GRAD AND PROFESSIONAL SCHOOLS

Exploring the Relationship between International and Racial Minority Enrollment in M.B.A. Programs at Public Universities in the United States

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This study examines whether international enrollment can affect access for racial minority students in M.B.A. programs at public universities in the United States. Using data from *U.S. News & World Report*, Integrated Postsecondary Education Data System, the U.S. Census and the Bureau of Labor Statistics for the period from the 2001–02 through 2016–17 academic years, the analysis implemented a fixed-effects panel regression technique and concluded that international enrollments do not reduce access for domestic racial minority students. The study also reviewed other factors associated with increasing racial minority enrollment in M.B.A. programs.

The United States has been one of the most popular destinations for international students for several decades. In 2019, 21 percent of internationally mobile students were hosted by U.S. colleges and universities. Between 2000 and 2019, international enrollment grew by 113 percent, from 514,723 to 1,095,299 international students (Institute of International Education 2019). The dramatic growth in the number of international students has provoked public concerns from both scholars and the popular media. Critics argue that international students crowd out domestic students (Anderson 2016; Bound, *et al*. 2016; Pratt 2014). On the other hand, proponents of internationalization point at the economic value of students from abroad and emphasize international students' potential to subsidize the cost of educating domestic students (NAFSA 2019; National Foundation for American Policy 2018; Peri, Basso, and McElmurry 2016).

Recent criticism has arisen as a reaction to the influx of international students at the undergraduate level. However, international students have long maintained a high presence in graduate education. Between 2000

and 2019, graduate international enrollment grew from 238,497 to 377,943 students (Institute of International Education 2019). The share of international enrollment in total enrollment in graduate programs in 2019 was 13 percent, which is higher than the total share of international students in the whole U.S. higher education sector (five percent), according to the author's calculations using IPEDS. Although many graduate schools in the United States have been reporting declines in first-time enrollments among international graduate students since 2018 (Okahana and Zhou 2019), it is still important to understand the impact of international enrollments on domestic enrollments in the graduate sector.

This study investigates whether internationalization efforts have impacted domestic racial minority enrollment in graduate business schools. While other studies have examined the relationship between international student enrollment and domestic minority enrollment for undergraduates (Shen 2017) and for various Ph.D. programs (Borjas 2004; Regets 2007; Shih 2017; Zhang 2010), this is the first paper to explore the relationship in full-time M.B.A. programs. This study focused on business majors because business administration is the field in which the largest number of master's degrees have been conferred (McFarland, *et al.* 2019, 190). Additionally, business is one of the most popular fields of study for international students. According to an Open Doors report, in 2019, 20 percent of all international students in the United States were enrolled in business degree programs (Institute for International Education 2019).

The decision to look specifically at graduate business schools affiliated with public universities comes from the idea that public institutions are expected to embrace the mission of accessible and affordable quality education for the domestic student population (American Academy of Arts and Sciences 2016; Bastedo and Gumport 2003; Jaquette, Curs, and Posselt 2016). Public universities incorporate this notion in their mission statements. The mission of the State University of New York (SUNY) is "to provide to the people of New York educational services of the highest quality, with the broadest possible access, fully representative of all segments of the population in a complete range of academic, professional and vocational postsecondary programs including such additional activities in pursuit of these objectives as are necessary or customary" (SUNY 2021).

Similar to all other programs at public institutions, business schools affiliated with public universities charge international students tuition rates that are two to three times higher than what domestic students pay. Such pricing can subsidize the cost of enrolling more students from historically underrepresented groups of domestic students. This "cross-subsidization" may occur when business schools are committed to the access and equity mission. Alternatively, if a business school is oriented toward revenue generation, and/or if international applicants to M.B.A. programs have better academic profiles, there is a chance that prospective domestic racial minority students may be crowded out by their peers from abroad. Changes in student body composition are an important indicator of changing institutional priorities. Therefore, findings of this study provide insights about the changing character of public universities and have implications for the campus climate experienced by racial minority students.

Literature Review

Enrollment management is a complex process with various factors influencing institutional enrollment behavior. This section discusses major factors that can affect enrollments of domestic minority and international M.B.A. students and presents findings from existing studies on the relationship between international students and domestic enrollment in graduate education.

