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The effect of ethics on labor market success: Evidence from MBAs

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ABSTRACT

This paper empirically investigates the link between ethics, earnings and gender. Using a self-reported measure from a longitudinal survey of registrants for the Graduate Management Admission Test, we find that ethical character is negatively associated with males' wages. For females, however, this relationship does not hold. In addition, using measures of the degree to which ethics is emphasized in business school curricula as an indicator for enhancement of individual ethical standards of graduates, we investigate variation in the returns to an MBA degree. We find that the larger the degree to which males report that business education enhanced their ethical character, the lower their wages, holding other aspects of their education constant. For females, however, enhanced ethics through business school is *positively* and significantly associated with returns to the MBA degree. More objective measures of ethics emphasis in business school curricula provide further support of these findings.

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1. Introduction

A considerable number of studies in the social sciences have focused on identifying differences in behavior and attitudes between men and women. Ethical behavior and reasoning is one area in which substantial differences have been found. In particular, many studies have pointed towards the conclusion that men are more selfish than women, who are relatively more socially conscious in their thinking and decision making. For example, women have been shown to take stronger ethical stances (Glover et al., 1997; Reiss and Mitra, 1998), score higher on 'integrity tests' (Ones and Viswesvaran, 1998) and make more ethical decisions in business (Loe et al., 2000). They have also been shown to be more prone to helping others (Eagly and Crowley, 1986), to vote based on social issues (Goertzel, 1983), and their representation in government has been linked to lower levels of corruption (Dollar et al., 2001).

In addition, gender has been shown to have an important effect on behavior and payoffs in several different experimental economic settings related to selfish versus selfless decision making.[1] In ultimatum games, for example, women tend to be more cooperative, making more generous proposals and more likely accepting an offer of a given amount (Eckel and Grossman, 2001). Women also have a higher probability of cooperating in prisoner's dilemma games (Frank et al., 1993), and tend to be more generous and have an affinity towards fairness in dictator games (Eckel and Grossman, 1996, 1998; Andreoni and Vesterlund, 2001). Women are also more cooperative in public goods games (Nowell and Tinkler, 1994; Seguino

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[1] See Croson and Gneezy (2009) for a recent review of the literature on gender differences in economic experiments.

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et al., 1996), and are less trusting but more trustworthy than men in investment games (Buchan et al., 2004).[2] Of course, differences in behavior in these games normally translate into differences in individual payoffs. Depending on the structure of the game and the composition and behavior of other participants, more socially minded behavior may be associated with higher or lower individual payoffs. Specifically, one's payoff in such games appears to not only be due to one's behavior, but also a function of perceptions or stereotypes of gender groups (Eckel, 2008). To the extent that more ethical behavior may imply increased cooperation, coordination or altruism, and to the extent that women (relative to men) are expected to exhibit these behaviors, they may receive a penalty for deviating from them. On the other hand, if engaging in non-socially efficient behavior is more acceptable for men, they may be more likely to engage in lucrative self-promoting behaviors.

A primary goal of our study is to see whether these differences in attitudes, behavior and performance in experimental settings are borne out in differences in success in real-world labor market data. Specifically, we ask the questions: how do individuals' ethical standards influence their earnings? And, does the magnitude or direction of the effect vary by gender? To our knowledge, no previous research has addressed these questions. Nonetheless, there exist reasons to believe that ethics related behavior could affect one's earnings (either positively or negatively) on the job. First, as mentioned above, experimental evidence directly links socially minded behavior to earnings, and suggests likely differences in the reward or punishment of ethical behavior across gender. Second, over the last few decades, firms have devoted increasing attention to ethical practices. Even prior to the 1980s, many businesses and corporations began to adopt codes of ethics (White and Montgomery, 1980). Government agencies have done the same (Hays and Gleissner, 1981). In addition, some professional associations have their own codes, such as the American Institute of Certified Public Accountant's (AICPA) Code of Professional Conduct.[3] In accordance with this emphasis at the firm level, one might expect that employers who behave ethically will be rewarded for doing so. On the other hand, any emphasis a firm places on business ethics may just be "window-dressing", and firms may actually reward unethical behavior, either directly or indirectly (White and Montgomery, 1980). Indeed, empirical studies of the effects of ethics codes on ethical behavior or unethical incidents provide mixed results (see Loe et al., 2000, for a review). Further, even if firms do desire ethical behavior, monitoring the ethical decisions of employees may be difficult. If only outcomes are observed, individual employees may find it optimal to engage in unethical activity on the job if employers indirectly reward such activity with increased likelihood of promotion or higher pay.

