as full-time staff in order to meet their teaching obligations. But these faculty lack the full scope of rights and rewards relative to researchers, and do not receive full recognition for their alternative forms of excellence in teaching and service.

Appreciating the need to legitimize a dual track faculty, some business schools are allying with other professional schools within their universities to accommodate clinical professors, or professors of the practice, into the governance, reward, and job security rights of their universities. Although extending tenure to such faculty is a steep uphill battle, other forms of extended job security can be offered, as well as engagement in all but research-related decisions like tenure deliberations. Incidentally, some higher education observers predict the disappearance of the institution of tenure even for research faculty, suggesting convergence between research and practice tracks of the professorate. The essential point is that this alternative career track will need to be legitimized if the goal is to encourage a vibrant pipeline of practice professionals into business faculties.

In many parts of the world outside the US, the use of faculty who do not have research duties is widespread. Schools that are built on executive education in Europe, for example, often employ professionally experienced faculty (sometimes up to half of their total faculty numbers) as scholars and teachers, but not as researchers who publish in academic journals.

### **Clarify definition of “professionally qualified” faculty**

Accreditation standards have a direct bearing on the composition of faculties. AACSB’s earlier (pre-1991) accreditation standards required certain percentages of academically qualified full-time faculty,



where qualifications were defined as the terminal degree in the relevant career track (Ph.D., D.B.A., LL.M., etc.). There were fairly transparent metrics to gauge the quality and intellectual contributions of research faculties. Obviously, these standards reinforced pressures to hire doctoral faculty.

Under current AACSB (2003a) accreditation standards, these strict requirements can be shaped around the particular mission and focus of a program. For schools that have a teaching and practice mission, it is legitimate to skew the faculty complement toward practice-oriented faculty, including those who do not have a doctoral degree, provided these faculty have expertise as teachers and as practicing professionals.

However, to lend credibility to the new standards and to guard against excessive drift in their interpretation, more detail is needed in order to define and measure expertise and quality among professionally-oriented faculty, as opposed to research faculty. In the UK, the Institute of Learning and Teaching (ILT) in Higher Education has been established to ensure that teaching abilities are at a high standard. Membership in the ILT is fast becoming necessary for appointment as a teacher in business schools.

Since it is inevitable that many faculties—traditional research and others—will resolve their Ph.D. shortages by recruiting more professionally qualified faculty, we need explicit quality standards for “clinical faculty” similar to the measurement traditions developed for research faculty.

## **II. INCREASE PRODUCTION OF PH.D.'S**

### **Initiate new funding sources for business doctoral programs**

The arguments for supported research in business are economic development, viability of market and corporate governance structures, and strength of the educational institutions that graduate the future leaders of business. However, as self-evident as these arguments might be to business researchers, they are not shared by public policy and corporate leaders who determine the R & D imperatives for national and corporate budgets. Public understanding of the imperative for basic science and engineering research is vastly different. Due to widely supported and available public and private funding, science and engineering faculty and graduate student research and training are funded largely through federal and corporate research grants. In stark contrast, business doctoral students are funded almost entirely through the schools own resources because funding sources have not yet been convinced of the societal and market imperative for such research. A partial explanation is that business schools, unlike other disciplines in the sciences and engineering, have never had a common broad-based initiative advocating for research and institutional funding from traditional sources.

As indicated earlier, cost issues—for students and the business school faculties who mentor doctoral students—represent significant barriers to enlarging doctoral programs. Only a portion of the cost of business doctoral students is offset by the teaching output of doctoral students. And in some instances, these teaching expectations have expanded in order to offset the cost of student support, to the detriment of the educational experience.

In terms of traditional research funding in the US, National Science Foundation (2001) funding for key science, engineering, and social science initiatives is more than \$2.2 billion annually, of which less than \$10 million flows to business schools. The most likely NSF directorate to fund business research is the Social, Behavioral and Economics Directorate. Total funding for that directorate exceeds \$162 million annually, but only about \$2 million—a little more than one percent—is earmarked for business-related research through the “Transforming Quality Organizations (TQO)” program. Other directorates—in Computer and Information Sciences and in Engineering—provide minimal funding to

researchers in business schools, predominantly in operations research, management sciences, and information technology. The Commerce Department, through the National Institute for Standards and Technology (NIST), has also provided small amounts of funding for business research.