Factors Affecting M.B.A. Enrollments

Graduate business schools need to improve and enhance the competitive market position to increase the capacity to achieve strategic goals. One way to achieve this is by strengthening the academic profile. In the case of graduate business education, several factors are considered by admissions committees. The first six factors—GPA, GMAT, coursework, letters of recommendation, personal statement, and resume—are the standard and most important factors, whereas professional experience or internships, leadership in student organi-

zations, and honors/awards are additional factors that may help prospective M.B.A. students stand out among other candidates (Hammond, *et al*. 2015).

Graduate business school enrollments are also greatly affected by institutional financial needs. Compared to other graduate programs, business programs are more actively engaged in profit-seeking behavior as they tend to be seen as "cash cows" for their host universities. It is more cost effective for institutions to expand graduate business enrollment compared to other academic programs as M.B.A. students have lower demands on facilities (they do not need dormitories, dining halls, and other facilities and may attend classes in evenings or on weekends). Graduate business schools offer an important revenue stream and sometimes share their positive cash flow with less-funded academic programs (Friga, Bettis, and Sullivan 2003).

The entrepreneurial nature of business schools impacts its admissions and enrollment practices (Jaquette, Kramer, and Curs 2018). It imposes a great deal of pressure on business school admissions officers to meet financial goals and rarely leads to practices that improve socioeconomic and racial diversity. Graduate business programs are motivated toward enrolling more high-income, out-of-state (if affiliated with a public university) and international students who pay significantly higher tuition prices. Additionally, unlike other graduate programs, M.B.A. programs rarely offer financial aid and expect students to pay full tuition and associated expenses *out of pocket or through the students'* employer tuition assistance program (Baum and Steele 2018; Kowarski 2019).

Another factor that might affect enrollment trends is whether business school admissions emphasize access and equity. Business schools have been asserting that a diverse student body is an important element in educating business leaders to meet the needs of a diverse society (Howard 2019). However, it is still unclear whether expressing a desire to increase diversity of their student body will translate into practices.

The three aforementioned priorities that affect M.B.A. enrollments of international and domestic minority students are subject to organizational constraints. Business schools are under pressure from accreditation agencies that require maintenance of certain standards that can limit the size of the program (AACSB 2017). It is important to note that when enrollment demand grows more rapidly than institutional capacity, institutions use admissions standards to ensure that capacity and enrollments grow at similar rates (Hoenack and Weiler 1979). Multiple external factors can determine international and domestic minority enrollment patterns at a business school. Business school enrollment trends are affected by economic conditions. When the economy slows down, domestic demand for M.B.A. programs will go up (Bogan and Wu 2018; Goh and Hoxby 2009; Shmidt 2018). The increased enrollment is attributed to the declining opportunity cost during times of economic weakness. People choose to invest in graduate education when it becomes harder to keep or find a job or get a promotion.

Competition from M.B.A. programs in other countries can also play a role in shaping international enrollments in M.B.A. programs. Business schools in Canada, the UK, and other Western European countries also attract many foreigners. A majority of M.B.A. schools in Western Europe and Canada have seen significant growth in international enrollment for the 2017–18 academic year (Graduate Management Admission Council 2018).

Federal and state policies might also shape domestic minority enrollment trends in M.B.A. programs. Research has shown that minority students take on more student debt (Goldrick-Rab, Kelchen, and Houle 2014). Graduate Management Admissions Council reports (2019a, 2019b) demonstrated that African American and Latino graduate business school candidates are more likely than other U.S. candidates to use loans and grants to pay for business school. Therefore, domestic minority enrollment in graduate business programs might be affected by changes to federal lending policies for graduate and professional education.

National immigration policies affect international enrollments at business schools. Recent changes to the political climate and anti-immigration rhetoric in America have made it more difficult for business schools to recruit international students. Changes to

H-1B visa policies, as well as travel bans, are keeping international students away (Tausche and Dhue 2017; Grow 2020). A GMAC Application Trends survey taken in 2018 showed that only 32 percent of American business schools reported growth in international applications for traditional M.B.A. programs, compared to 49 percent in 2016 (Graduate Management Admission Council 2018).