A likely reason for the dearth of empirical studies addressing these questions is that characterizing the true ethical standards of individuals, or observing their relevant behavior in the workplace, is a difficult or impossible task. Further, the problem of confounding factors affecting earnings is likely to bias the estimates of interest. Ideally, after determining a specific definition of what constitutes ethical versus unethical behavior, we would observe specific incidents of socially commendable behavior or ethical misconduct on the job. Rather, in this paper, we use unique survey data and attempt to identify several different variables which likely serve as a proxy for an individual's commitment to ethics in the workplace. By including a wealth of control variables and in some cases individual fixed effects, our hope is to minimize any resulting bias that may come from the use of imperfect proxies or the endogeneity of survey responses used in this study.

While the effect of ethics on individual earnings has not been investigated previously, there is a large body of literature pertaining to the effect of firm-level ethical character on performance. The most common approach has been to analyze the relationship between some general measure or non-quantitative rating of "social performance" (such as monetary contributions to the community, charities, and companies singled out in the press) on financial performance (usually measured by changes in stock price, return on equity, or return on assets). This research has not reached any convincing conclusion regarding even the direction of the effect, although many studies do find that firms that are more socially responsible perform as well as, or even better than, firms that are less socially responsible (see Griffin and Mahon, 1997; Roman et al., 1999 for reviews, and Orlitzky et al., 2003 for a meta-analysis). Our paper can be seen as a complementary, individual-level analog of this body of research.

We utilize panel data from surveys of individuals who registered to take the Graduate Management Admission Test (GMAT), an exam required by most MBA programs for admission. Individuals were subsequently surveyed in four waves over a span of about eight years, whether or not they ultimately obtained an MBA. There are several reasons why MBAs are a particularly appealing group for use in a study of business ethics. This group of people is most likely to consist of future business leaders, the people for which it is very important to maintain high ethical standards. Indeed, the ethical behavior of employees is often modeled after the behavior of managers (Stead et al., 1990). Furthermore, as the sample includes only those who have demonstrated some degree of interest in obtaining an MBA, it represents a relatively homogeneous group of men and women in terms of prior accumulated human capital and commitment to their careers. More importantly, the survey data include individual earnings, work experience, and information regarding self-reported ethical character, as well as self-perceived gains in ethical character through business school, allowing us to empirically investigate the relationship between earnings and ethical character. By linking this individual-level data to information regarding characteristics of business schools, we are also able to investigate the effect on earnings of MBA attainment from programs differing in their emphasis on ethics. Finally, a further advantage of analyzing the returns to an MBA is that it allows us to exploit the fact that

[2] A physiological basis for gender differences in trust and responses to distrust has also been found in the context of such games (see Zak et al., 2005).

[3] There may be a theoretical justification for the existence of such codes of ethics within private business beyond a mere sense of social responsibility or other non-profit maximizing objectives of the firm. First, they may limit the occurrence of uncooperative (and unproductive) employee behavior. Second, ethical firms may benefit in the long-run from trust and commitment on the part of customers (Arrow, 1979; Akerlof, 1980; Noe and Rebello, 1994).

most MBA students work full-time prior to obtaining an MBA.[4] The presence of both pre- and post-MBA earnings observations allows us include individual fixed effects in our regressions as a method of controlling for unobserved heterogeneity in our sample.[5]