NSF funds in the sciences are also used to support undergraduates who participate in research projects (Research Experiences for Undergraduate Students–REUS) to entice them into graduate programs of research. Similar funding made available for undergraduates to support research in business could increase the pipeline of research-oriented students into doctoral programs in business.

In addition to federal funding, corporate support is available for particular business Ph.D. initiatives. The KPMG Foundation’s Ph.D. Project and the GE Fund create opportunities in the Ph.D. pipeline for under-represented minorities. The Ph.D. Project has had dramatic success in identifying minority Ph.D. candidates who have selected business academic positions upon graduation. Of 328 students supported to date, all but four have obtained Ph.D.-rank academic positions.

Since one in six business Ph.D.’s ends up in industry, the corporate world has a direct as well as indirect interest in the production of business Ph.D.’s. Corporate initiatives should be expanded to more broadly support business research and Ph.D. students. There are examples of joint industry-government research initiatives. The TQO program mentioned earlier was a joint NSF-industry funded research program. Similarly, in the late 1970s and 1980s, public accounting firms (specifically KPMG and Ernst & Young) sponsored tax and audit research programs in accounting departments in major business schools. The Presidential Information Technology Advisory Committee (PITAC) was a joint government-industry commission to advance and fund information technology research in the US. A similar body—the Business Higher Education Forum, which is sponsored jointly by the National Alliance of Business and American Council on Education—is a possible sponsor of a business research program that will achieve (a) critical business advances in targeted areas and (b) expansion of the Ph.D. pipeline by funding students.

The DFC suggests a focused and coordinated public-private partnership to assure continued research and education in business. We recommend the creation of a public-private funding program, to infuse a new generation of business Ph.D.’s into universities. Call it the “Business Futures” Program. An infusion of \$55 million, for example, could potentially provide direct and indirect support for 220 additional business doctoral students each year, at \$50,000 annually per student. Since Ph.D. time-to-graduation is five years on average, within 10 years this program can produce 950 additional doctoral graduates, reducing by 40 percent the projected shortage of 2,419 business Ph.D.’s. Drawing on precedents described earlier, there should be multiple funding sources and channels for the Business Futures Program, including (a) increased government support for research in business schools; (b) foundation and corporate support for Ph.D. scholarships in particular business disciplines; and (c) joint federal-industry sponsorship of targeted research initiatives. Business research experts should be key participants in determining the agenda for sponsored research and allocation decisions.

In the UK, management research has historically been funded by the Economic and Social Research Council, and (to a lesser extent) by the Engineering and Physical Science Research Council. A new Advanced Institute for Management has been set up by these Councils to develop management research, but its funds are likely to be applied principally to support senior research workers and post-doctoral full-time researchers, rather than Ph.D. students. Only a very small number of funded Ph.D. scholarships are likely to be supported by UK government funds. Despite recommendations of the Council for Excellence in Management and Leadership that government should seriously address the likely shortfall in business school instruction, there is little sign that the UK government will respond.

The situation is more difficult for universities in some regions, such as Latin America, which do not have research traditions that can motivate increasing government support. On the other hand, these schools may be more likely to benefit from corporate sponsored research initiatives.

### **Provide reputational incentives to invest in Ph.D. programs**

Business schools are heavily MBA focused because most (by one tally, 16 of 19) of the major business school rankings focus on the MBA. Although several European and Asian countries have national research rankings, there is no reputable source that ranks business research contributions or Ph.D. programs internationally or in the US, the largest Ph.D. producer.

The most central academic ranking of research doctorate programs in the US is conducted by the National Research Council (NRC) and excludes business as well as other professional programs. In 1995, which was the most recent ranking, NRC ranked 41 programs. The latest update of programs proposed for NRC rankings adds 17 new programs that reflect emerging and distinct fields (Brainard, 2003). No professional programs—business included—are proposed as additions to the upcoming NRC rankings.