How International Enrollment Affects Domestic Enrollment

Several quantitative studies looked at how international students impact domestic enrollment in graduate education. Despite some methodological similarities, the studies produced quite conflicting findings. Borjas (2004) used data from the Integrated Postsecondary Education Data System (IPEDS) and looked at enrollments in all graduate programs at a given institution except law, medicine, and dentistry programs. The analysis of cross-sectional data spanning 1978 through 1998 revealed that enrolling ten additional international students reduced enrollment of domestic White male students by four. The crowd-out effect was found to be the strongest for the subsample of elite private universities. However, Borjas also found that ten additional international students would raise enrollment of domestic female students, Asians, and Hispanics by roughly two. Shih (2017) also used graduate enrollment data from IPEDS on both public and private not-for-profit universities and covered a more current period (1995 through 2005). He found that an in-flux of ten international students leads to eight additional domestic students. Shih showed that cross-subsidization is more pronounced in the public higher education sector. Regets (2007) used department-level data from the National Science Foundation's Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS) for the period from 1982 to 1995. Regets found that an increase in enrollment of one international student is associated with an enrollment increase of 0.33 for white domestic students and an increase of 0.02 for underrepresented minority students. Regret's analysis also showed a decrease of 0.07 for Asian students. Zhang (2010) used more current data from the National Science Foundation's Survey of Graduate Students and Post-doctorates in Science and Engineering (GSS) and found that one additional international Ph.D. recipient leads to one extra domestic Ph.D. recipient. However, the analysis of non-STEM fields revealed a crowd-out effect.

The conflicting results in the existing studies on the impact of international enrollment on domestic enrollment suggest the need for more research on international graduate enrollment. For example, none of the previous studies on the impact of international graduate-level enrollment has focused specifically on business education. It also becomes important to analyze more up-to-date data to account for recent changes in international enrollment trends.

Conceptual Framework

Following prior research on enrollments, the conceptual framework begins with resource dependence theory (RDT). The theory posits that organizations are constantly trying to acquire additional resources and minimize their dependency on any single external source (Pfeffer and Salancik 1978). One application of RDT is the effort of business schools affiliated with public universities to acquire additional tuition dollars through admitting international students who pay higher tuition.

International students bring another important resource to M.B.A. programs—prestige. Many business schools, particularly those affiliated with large public university systems, aspire to build a national or even international brand (O'Meara 2007). Recruiting international students can help increase awareness of a business school internationally and reach the goal of being viewed as cosmopolitan, diverse, and financially sound (Ford and Cate 2020).

Resource dependence and prestige seeking add accents to the concept of Iron Triangle of Enrollment Management (ITEM). This concept demonstrates that institutions and academic programs want to pursue access, academic profile, and revenue simultaneously (Cheslock and Kroc 2012). One important feature of ITEM is that gains in any one dimension will lead to decreases

in at least one dimension (Kelly and Rodriguez 2014). For example, an increase in access for underrepresented groups of students who tend to be less well prepared for college both financially and academically can result in a decrease in academic profile. It can also lead to a decrease in tuition revenue.

The Iron Triangle helps identify business schools' preferences for domestic racial minority and international students. Some of the same institutional priorities that international students embody—cultural and geographic diversity—are also enhanced through the admission of domestic minority students. In addition to diversity, racial minority enrollment contributes to the business school's access and equity mission. Focus on access and equity is more common for business schools affiliated with public institutions that are grounded on institutional mission to provide state's residents access to higher education. The majority of full-time M.B.A. programs in the United States that have the most racial minority students in their classes are affiliated with public universities, according to author's calculations using *U.S. News & World Report* data.

International enrollment targets two interrelated enrollment goals outlined in ITEM. Graduate business schools' reasons for pursuing international enrollment are: tuition revenue gains and boosting academic profile through increasing prestige and creating a multicultural learning environment. International students, who often pay higher tuition as well as additional fees, are crucial for generating significant revenues. Enrolling more international students also helps to enhance business schools' prestige. International students expand alumni networks globally, increasing a university's visibility and strengthening its brand (Lee 2010). Additionally, many business schools' rankings (*e.g.*, *Financial Times*, CNN ranking, *The Economist*) are rewarding business schools for higher numbers of international students in the programs (de Vega 2016).