Career paths of MBAs (as well as those who considered but did not attend MBA programs) are likely to differ by gender. While Arcidiacono et al. (2008) find only small gender differences in estimates of short-term returns to a broad class of MBAs, other studies cite large earnings differentials of graduates. Bertrand et al. (2010), for example, cite the gender earnings differential of University of Chicago MBAs to be as high as 60% over 10 years after graduation. A large part of this differential can be attributed to preferences over work versus family, a finding that is echoed in analyses of Harvard graduates (Goldin and Katz, 2008; Herr and Wolfram, 2009). However, a recent and growing body of research attributes some gender differences in earnings and career paths to variation in noncognitive skills or characteristics, like motivation, assertiveness, or reactions to competition (Booth, 2009; Braackmann, 2009; Fortin, 2008; Grove et al., 2011; Long, 1995; Mueller and Plug, 2006; Thiel and Thomsen, 2009). With this gender heterogeneity in mind, the types of jobs or work environments in which women are likely to thrive are likely to differ from those for men. Furthermore, their career related goals may be different, as men are more likely to place higher priority on earnings or status than women, who may alternatively place more emphasis on personal development and intrinsic rewards (Powell and Maneiro, 1992; Russo et al., 1991; Sturges, 1999).

Gender differences in the effects of obtaining an MBA degree may be due to desired versus actual skills gained by males and females within the program. The MBA has been found to provide graduates with value added in areas such as information analysis and initiative (Kretovics, 1999), self-esteem and self-confidence (Baruch and Peiperl, 2000), and decision-making (Kakabadse and Kakabadse, 1999), but still may fall short in fostering the development of interpersonal and leadership abilities (Boyatzis and Renio, 1989) and other 'soft skills' associated with the actual practice of management (Mintzberg, 2004; Pfeffer and Fong, 2002). Mirroring their differing priorities, there is some evidence that men and women gain from an MBA in diverging ways. In particular, women gain more than men in terms of intrinsic skills or traits, such as confidence, assertiveness, interpersonal skills, and communication skills (Simpson, 1995, 1996, 2000; Simpson et al., 2005). To the degree that MBA programs may differ in their emphasis on alternative skills or areas of development, gender heterogeneity in the returns to an MBA may result.

In this paper, we specifically investigate the role of ethics in association with business school curricula in explaining earnings, and allow this relationship to vary by gender. While virtually non-existent a few decades ago, business ethics has in one form or another found its way into the curriculum of most MBA programs. The Association to Advance Collegiate Schools of Business (AACSB) added ethics to its list of required knowledge in 1974. Since the 1990s, however, the removal of a clear AACSB mandate requiring a course in business ethics has facilitated the dropping of ethics courses from the curriculum of some business programs. The result is a wide variety in the way in which and degree to which ethics is incorporated into graduate management education. Some programs incorporate ethics into other courses. Others require specific ethics courses or service-based learning. Still others do very little in the way of incorporating ethics into their curricula (Kelley, 2003). To the extent that men and women may desire different content within an MBA program, MBA programs' varying emphasis on ethics may shed some additional light on earnings differentials, either because of a direct effect of curriculum on the managerial capabilities of graduates, or because of an indirect effect of MBA programs sorting graduates into varying careers.

Empirical analyses of the effects of ethics courses have been limited primarily to inferences based on situation or decision based questionnaires administered before and after the course. There is no clear consensus among the large body of research in this area. Some studies conclude that ethics courses positively affect the values and opinions of students and their ability to recognize ethical issues (Glen, 1992; Green and Weber, 1997; Gautschi and Jones, 1998; Weber and Glyptis, 2000). Several others conclude that ethics courses or service-based learning have little or no effect on student attitudes (Martin, 1981–1982; Wynd and Mager, 1989; Conroy and Emerson, 2004). Rather than investigating the effects of ethics education on an individual's values, we go beyond the previous research by looking at the effect of expressed or implied differences or changes in ethical values on an individual's wage. To the extent that higher ethical standards may positively or negatively affect earnings, the monetary return to an MBA may be positively or negatively affect by the degree to which the MBA program emphasizes ethics. Using variation in MBA programs' emphasis on ethics and the resulting wage increases of their graduates is thus another way to determine, indirectly, the effect of ethics on labor market success. Furthermore, to the degree that males' and females' ethics are valued differently in the labor market, this analysis offers a possible additional explanation of male–female post-graduation earnings differentials that has not been addressed in the literature.