We recommend that the industry advocate for such inclusion despite the added burden of yet another ranking of business programs, because a distinct focus on the intellectual and research contributions of business Ph.D. programs may provide the reputational incentive to redirect resources into business Ph.D. programs. The traditional media outlets also need to be educated about research as an important contributor to program quality, and about the appropriate roles and metrics of research rankings.

In the UK, an elaborate system is already well developed for rating the research caliber of all academic programs, including business. The UK's Research Assessment Exercise (RAE), conducted once every four or five years, drives higher education funding on the basis of ratings of research quality. Ratings range from "1" to "5\*," according to how much of the research output is judged to achieve national or international levels of excellence. The RAE ratings are publicized extensively and provide a clear financial as well as reputational incentive for UK business schools to invest in research activities, including Ph.D. education.

### **Secure agreement among top producers to increase program intake**

Resource constraints in faculty size and doctoral funding, and the absence of reputational incentives, are hindrances to increased intake into doctoral programs and account for Ph.D. program contraction among those that were the major producers of Ph.D. graduates in the past. However, even marginal increases among stronger Ph.D. programs, to return to earlier production levels, would have a significant impact on the pipeline.

Doctoral production is concentrated among relatively few schools. Thirty percent of business schools accounted for 78 percent of the 29,870 Ph.D.'s awarded between 1960 and 2000. In the most recent AACSB survey of US doctoral programs, about half have at least 50 students enrolled and account for 77 percent of the 6,000 students reported by all survey participants. An increase of two or three students annually by the largest programs could result in a net annual increase of approximately 100–150 doctoral graduates after five years. This self-initiated solution, encouraged by Business Futures funding, could create a substantial reduction in the projected shortages of doctoral faculty.

There is an opportunity to examine the role of doctoral education during peer accreditation reviews. The particular assets and costs of any single program should be considered in the context of the pro-

fessions obligations to continue to replenish its intellectual troughs. Before recommending doctoral program reductions in favor of other initiatives, review teams are encouraged to balance the needs of the program with the more general concern for preserving doctoral education.

### **III. PROMOTE BUSINESS DOCTORAL EDUCATION TO PROSPECTIVE STUDENTS**

#### **Market doctoral programs and career attractiveness**

The earlier cited survey of members of Beta Gamma Sigma, the business student honor society, demonstrated a gap between their perceptions and the reality of business faculty career opportunities. They significantly overestimated the financial burden of the doctoral studies, and underestimated the financial returns of an academic career in business. Since the survey was taken among a target applicant pool for doctoral programs, it points sharply to a need for industry-wide marketing efforts to increase the supply of prospective doctoral students.

AACSB International, *efmd*, GMAC, and other international management education and professional associations in business can play an important role in educating student and business target populations about the intellectual and financial attractiveness of faculty careers in business, and in dispelling the myths about doctoral studies (e.g., that it is self-funded or requires an MBA for entry). Organizations comprised of diverse student and applicant populations are especially important targets for proactive marketing in order to increase heterogeneity in the doctoral faculty pipeline.

#### **Develop dedicated recruiting channels for doctoral students**

The MBA marketplace has developed vehicles for global recruiting of prospective students. Global MBA Forums are orchestrated by commercial vendors to drum up interest in MBA program attendance in various local markets. Forums are attended by program representatives and interested candidates. Some schools orchestrate their own recruiting meetings in particularly attractive markets to promote their programs and screen prospective candidates.

Similar vehicles need to be engineered for doctoral student recruiting. The Ph.D. Project is the only comparable industry-wide recruiting activity at the doctoral level, and it should be duplicated to elicit interest among other domestic and international candidates for doctoral programs. Partnerships in the established doctoral recruiting activities of other disciplines (e.g., engineering or computer sciences), as well as existing organizational structures (e.g., DocNet, which is an organization of doctoral program directors), could be leveraged to organize recruiting forums for doctoral candidates. These will require industry-level leadership and support.