Enrollment management priorities vary based on the selectivity of an academic unit. More selective programs primarily focus on attracting more high-caliber students, while less selective ones are more concerned with filling classes with any students who meet minimum admissions criteria. Reports on graduate admissions test scores broken down by race demonstrate that racial minority students tend to be less academically qualified (Educational Testing Service 2020; Graduate Management Admission Council 2019a; Graduate Management Admission Council 2019b). Thus, minorities will more likely apply and get accepted to a less selective business program. According to data from *U.S. News & World Report*, in 2017, racial minority students represented 30 percent of all students in the least selective full-time M.B.A. programs (selectivity based on GMAT score). The share of minority students in the most selective M.B.A. programs is about 20 percent, according to the author's calculations using data from the directory portion of the *U.S. News & World Report's* guidebooks for graduate and professional education. This calls for examination of how the relationship between international and minority enrollment varies across business schools of different selectivity.

Research Questions

The goal of this study is to identify whether there is an effect of international enrollment on domestic minority enrollment in traditional full-time M.B.A. programs at business schools affiliated with public universities and accredited by the Association to Advance Collegiate Schools of Business (AACSB). It will be guided by the following research questions:

- Is the growth in the numbers of international students associated with declines or increases in the numbers of minority students in M.B.A. programs at public universities?
- Does the relationship between international enrollment and minority enrollment differ by program selectivity?

Methodology

This study examines the relationship between international and domestic minority enrollment counts in full-time M.B.A. programs at public universities in the United States. It uses data from the 2003–04 through 2016–17 academic years. This time period is of significance for this study, as it captures time before, during,

and after the Great Recession. The following section provides details on the data, sample, method, and control variables.

Sample

The sample consists of 200 business schools affiliated with public universities accredited by the Association to Advance Collegiate Schools of Business (AACSB) and provided information for the *U.S. News* guidebook. To answer the second question, the sample was divided into more selective and less selective programs based on the average GMAT score of the admitted students (score for the 2003–04 academic year or the year when a business program first reported to *U.S. News and World Report*). The subsample of more selective programs consisted of business schools with a GMAT score higher or equal to 540, and the subsample of less selective schools consisted of those with a GMAT score below 540). The average GMAT score of 540 was chosen as the cut-off score because it was the median score for the sample of business schools in this study.

Data

The main source of data is the directory portion of the *U.S. News & World Report's* guidebooks for graduate and professional education. The graduate program directory portion of the guidebooks contains self-reported information about M.B.A. programs. *U.S. News & World Report* categorizes Asian-American, African American, Hispanic, or American Indian as minority students. This categorization is the same as the one by the U.S. Department of Education. The author and an academic advisor hand-entered data from the 2004 through 2018 *U.S. News & World Report* guidebooks to compile the dataset for this study.

Data from the Integrated Postsecondary Data System (IPEDS) was used on several institution-level controls. Prior to 2003–04, institutions used different standards to report financial data to IPEDS. Consequently, the 2003–04 academic year was chosen as a starting point of the analysis. The final year was determined based on *U.S. News* data availability. State-level covariates were gathered from several governmental data systems and described in the Control Variables section.

Missing data were not imputed given the limited power of imputing data for panel data analysis (Young and Johnson 2015). Additionally, the regression method does not eliminate the entire unit of analysis if data are missing for a specific time point. Thirty-nine programs that had less than three program-year observations were removed from the sample.

Missing data reduced the analysis sample and the potential number of program-year observations. Fifty four percent of program-year observations had complete data for analysis. The final regression analysis sample was an unbalanced panel of 200 business programs and 1,531 program-year observations. The largest percentage of cases with missing data was for the 2004–05 academic year. The largest percentage of missing data overall were enrollment counts (minority and international) and selectivity metrics (GMAT and GPA). Each variable had around 25 percent missing data.

Several variables in the dataset required computation or transformations before they could be used in the analysis. A small number of business schools reported tuition prices for the entire degree program (typically two years in length), so the reported was divided by price by two to get an annual price. Several M.B.A. programs reported per credit tuition. In that case, per-credit tuition was multiplied by eighteen (9 per semester) to get a typical full-time credit load for the year). All enrollment and financial variables were log-transformed to reduce heteroscedasticity. The financial variables were held in constant 2017 U.S. dollars by adjusting for inflation using the Consumer Price Index, produced by the U.S. Bureau of Labor Statistics.

Control Variables

Time-varying covariates for the study were grouped into three categories: program-level, institution-level, and state-level controls. The control variables are related to institutional demand for both minority and international students. The first group of controls focused on program-level characteristics and came from the *U.S. News* guidebooks. This group included the share of full-time enrollment in overall program enrollment. Median GMAT scores and average GPAs of newly admitted full-

time M.B.A. students as well as program acceptance rate were included as controls. The out-of-state tuition price for full-time M.B.A. programs was also included in this group of covariates.