Indeed, our results differ substantially between males and females. For males, self-reported ethical character is negatively associated with wages (−3.4%). For females, however, this relationship does not hold. Furthermore, males who report that business education greatly enhanced their ethical character saw a significantly lower return to obtaining an MBA (−6.5%), holding other aspects of their education constant. For females, however, enhanced ethics through business school is *positively* and significantly associated with wages (+5.5%). Using external ratings of MBA programs' emphasis on ethics resulted in similar findings. To the extent that our measures of ethical character proxy for actual differences in ethics related behavior

[4] Average work experience among our sample of eventual MBA completers exceeded five and half years at the time of GMAT registration.

[5] The use of fixed effects in reducing the selection bias of estimates in a returns to MBA context is discussed and demonstrated in Arcidiacono et al. (2008).

in the workplace, our results thus corroborate the frequent finding in the experimental economics literature of substantial differences between men and women in social versus individualistic behavior and subsequent performance.

The remainder of the paper proceeds as follows. Section 2 describes the data. Our empirical methodology is described in more detail in Section 3. Results are presented in Section 4. Section 5 concludes by offering additional discussion of the results, as well as potential caveats regarding our findings.

2. Data

We utilize data from a longitudinal survey of registrants for the Graduate Management Admission Test (GMAT). The GMAT is a standardized test designed to evaluate students' cognitive skills and likelihood of successful performance in business school, and is a requirement for admission into most MBA programs. The survey, sponsored by the Graduate Management Admission Council (GMAC), was administered in four waves, beginning in 1990 and ending in 1998. 5853 individuals responded to the first wave; due to some attrition, 3771 of the same individuals responded to wave 4. The sample of individuals surveyed was independent of whether they ultimately attended an MBA program or whether they even chose to take the GMAT.[6]

The survey asks detailed questions about characteristics such as level of education, job market experience, household composition and income. It also asks registrants a wide variety of more subjective questions regarding attitudes towards schooling, future expectations, and personal values. Most relevant to the current study, the first survey (prior to respondents entering an MBA program) asks individuals to rate themselves in a number of characteristics or skills that may be related to success in the business world. These include communication skills, ability to motivate others and high ethical standards, among many others. An *Ethics* dummy variable was constructed according to whether or not the individual believed that they "very much" possessed high ethical standards.[7] Also, following work by Montgomery and Powell (2003), we construct an aggregate measure of these self-reported possessed skills (not including their self-assessment of ethical standards). The resulting "*skill index*" allows for the control of ability and/or individual confidence. Importantly, including this skill measure should also help to control for any arbitrary variation across individuals in self-reported skills. We can therefore look at the effect on an individual's wage of reporting having possessed high ethical standards relative to their reported possession of other skills, rather than looking at the effect of a general tendency towards low or high reporting of personal characteristics or skills.

In addition, the survey data has been linked to the individual's GMAT registration information and test results. Since most of those who registered actually took the GMAT, the scores provide us with another relatively good, objective measure of individual ability (or accumulated knowledge or skills). Other variables that are included to control for individual differences in background and values are mother's education (years), and four dummy variables corresponding to whether or not the respondent viewed wealth, family, career and religion as being "important" or "very important".[8]

Table 1 reports descriptive statistics of the first wave of data, separated by gender. Appendix Table 1 provides definitions and data sources for each variable used in the analysis. Included in our sample are individuals who: (1) took the GMAT, (2) reported an undergraduate GPA, (3) had a current full-time job at the time of the survey with an associated wage, and (4) completed questions dealing with skill and ethics self-assessment. Females and males are likely to be more similar in this data set than they are in data spanning a wider spectrum of society. Our sample contains a group of individuals who, in considering business school, have already selected to take the GMAT exam, thus expressing a certain degree of commitment to their careers. Nonetheless, a few gender differences in observed characteristics are found. Men, largely due to their average older age, have on average one more year of full-time work experience than women.[9] Consistent with this is the lower likelihood of women being married, having fewer children, having lower wages and lower likelihood of holding a managerial position.[10] Also, unlike other minorities in the sample, African-Americans are almost twice as likely to be female than male.[11]

[6] Attrition more heavily affected those who never entered into an MBA program than those who did. While those who left the sample do differ from those who remain in a few observable characteristics, significant differences are not found for a majority of the variables, most notably *Ethics*. An appendix characterizing the attrition in more detail is available on request.