#### **Attract high quality applicants with special funding**

Incremental financial incentives targeting the most attractive candidates should increase the number of high quality applicants into doctoral programs since surveys of potential Ph.D. applicants indicate that the cost of education is a deterrent to their candidacy. In addition to Business Futures funding, support for doctoral students could be more heavily emphasized in business school endowment campaigns, which have been traditionally directed to other priorities.

In addition to funding, intangible program features can enhance attraction of highly qualified candidates to Ph.D. programs. These include explicit expectations for structured mentoring of Ph.D. candidates by faculty, engagement of Ph.D. students in collaborative research with faculty, and prominence of the Ph.D. program within the program priorities of the business school.

### **Develop and maintain a doctoral program resource site**

A central worldwide clearing house should be developed that provides convenient access to information about doctoral education and career paths in business schools, as well as direct links to the Web sites and online enrollment information for all of the major doctoral programs. AACSB and GMAC are well-positioned to take leadership roles in providing this resource. AACSB has produced doctoral program guides in the past, has access to a variety of related information such as salary data, and already operates the Management Education Jobs (M.E. Jobs) Web site. GMAC's mission is to promote access to graduate management education and their continuing partnership with the Ph.D. Project, whose Web site already has relevant information about academic careers, can facilitate this effort. A comprehensive business doctoral program resource site should add value to Ph.D. Project initiatives.

It would be advantageous to make doctoral program information available worldwide, since so many doctoral students in business now do doctoral work in countries other than their own. Partnerships between the representative bodies in different countries and regions would facilitate this effort. Faculty disciplinary associations, with their emphases on doctoral consortia, also will have substantial interest in supporting such a resource site.

## **IV. FOSTER INNOVATION IN DOCTORAL EDUCATION DELIVERY**

As indicated earlier, the cost of doctoral programs is a limiting factor discouraging their expansion. A key cost driver is the labor intensive involvement of faculty in doctoral teaching and mentoring. Innovations that address these costs can provide opportunities for expansion.

### **Test use of consortia models**

Doctoral program delivery is unusually expensive because of the low student-faculty ratios. By pooling resources across institutions, schools can increase the number of students served while concurrently reducing the faculty resources devoted to the program. Such pooling can occur for selected courses, or even entire programs. Consortia need not be comprised strictly of business school partners. They can involve other disciplines within and across universities, as well as non-traditional education institutions, such as think tanks or corporate universities.

Information technology is the critical enabler of such alliances and opens the possibility for global partnerships in doctoral education, as long as the students are still afforded the opportunity to engage in intensive interactions with faculty—on site or virtually.

Although institutional partnerships are fairly common at the MBA level, consortia for doctoral education are rare and should be tested for their learning and cost effectiveness. There are a few examples of institutions working together, such as Montreal-based universities in Canada that offer pooled teaching seminars and the European Doctoral School on Knowledge and Management (EUDOKMA) in Europe. These joint programs tend to deliver collaboratively only a portion of the doctoral work. Also, there is a movement toward doctoral centers in some European countries (e.g., Germany, Denmark) that, among other things, are designed to facilitate coordination in doctoral education among universities (Haug & Tauch, 2001).

Another partnership model is the customized program that Tulane University delivers with Monterrey Tech. Students from Mexico take formal courses in Monterrey and New Orleans, USA, and are mentored jointly by Tulane and Monterrey Tech faculty. Custom degree programs with European and US schools can be especially important sources for schools that are seeking global reputations, but are located in regions without well-developed university research traditions.

### **Use technology to reduce the cost of doctoral education**

Information technology can provide a variety of advantages to the doctoral educational process as well as to its cost:

- As the enabler of consortia-based programs, per above, without regard for program distance;
- As the channel to access faculty or business expertise, or centers of excellence, in a particular teaching or research area;
- As a method for accessing and introducing program innovations that, without the technology, might remain inaccessible or prohibitively expensive;
- As a means to shorten time-to-degree by providing students more efficient models of learning and research access.

For these reasons, information technology can increase the lure and feasibility of a doctoral degree program for candidates, and reduce the cost of delivering program excellence for business schools.