The second group of control variables focused on institution-level factors and came from IPEDS. Graduate and professional enrollment as a percentage of overall enrollment was used to account for the university's relative focus on undergraduate versus graduate education. Two major revenue sources for public universities—state appropriations and tuition revenue—were also included in the second group of covariates. Tuition revenue as a percentage of overall revenue was used to control for an institution's reliance on tuition revenue.

The third group of control variables is state-level factors. State economic conditions have an impact on university enrollment. Studies showed that declines in state funding lead to increases in nonresident enrollment at public universities (Bound, *et al.* 2016; Jaquette and Curs 2015). The state unemployment rate (from the Bureau of Labor Statistics) and median household income (from the U.S. Census Bureau) were added to the third group of controls. This group also included the state-level share of minority population in total population (calculated based on data from the U.S. Census Bureau) as it could be correlated with minority enrollments.

Summary Statistics

Summary statistics for the total sample and the two subsamples for the 2003–04 and 2016–17 academic years are presented in Tables 1–3. Between 2003–04 and 2016–17, the median minority enrollment in full-time business programs increased 66 percent, from nine to fifteen students. The median international enrollment grew 50 percent, from eighteen to 27 students during the same period. Full-time students made up proportionally fewer of incoming M.B.A. classes at public universities in 2017 than they had fourteen years prior.

There were some differences in the enrollment figures based on program selectivity. In the 2016–17 academic year, more selective programs enrolled a median of seventeen minority students, and the me-

TABLE 1 ➤ Summary Statistics of the Total Sample (n = 200)

Variable	FY 2003–04			FY 2016–17		
	Mean	Median	SD	Mean	Median	SD
Program-Level Variables						
Count of International Students	37	18	28	42	27	45
Count of Minority Students	26	9	54	22	15	30
Share of Full-Time Students (%)	41	37	23	39	34	23
Median GMAT Score	561	554	65	570	561	79
Average GPA	3.30	3.30	0.14	3.34	3.35	0.15
Out of State Tuition ($)	15,321	13,733	7,458	25,471	20,782	13,515
Institution-Level Variables						
Share of Graduate Enrollment in Total Enrollment (%)	16	15	7	15	14	7
Share of Tuition Revenue in Total Revenue (%)	38	38	13	50	53	16
State Appropriations per FTE ($)	5,483	5,017	2,145	6,901	6,082	3,708
State-Level Characteristics						
Median Household Income ($)	57,709	57,167	7,876	58,998	58,319	8,057
Unemployment Rate (%)	5.95	6	0.89	4.85	5	0.71
Share of Minority Population (%)	19	19	9	23	21	9

Source: *U.S News & World Report* guidebooks; IPEDS; Census Bureau; Bureau of Labor Statistics

TABLE 2 ➤ Summary Statistics of the Subsample of More Selective Programs (n = 105)

Variable	FY 2003–04			FY 2016–17		
	Mean	Median	SD	Mean	Median	SD
Program-Level Variables						
Count of International Students	46	30	48	50	36	50
Count of Minority Students	28	12	34	25	17	39
Share of Full-Time Students (%)	41	35	25	37	32	20
Median GMAT Score	605	603	43	612	622	62
Average GPA	3.3	3.3	0.13	3.37	3.35	0.14
Out of State Tuition ($)	17,721	15,572	7,994	31,940	30,210	13,858
Institution-Level Variables						
Share of Graduate Enrollment in Total Enrollment (%)	18	16	7	16	15	7
Share of Tuition Revenue in Total Revenue (%)	35	34	14	46	47	17
State Appropriations per FTE ($)	6,029	5,948	2,261	7,319	6,780	3,764
State-Level Characteristics						
Median Household Income ($)	58,248	57,361	7,711	60,195	59,396	7,857
Unemployment Rate (%)	5.95	5.9	0.93	4.86	5	0.72
Share of Minority Population (%)	18	19	9	22	21	9

Source: *U.S News & World Report* guidebooks; IPEDS; Census Bureau; Bureau of Labor Statistics

TABLE 3 ➤ Summary Statistics of the Subsample of Less Selective Programs (n = 95)