[7] The survey question from which this variable was derived included four possible responses, ranging from 1 ("very much") to 4 ("not at all"). However, the variation in survey responses was small, such that only 1.7% of the sample responded with a 3 or a 4. For this reason and for ease of interpretation, we transformed to the variable to a binary one, where a value of 1 represents "very much" having high ethical standards and 0 represents all other responses. In practice, if the variable is either coded as a linear variable from 1 to 4 or multiple dummy variables for each response are included, the results do not substantively change.

[8] The relationship between religion (both type and intensity) and business ethics has been well studied (Clark and Dawson, 1996; Agle and Van Buren, 1999; Conroy and Emerson, 2004; Brammer et al., 2007). In particular, religion may influence attitudes regarding what characterizes good versus bad ethics, and may therefore cause undue variation in survey responses. To the degree that the religion and ethics are positively correlated, our results may actually *underestimate* the effect of ethical character on earnings. Qualitatively, however, our results are unaffected by their inclusion.

[9] Due to the relatively complete job history reported during the survey period, we use a direct, cumulative measure of work experience. Work experience is determined by years of full-time work since the age of 21, and is reported to the nearest month.

[10] The latter differences may also, of course, reflect gender discrimination in the labor market, or unobserved differences in types of jobs or geographic markets chosen by males and females. In the following analysis, we control for as many of these potential factors as possible.

[11] According to the NCES Digest of Trends and Statistics, black females also make up a larger percentage of undergraduate degree recipients than black males. (http://nces.ed.gov/programs/digest/d03/tables/dt264.asp).

Table 1
Wave 1 descriptive statistics, by gender.

	Male		Female	
	Mean	Std. dev.	Mean	Std. dev.
Experience	6.49	(5.90)	5.46	(5.20)
Hourly wage	15.88	(7.45)	13.66	(5.03)
Quantitative GMAT	30.72	(8.56)	26.41	(8.06)
Verbal GMAT	29.02	(7.79)	27.69	(7.90)
Undergrad. GPA	2.98	(0.42)	3.06	(0.43)
Mother's edu. (years)	13.19	(3.48)	13.33	(3.47)
Children	0.39	(0.86)	0.19	(0.54)
Skill index	−27.12	(5.25)	−26.86	(4.99)
Lower-level manager	0.258		0.243	
Upper-level manager	0.208		0.115	
Self-employed	0.042		0.025	
Married	0.422		0.288	
Asian	0.149		0.153	
Black	0.100		0.186	
Hispanic	0.170		0.158	
MBA by Wave 4	0.355		0.321	
Other adv. degree	0.066		0.032	
Wealth important	0.261		0.198	
Family important	0.887		0.873	
Career important	0.636		0.687	
Religion important	0.298		0.351	
Ethics	0.655		0.757	
Observations		1575	1050	

In terms of measures of human capital, differences are not as clear-cut. Women tend to have lower GMAT scores (especially quantitative GMAT), but have slightly higher undergraduate GPAs and report a slightly higher level of skills, as given by the skill index (though these differences are not significant).[12] Mother's education is similar across genders, but men are more likely to have obtained an advanced degree (other than an MBA) by Wave 1 of the survey. Despite this, men are slightly more likely to have obtained an MBA by the time of the last survey. Also, females are somewhat more likely to report religion as being important and to have a higher assessment of their ethical standards.