### **Share information about best practices in doctoral education**

Innovations in program mission, content, and delivery should be shared. AACSB is a natural host for exchanges of information about best practices through interactive discussion groups and updated Web site resources, as well as conferences dedicated to innovations in faculty (doctoral and other) development. AACSB can also serve as the meeting ground or “mixer” to encourage alliances and consortia among interested business school partners from across the globe.

Best practice sharing should include programs that “teach” teaching and program development. Most doctoral programs are content oriented and devote little, if any, attention to the practice of pedagogy. All faculty—doctorally qualified and other—spend at least a portion of their time in the classroom and many are engaged in program development. Yet few have received instruction in the science of teaching and curriculum development. This is especially critical as we move toward technology-mediated teaching and learning, and attract faculty that focus almost exclusively on teaching.

## SUMMARY IMPACT

The table below projects the expected impact from the three primary recommendations aimed at increasing the supply of Ph.D.'s into business schools. The total projected increment by 2012 from these new strategies is 1,799 new Ph.D.'s into the market, compared against a projected shortage of 2,419 Ph.D.'s in 2012 if current practices are continued without change. (Note: Total increment of 2,171 shown in the table includes year 2012 production of graduates who assume positions only in 2013).

**Table 10. Incremental US business Ph.D. production from key strategies**

YEAR	Doctoral Faculty Demand	Actual Doctoral Faculty (With Actions)	Doctoral Faculty Retirements	Number of New Academic Doctoral Faculty	SOURCE				GAP	
					Post-doc Programs	Alternative Ph.D. Programs	Increased Ph.D. Funding	Total	With Actions	Without Actions
2003	26,214	25,727	547	603	–	–	–	–	-486	-486
2004	26,489	25,783	548	603	25	–	–	25	-706	-706
2005	26,610	25,863	549	604	50	10	–	60	-747	-772
2006	26,885	25,978	550	608	100	20	–	120	-907	-992
2007	27,093	26,156	551	611	150	20	46	216	-937	-1,142
2008	27,354	26,431	553	613	150	20	92	262	-923	-1,344
2009	27,617	26,754	554	615	150	20	202	372	-864	-1,547
2010	27,895	27,186	555	617	150	20	202	372	-709	-1,764
2011	28,184	27,620	557	620	150	20	202	372	-563	-1,990
2012	28,676	28,056	558	627	150	20	202	372	-620	-2,419
Total					1,075	150	946	2,171		

Source: Doctoral Faculty Commission

## ROLE OF INDUSTRY-LEVEL ASSOCIATIONS

The recommendations offered in this report impose burdens on individual schools, as well as on the industry associations. The primary burden on leading industry groups, such as AACSB International, is:

- To support industry-level advocacy and market positioning for funding and reputational purposes, e.g., to provide broad-based organizational infrastructure and the fact base to achieve the Business Futures Program and motivate the inclusion of business and management in NRC rankings;
- To develop mechanisms for industry marketing of business Ph.D. programs and career opportunities to various high potential market segments globally;
- To assist in delivering targeted workshops to bridge the skill set of non-business Ph.D.'s into business schools;
- To serve as the industry clearing house for Ph.D. program information and enrollment, and best practice sharing.

To achieve solutions for the Ph.D. market problem, AACSB and other industry and disciplinary associations around the world must play a critical role. This comes with significant associated costs, which will require the support of the industry membership to be successfully realized.

Key sources of influence are university presidents and provosts, whose support is critical. Higher education leadership has to buy into the urgency associated with business Ph.D. shortages and elevate this to a top priority relative to other important needs as they advocate for government and corporate funding. Without such focus and prioritization from the leadership of higher education, the odds of realizing the Business Futures Program are trivial.

Given its expanding international scope, the natural role for AACSB is to coordinate efforts to influence all institutions that can potentially alleviate global Ph.D. shortages—government agencies based in various countries that can fund Ph.D. education, university leaders and leadership organizations, professional disciplinary associations, the media, and, of course, business schools who are members of AACSB and global partner organizations. This would constitute significant expansion of AACSB’s traditional charter, and would require dedicated infrastructure and support.