Variable	FY 2003–04			FY 2016–17		
	Mean	Median	SD	Mean	Median	SD
Program-Level Variables						
Count of International Students	25	9	35	28	16	41
Count of Minority Students	10	8	22	22	11	74
Share of Full-Time Students (%)	41	39	19	42	36	25
Median GMAT Score	499	500	35	495	498	41
Average GPA	3.23	3.21	0.12	3.31	3.32	0.17
Out of State Tuition ($)	11,450	10,952	4,234	16,376	16,129	5,332
Institution-Level Variables						
Share of Graduate Enrollment in Total Enrollment (%)	14	13	7	14	12	7
Share of Tuition Revenue in Total Revenue (%)	43	44	12	56	58	13
State Appropriations per FTE ($)	4,748	4,443	1,712	6,419	5,683	3,601
State-Level Characteristics						
Median Household Income ($)	56,920	56,691	8,139	57,628	57,780	8,104
Unemployment Rate (%)	5.93	6.2	0.85	4.82	4.84	0.70
Share of Minority Population (%)	20	19	8	24	21	9

Source: *U.S News & World Report* guidebooks; IPEDS; Census Bureau; Bureau of Labor Statistics

dian minority enrollment at less-selective schools was eleven students. More selective programs were also able to attract more international students. Between 2003–04 and 2016–17, median international enrollment at more-selective business schools grew 20 percent from the median of 30 to the median 36 students. At less selective programs, it grew 77 percent from nine to sixteen students during the same period.

There were some changes to the selectivity measures for the period of the study. The median GMAT score slightly increased from 554 to 561 points. The median average GPA grew from 3.30 to 3.35. The median GMAT score grew by nine points for more selective programs, from 603 to 612 points. The median GMAT score slightly decreased from 500 to 498 points for less selective programs. The median average GPA of newly admitted students increased for both more and less selective programs. In the 2016–17 academic year, the median average GPA was 3.35 for more selective programs and 3.32 for less selective programs.

Out-of-state tuition prices grew substantially from the median of $13,733 to the median of $20,782. In the 2016–17 academic year, more selective business programs charged a higher out-of-state tuition of $30,000, while less selective programs charged $16,000.

The descriptive results of the institution level characteristics show that the share of graduate enrollment remained stagnant at approximately 15 percent. There were changes in the share of tuition revenue in total revenue for public universities in the sample. It grew from 38 to 53 percent for the total sample of business programs. The median state appropriations per FTE grew from $5,017 to $6,082.

The summary statistics for the state-level characteristics demonstrate that household income increased from $57,167 to $58,319. The state unemployment rate had slightly declined. The proportion of minority residents in the total population increased slightly from 19 to 21 percent.

Analysis Method

The study utilized a time-series panel regression technique. The number of full-time racial minority students in full-time M.B.A. programs is the dependent variable and the number of international students enrolled is the key independent variable. The model also included control variables that can capture program-, institution- and state-level factors that vary over time and affect international and minority enrollment for a given business program. The fixed-effects model of interest is shown in Equation 1.

EQUATION 1.

$$Y_{it} = \beta_1 X_{it} + \beta_2 W_{it-1} + \alpha_i + \delta_t + \varepsilon_{it}$$

In this model: **Y** is the outcome variable at program *i* in year *t*; the independent variable of interest, **X**, is the number of international students in the full-time M.B.A. class for a given business school for a given year; $\boldsymbol{\beta}_1$ is the coefficient of interest that measures the effect of international enrollment on minority enrollment; $\mathbf{W}_{it-1}$ is a vector of program-, institution- and state-level time-varying covariates lagged one year relative enrollment figures of interest; $\boldsymbol{\alpha}_i$ represents the vector of fixed effects; $\boldsymbol{\delta}_t$ represent time fixed effects and $\boldsymbol{\varepsilon}_{it}$ is the error term.

Limitations

The first limitation of the study is that because of data availability, the sample was limited to AACSB accredited business schools in the United States. The study did not attempt to generalize results beyond AACSB accredited M.B.A. programs and focused on more prestigious full-time M.B.A. programs. Accreditation by internationally respected agencies, such as the AACSB, is an important selling point of programs at reputable schools. AACSB has the most stringent accreditation standards (AACSB 2020). AACSB-accredited business schools typically belong to research-oriented higher education institutions (Kelchen 2018). There are 820 business schools in 53 countries that have earned AACSB accreditation. These schools represent less than five percent of schools granting business degrees. Thus, the sample is not representative of the population of M.B.A. providers since there are other accreditors. Besides, business schools in the United States don't have to be accredited to operate.