In addition to investigating the effect of self-reported ethical character on wages, we look at the effect of an emphasis on ethics in an MBA curriculum on the returns to the MBA degree. In Waves 3 and 4 of the GMAT Registrant Survey, individuals were asked about the degree to which particular skills or characteristics (the same ones they were asked to self-assess in Wave 1) were enhanced due to their business school experience. In a similar vein to the *Ethics* variable described above, we created the dummy variable, *Gain ethics*, based on whether individuals reported that the characteristic of high ethical standards was "very much" enhanced by their graduate school experience. Similar to the *skill index* variable described above, we also include as a control variable (*Enhanced skill*) the sum of the other responses having to do with skill enhancement through business school.

We also merge external data involving characteristics of MBA programs to the survey data of MBA completers. In particular, we use a measure of the MBA program's assessment of the strength of ethics in its curriculum. Collected and reported in *The Best Graduate Business Schools*, by Bachhuber (1994), schools were asked to evaluate the reputation of their program, as compared to others, on a scale from 1 to 5. In addition, the World Resources Institute and the Aspen Initiative for Social Innovation through Business publish a report biennially which summarizes the results of a comprehensive survey of business schools on the emphasis of ethics or social stewardship in their programs. In particular, they identify "schools on the cutting edge" of incorporating social and environmental stewardship into their programs, "schools with significant activity", and "schools with moderate activity".[13] Using data from the 1999 report, dummy variables for each of these distinctions were created. In order to control for other aspects of program quality which may be correlated with both emphasis on ethics and returns to the MBA degree, we also include several general measures of program quality and structure. These include: whether or not the individual completed a full-time, part-time or executive MBA program; whether or not the school was ranked in the top 10 or top 25 business schools, according to 1992 U.S. News and World Report rankings; whether the school is public or private; whether or not the program was accredited by the Association to Advance Collegiate Schools of Business (AACSB); the average GMAT score of enrolled students; and the average undergraduate GPA of enrolled students. These latter school characteristics were obtained from *Barron's Guide to Graduate Business Schools* (Miller, 1994).

[12] Note, due to the way ratings were reported in the survey, the negative of the skill index is used in this study, so that a less negative number indicates an individual felt they were more skilled. A rating of −15 represents the highest possible rating, and −60 the worst.

[13] More specifically, their ratings of schools are determined by the degree to which MBA coursework includes social impact management, the number of articles that examine business in a social context published by faculty members, and related institutional features of the school (such as clubs, conferences and outside speakers).

Table 2
Wave 1 descriptive statistics of MBA programs attended, by gender[a].

	Male	Female
Full-time	0.349	0.332
Part-time	0.547	0.599
Executive	0.104	0.068
U.S. News Top 10	0.077	0.057
U.S News Top 11–25	0.098	0.081
Public	0.474	0.441
AACSB accredited	0.671	0.667
Average GMAT	555.8 (56.2)	550.9 (59.0)
Average GPA	3.17 (0.17)	3.16 (0.20)
Ethics rep. = 1	0.016	0.00
Ethics rep. = 2	0.098	0.127
Ethics rep. = 3	0.148	0.197
Ethics rep. = 4	0.205	0.282
Ethics rep. = 5	0.533	0.394
Cutting edge	0.082	0.042
Significant activity	0.123	0.077
Moderate activity	0.209	0.175
Gain ethics	0.533	0.563
Observations	559	337

[a] Standard deviations in parentheses. Means reflect the mean characteristic of those schools attended by Wave 1 survey respondents who went on to get MBAs, weighted by their frequency in the sample.

Table 2 reports descriptive statistics of the MBA programs attended by individuals in the sample, separated by male and female respondents to Wave 1. The majority of the sample of individuals who obtained MBAs by the end of the survey period attended part-time programs. Women were less likely to report attending Executive MBA programs. Women were also less likely to attend top ranked programs. Corresponding to this was the slightly lower average GMAT score and average undergraduate GPA of programs attended by women versus men, though the differences are not significant. Also, the external ethics ratings are on average slightly higher for the programs attended by men than they are for the programs attended by women, a difference that could once again be due to differences in average overall program quality. Conversely, women were slightly more likely to report their ethical standards as being "very much enhanced" than men were.