Solutions will be obtained only through a broad partnership of university leaders, professional societies, and industry umbrella organizations in concert with the actions of business school deans and faculty in order to assure the future renewal, rigor, and creativity of business thought.



# Appendices

All appendices are available at the Doctoral Faculty Commission Web site: [www.aacsb.edu/dfc](http://www.aacsb.edu/dfc).

Appendix A: Global Survey of Doctoral Programs

Appendix B: Ph.D. Gap Analysis

Appendix C: Business Honors Student Survey

Appendix D: Analysis of US Doctoral Records File

## References

- AACSB International – The Association to Advance Collegiate Schools of Business. (2002a, September). *Overview of US business schools*. St. Louis, MO: Author.
- AACSB International – The Association to Advance Collegiate Schools of Business. (2002b, October). *Overview of Canadian Business Schools*. St. Louis, MO: Author.
- AACSB International – The Association to Advance Collegiate Schools of Business. (2002c, December). *Salary survey report: United States*. St. Louis, MO: Author.
- AACSB International – The Association to Advance Collegiate Schools of Business. (2003a, April 25). *Eligibility procedures and standards for business accreditation*. St. Louis, MO: Author.
- AACSB International – The Association to Advance Collegiate Schools of Business. (2003b, June). *Salary survey report: United Kingdom*. St. Louis, MO: Author.
- Anderson, E. L. (2002). *The new professoriate: Characteristics, contributions, and compensation*. Washington, DC: American Council on Education.
- Anderson, L., & Eddy, K. (2002, September 30). Schools warned on research [Electronic version]. *Financial Times*.
- Association of Business Schools. (2001). *Pillars of the economy 2001: The contribution of UK business schools to the UK economy*. Retrieved April 10, 2003, from [www.the-abs.org.uk/reportpageindex57.html](http://www.the-abs.org.uk/reportpageindex57.html)
- Association of Business Schools (2002). *Business and administrative studies: Students by subject and level (Full Time Equivalents)* [Data File].
- Bareham, J., Bourner, T., & Stevens, G.R. (2000). The DBA: What is it for? *Career Development International*, 5(7), 394–403.
- Bartelse, J., Beerkens, E., & Maassen, P. (2000, April). Germany. In *Graduate Education Reform in Europe, Asia, and the Americas and International Mobility of Scientists and Engineers. Proceedings of an NSF Workshop*. Arlington: National Science Foundation. Retrieved February 10, 2003, from [www.nsf.gov/sbe/srs/nsf00318/toc.htm](http://www.nsf.gov/sbe/srs/nsf00318/toc.htm)
- Beech, H. (2000, March 6). Leadership deficit [Electronic version]. *Time Asia*, 155(9).
- Brainard, J. (2003, January 10). Survey of doctoral programs needs major changes, panel suggests [Electronic version]. *The Chronicle of Higher Education*, 49(18), p. A10.
- Drivers of change in business schools. (2002, March/April). *BizEd*, 6–7.
- European Commission. (2002). *Key data on education in Europe*. Luxemburg: Office for Official Publications of the European Commission.
- European Foundation for Management Development (1998). *EQUIS quality standards*. Brussels, Belgium: Author.