AACSB accreditation standards emphasize a need to internationalize student experiences (Gordon, Heischmidt, and Greenwood 2000). This is a strong stimulus to recruit more international students. Additionally, several studies indicated that AACSB accreditation is important to students selecting an institution of higher education for their studies (Hunt 2015).

Another limitation of the study is that beta coefficients for the relationship between international enrollment and minority enrollment do not directly suggest cross-subsidization or crowd-out effect. To interpret the relationship coefficient as cross-subsidization, it is necessary to look at the institutional and program budget and see how much tuition revenue was generated from international M.B.A. students and how much institutional aid was given to minority students in full-time M.B.A. programs.

Results

Table 4 presents fixed-effects estimates of the association between international enrollment and minority enrollment in full-time M.B.A. programs in business schools affiliated with public universities. They indicate that a one percent increase in international enrollments is associated with a 0.20 percent growth in domestic racial minority enrollment ($p < 0.001$). The magnitude of this relationship between international enrollment and minority enrollment is similarly small and positive for the subsamples of more and less selective M.B.A. programs. These results demonstrate that as M.B.A. programs increase international enrollment, they do not restrict access for minority students. This may also suggest that international students subsidize minority students; however, as mentioned in the limitation section, this study estimated the correlational relationship rather than causal one.

TABLE 4 ➤ Results for Fixed Effects Models[1]

	Full Sample		More Selective M.B.A. Programs		Less Selective M.B.A. Programs	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Log Count of International Students	0.20[a]	0.03	0.29[a]	0.04	0.10[c]	0.05
Log Out-of-State Tuition Price	0.14[c]	0.07	0.30[a]	0.08	-0.15	0.13
Share of Full-Time Enrollment in Total Enrollment	1.02[a]	0.13	0.86[a]	0.18	1.08[a]	0.20
Median GMAT Score	-0.00[c]	0.00	-0.00[c]	0.00	-0.00	0.00
Average GPA	0.14	0.14	0.24	0.20	-0.00	0.00
Enrollment as Graduate Students (%)	-0.97	0.62	0.22	0.76	0.44	0.49
Revenue from Tuition (%)	1.13[a]	0.33	1.74[a]	0.49	0.09	0.20
Log State Appropriations per FTE	-0.04	0.09	0.03	0.12	-0.68	0.07
Median Household Income	0.00	0.00	0.00	0.01	0.00	0.00
Unemployment Rate	0.03[b]	0.00	0.02[c]	0.01	0.04[c]	0.02
Minority Population (%)	0.02	0.17	0.07[c]	0.03	0.01[b]	0.04
Observations	1,531		926		605	
Number of Programs	200		107		93	
R^2	0.1534		0.1949		0.1579	
R^2, Adjusted	0.0187		0.0783		0.0153	

[1] Dependent variable is Log Count of Minority M.B.A. students
[a] $p < 0.001$
[b] $p < 0.010$
[c] $p < 0.050$

There were several other predictors of minority enrollment in full-time M.B.A. programs. The share of tuition revenue in total revenue at the university level is the strongest predictor of full-time M.B.A. minority enrollment (B = 1.13, $p < 0.001$). A one percent increase in the share of tuition revenue in total revenue leads to a 1.13 percent increase in minority student enrollment. One potential explanation is that public universities use additional tuition revenue to subsidize minority students in graduate business programs. Another possibility is that universities actively grow enrollment to increase tuition revenue.

Full-time minority enrollment is also associated with the proportion of full-time M.B.A. enrollment in total enrollment (B = 1.02, $p < 0.001$). A one percent in the share of full-time M.B.A. enrollment leads to 1.02 increase in full-time minority enrollment. One possible explanation of this relationship is that as business schools try to expand enrollment in their full-time programs, they start to enroll more minority students. At the same time, this relationship is not significant for the subsample of less selective business programs.

There is a statistically significant negative relationship between the median GMAT score and minority enrollment. For the full sample (B = -0.00, $p < 0.05$) and for the subsample of more selective programs (B = -0.00, $p < 0.05$) the relationship is negative, meaning that as the GMAT score goes down, minority enrollment goes up. Meanwhile, the relationship between median GMAT score and minority enrollment is statistically significant and positive for the subsample of less selective programs (B = 0.08, $p < 0.001$), suggesting that the growth of the median GMAT score leads to minority enrollment increases.