3. Methodology

We estimate equations of the form:

$$\ln W_{it} = X_{it}\beta_1 + Ethics \times \beta_2 + Ethics \times Female \times \beta_3 + MBA_{it} \times \beta_4 + \varepsilon_{it}. \quad (1)$$

The dependent variable is the logarithm of hourly wages, constructed from reported earnings and hours worked for up to four survey waves for each individual in the sample. We limit our analysis to those holding current, full-time jobs. Our focus is on estimating the effect of our ethics measure on one's wage, both for men (β_2) and for women ($\beta_2 + \beta_3$), where the inclusion of the interaction term allows there to be separate effects by gender. Especially since our primary ethics measure is self-reported, and serves as merely a proxy for actual ethical or unethical behavior in the workplace, it is likely to be correlated with other individual attributes which may influence earnings. We thus aim to control for a wealth of covariates related to individual ability, attitudes and employment. Thus, X contains variables such as demographics, individual ability measures (i.e., both verbal and quantitative GMAT scores, undergraduate GPA, and the skill index), managerial status of the current job, and work experience. *MBA* is equal to one if the individual completed an MBA by the time of the current wage observation; otherwise it is zero.[14]

In practice we also allow for various MBA interactions, reflecting the large variation in program types and quality. Several characteristics of MBA programs are relatively easily observed and, in comparison to the self-reported data, are relatively objective in nature. While the focus of this study is not on the returns to these particular MBA program characteristics, it is important to control for aspects of the MBA program which may be correlated with emphasis placed on ethics within the curriculum, but which may independently influence the return to the degree. This is especially true in our subsequent regression specifications of the form:

$$\ln W_{it} = X_{it}\beta_1 + Ethics \times \beta_2 + Ethics \times Fem \times \beta_3 + MBA_{it} \times \beta_4 + Gain\,ethics \times MBA_{it} \times \beta_5 + Gain\,ethics \times Fem \times MBA_{it} \times \beta_6 + u_i + \varepsilon_{it}. \quad (2)$$

[14] We consider MBA to be a dichotomous variable throughout. Though a small number of individuals in the sample were currently enrolled in MBA programs in wave 4, the results that follow are robust to omitting them or accrediting partial MBA status.

The focus here shifts to β_5, which represents the additional earnings premium (positive or negative) of males attending MBA programs deemed to have enhanced their ethical character, represented either by a self-reported measure or external evaluations of MBA programs' emphasis on ethics. Once again, we allow this effect to vary by gender, such that the analogous ethics premium for women is represented by $\beta_5 + \beta_6$. The existence of both pre- and post-MBA wage observations in the sample allows us to include individual fixed effects, u_i, to eliminate time-invariant unobserved heterogeneity from influencing results.

4. Results

The first column of Table 3 presents the results of a log wage regression on demographic characteristics, variables representing human capital accumulation and ability, and the *Ethics* self-assessment indicator variable. Also included in the regression are broad regional dummies for place of residence and variables reflecting an individual's background and values regarding family, wealth, religion, etc. Donaldson and Dunfee (1994) note the importance of taking value-based responses in context. More specifically, Morgan (1993) shows that the way individuals perceive both their own ethical standards and those of others varies with an individual's managerial status. For this reason, variables indicating whether or not the individual reported being a lower-level manager, mid- to upper-level manager, or self-employed were also included in the regressions.

As discussed above, in order to allow the effect of self-reported ethics on wage to differ between males and females, we include both the *Ethics* dummy variable and an interaction term with *Female*. While not including the interaction term results in a negative and significant coefficient on *Ethics* for both genders, including the interaction term uncovers substantially different results for males and females. While the coefficient on *Ethics* is statistically significant and negative, the coefficient on the interaction term is equal in magnitude and positive, though marginally insignificant. Since the dependent variable is

Table 3
Log wage regression results: individual ethics variables.