- Feltham, T. S., Pearson, V. L., & Ford, D. (2001). Supply and demand for Canadian business Ph.D. graduates: A quest for greater understanding. Montreal, Canada: Canadian Federation of Business School Deans.
- Gerald, D. E., & Hussar, W. J. (2002, October). *Projections of education statistics to 2012* (NCES 2002-030). Washington, DC: National Center for Education Statistics.
- Gordon, R. A., & Gordon, J. E. (1959). *Higher education for business*. New York: Columbia University Press.
- Haug, G., & Tauch, C. (2001, March/May). Trends in learning structures in higher education (II). Draft follow-up report to the Bologna Declaration prepared for the Salamanca and Prague Conferences.
- Higher Education Research Institute. (1998). *Faculty survey institutional summary: Special analysis for AACSB* [Data File].
- LeClair, Dan (2003, March/April). Who's making what? *BizEd*. 42-45.
- Management Education Task Force. (2002, August). *Management education at risk: Report of the Management Education Task Force*. St. Louis, MO: AACSB International.
- National Science Foundation. (2001). Summary of FY2001 budget request to Congress. Arlington: Author.
- National Science Foundation. (2002). *Doctorate records file* [data file].
- Pfeffer, J., & Fong, C. T. (2002). The end of business schools? Less success than meets the eye. *Academy of Management Learning and Education*, 1(1), 78-95.
- Ph.D. Project. (2002). About the Ph.D. Project. Retrieved December 16, 2002, from Ph.D. Project Web site: [www.phdproject.org](http://www.phdproject.org)
- Shamatsuka, Y. (2002, March). Homegrown MBAs catch on [Electronic version]. *Japan Inc.*
- Soutar, G. (2002). Research productivity in Australian management departments from 1997 to 1999. Sydney: Australian and New Zealand Academy of Management.
- Williams, S. (2000, October). *Management and leadership teaching: Present trends and future demand*. London: Council for Excellence in Management and Leadership and Foundation for Management Education.
- Yu, C. (2001, January 16). Postgraduates turn to business, law, high-tech degrees [Electronic version]. *China Daily*.
- Zimmerman, J. L. (2001, September 5). Can American Business Schools Survive (Financial Research and Policy Working Paper No. FR 01-16). Rochester, New York: The Bradley Policy Research Center, University of Rochester.

## Doctoral Faculty Commission

### **Chair**

**Judy D. Olian**, dean, The Mary Jean and Frank P. Smeal College of Business Administration,  
The Pennsylvania State University

### **Members**

**Stuart I. Feldman**, vice president internet technology, IBM Global Services

**Howard Frank**, dean, The Robert H. Smith School of Business, University of Maryland

**Daniel R. LeClair**, director of knowledge services, AACSB International

**Bernard J. Milano**, president and trustee of KPMG Foundation

**Jone L. Pearce**, interim dean, Graduate School of Management, University of California, Irvine

**Stephen R. Watson**, principal, Henley Management College

**Doyle Z. Williams**, dean, Sam M. Walton College of Business, University of Arkansas

For more information about this report, contact:

AACSB International Knowledge Services: 1+ 314-872-8481. E-mail: [knowledge.services@aacsb.edu](mailto:knowledge.services@aacsb.edu).

## 2003–2004 Board of Directors

### OFFICERS AND MEMBERS

#### **Chair**

Carolyn Y. Woo, University of Notre Dame

#### **Vice Chair–Chair Elect**

Doyle Z. Williams, University of Arkansas

#### **Secretary–Treasurer**

Paul Danos, Dartmouth College

#### **Immediate Past Chair**

Jerry E. Trapnell, Clemson University

#### **President and Chief Executive Officer**

John J. Fernandes, AACSB International

Angel Cabrera, Instituto de Empresa

Joseph A. DiAngelo, Saint Joseph's University

Richard E. Flaherty, University of Nevada, Las Vegas

Rex D. Fuller, Colorado State University-Pueblo

Adelaide Griffin, Texas Woman's University

Yash P. Gupta, University of Washington

Sidney E. Harris, Georgia State University

Arthur Kraft, DePaul University

Patrick R. Liverpool, Delaware State University

Patricia W. Meyers, University of Dayton

Frank J. Navratil, John Carroll University

Judy D. Olian, The Pennsylvania State University

Helen F. Peters, Boston College

Susan M. Phillips, The George Washington University

Andrew J. Policano, University of Wisconsin-Madison

Sharon Smoski, State Farm Insurance Companies

Richard E. Sorensen, Virginia Polytechnic Institute and State University

Howard Thomas, University of Warwick

Dennis J. Weidenaar, Purdue University

Jean C. Wyer, PricewaterhouseCoopers

### MISSION STATEMENT

AACSB International will provide global leadership in advancing management education through accreditation and by fostering international interchanges, key business linkages, sharing of best practices, professional development, and other member services.