The state unemployment rate is also a significant predictor of minority enrollment in full-time M.B.A. programs for the full sample of programs as well as for the subsamples of more and less selective business programs. As the unemployment rate goes up, full-time minority enrollment in full-time M.B.A. programs increases. The increased minority enrollment could be attributed to the declining opportunity cost of education during times of economic decline.

Discussion

Although racial disparities in overall graduate education have been narrowing, various stakeholders from both within and outside academia have had debates about equity across M.B.A. recruitment and admissions practices (Graduate Management Admission Council 2018; Ethier 2019; Howard 2019). Master of business administration is a valuable credential for a career in business. This degree offers high potential for return on investment for both M.B.A. graduates and companies that hire them (Gupta and Bennett 2014). It is crucial to understand institutional efforts for addressing racial inequality in M.B.A. admissions because it mirrors the whole educational sector's attempts to reduce inequality in society.

This study looked at fluctuations in minority enrollments in full-time M.B.A. programs at public universities caused by international M.B.A. enrollments. It focused specifically on business schools affiliated with public universities because public institutions are famous for their commitment to equity and inclusive excellence for the domestic student population. The commitment can be compromised, however, because public institutions recruit international students that pay higher tuition and fees to increase their tuition revenue (Cantwell 2015; Jaquette, Curs and Posselt 2016). The findings, nevertheless, concluded that increases in international enrollments do not reduce access for domestic minority students, and there may be a small increase in minority enrollment as a result. This holds true for both more selective and less selective business schools.

Additionally, this study showed a strong positive, statistically significant relationship between the share of tuition revenue in total university revenue and minority enrollment. This may either suggest that public universities use additional tuition revenue to subsidize full-time minority students in M.B.A. programs or that business schools enroll more minority students to generate more revenue.

The study also showed a positive relationship between state unemployment rate and racial minority enrollment. This finding aligns with Becker's (1994) Human Capital Theory model. The model theorizes that a weak economy and, consequently, fewer employment

opportunities and lower salaries lead to lower opportunity costs for receiving a higher education.

The findings have implications for practice and policy that aim to facilitate a more diverse and inclusive graduate business education. By demonstrating a positive significant relationship between minority and international student enrollment, this study suggests that enrollment managers of M.B.A. programs affiliated with public universities have been increasing both international and racial minority enrollment. Enrollment managers, scholars, and policymakers must ensure that internationalization efforts do not compromise racial diversity and inclusion.

Recommendations for Further Research

Quantitative studies might fail to explain the complexity of decision-making in M.B.A. admissions. The author suggests further qualitative exploration of the concept of Iron Triangle of Enrollment Management in the context of graduate business education. Qualitative studies can help understand views of business school enrollment management personnel and institutional leaders on how to best balance three enrollment goals. This will help to identify factors that promote as well as limit the advancement of racial minority students in M.B.A. programs.

Although the results indicated that there is no crowd out in M.B.A. programs at public universities, the picture can be different in the context of more selective private schools. According to rankings like *U.S. News & World Report* and QS Quacquarelli Symonds, the majority of the most prestigious M.B.A. schools are affiliated with elite private not-for-profit universities (Morse, *et al.* 2020). Business schools at private elite universities charge significantly higher tuition, establish tougher admissions standards, and limit their class sizes—all of which can potentially lead to a crowd-out effect. One interesting and worthwhile study would be a replication of this quantitative study to look at enrollment trends in M.B.A. programs affiliated with elite private nonprofit universities to see if there would be a crowd-out effect in that context. The results of this study are expected to be similar to the results in Borjas's study (2004). Borjas showed that international students crowd out domestic students in the subsample of graduate programs at elite private universities.

The relationship between macroeconomic indicators and graduate business school enrollment is another compelling area for future research. Several studies showed that the magnitude of the effects of economic conditions on graduate school enrollment is greater for underrepresented minority groups (Bogan and Wu 2018; Long 2014). These studies also demonstrated that the magnitude varies by the type of graduate school program. Scholars can further explore and compare the impact of different economic indicators, such as S&P 500 Index, GDP growth, and personal income growth on racial minority enrollment patterns in M.B.A. programs.

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