	(i)		(ii)		(iii)	
	Coeff.	*t*-stat.	Coeff.	*t*-stat.	Coeff.	*t*-stat.
Ethics	−0.034**	−2.39	−0.030**	−1.96	–	–
Female × Ethics	0.035	1.57	0.036	1.49	–	–
Gain ethics × MBA	–	–	−0.048	−1.56	−0.065**	−2.17
Gain ethics × MBA × Female	–	–	0.044	0.95	0.120**	2.58
MBA	−0.006	−0.28	−0.196	−0.88	0.028	0.12
Part-time × MBA	0.020	0.94	0.027	1.02	−0.038	−1.40
Executive × MBA	0.165**	4.02	0.200**	3.93	0.036	0.82
Top 10 × MBA	0.307**	8.88	0.195**	4.24	0.093*	1.78
Top 25 × MBA	0.149**	4.17	0.083**	1.99	−0.040	−0.97
Public × MBA	–	–	−0.075**	2.90	−0.056**	−2.30
Avg. GPA × MBA	–	–	0.000*	1.78	0.000*	1.74
Avg. GMAT × MBA	–	–	−0.012	−0.20	−0.034	−0.57
Accredited × MBA	–	–	0.089**	2.56	0.075**	2.44
Enhanced skill × MBA	–	–	0.000	0.17	0.002	1.26
Female × MBA	−0.011	−0.54	−0.034	−0.97	−0.121**	−3.57
Other adv. degree	0.074**	4.08	0.080**	4.28	−0.008	−0.44
Married	0.045**	4.29	0.049**	4.37	0.019*	1.77
Children	0.017**	2.31	0.016**	2.03	0.016**	2.41
Self employed	0.046	1.42	0.042	1.26	0.055**	2.78
Lower level manager	0.008	0.87	0.004	0.44	0.014	1.60
Upper level manager	0.111**	8.72	0.118**	8.64	0.069**	6.13
Undergrad. GPA	0.049**	3.73	0.052**	3.68	–	–
Quantitative GMAT	0.009**	11.66	0.009**	10.31	–	–
Verbal GMAT	0.001	1.06	0.001	1.03	–	–
Female	−0.071**	−3.51	−0.078**	−3.53	–	–
Mother's edu.	0.000	−0.14	0.000	−0.16	–	–
Skill index	0.003**	2.42	0.003**	2.34	–	–
Wealth important	0.025**	2.41	0.024**	2.08	–	–
Family important	0.052**	4.13	0.053**	3.96	–	–
Career important	−0.014*	−1.68	−0.014	−1.56	–	–
Religion important	−0.025**	−2.42	−0.025**	−2.27	–	–
Individual fixed effects	No	No	Yes			
Obs.	9981	8826	8826			
R-squared	0.438	0.427	0.567			

Regressions also included a cubic in time and experience, and in the case of OLS, race and regional dummies. Standard errors are clustered at the individual level.

* Coefficient is statistically significant at the 10% level.
** Coefficient is statistically significant at the 5% level.

the log of wage, the coefficient on *Ethics* reflects a negative 3.4% effect of reporting having high ethical standards on men's wages. The effect of ethical standards for females, represented by the sum of the coefficients on *Ethics* and *Ethics* × *Female*, is insignificantly different from zero. Thus it seems that for men, having high ethical standards is associated with lower wages. For women, however, no relationship exists between wages and reported ethical standards.[15]

Other results are worth mentioning. Estimates of the returns to an MBA degree are consistent with those found by Arcidiacono et al. (2008), who focus on estimating the economic return to an MBA using the same data.[16] Economic returns are non-existent for full-time programs outside the top 25, but returns to executive programs or programs within the top 25 are substantial. Ability measures, including the skill index, are positive and significantly associated with wages, with the exception of verbal GMAT score, which is insignificant.[17] A substantial wage gap exists between genders even beyond the effect of ethics, as men earn an average of 7.1% more than women.[18] There exists a positive wage premium for marriage, and number of children is also positively associated with wages. Also, those who viewed family as being important in their lives also earned higher wages, as did those who viewed wealth as being important. The importance of career or religion, however, has negative effects on wages.[19]

The next two columns of Table 3 report results from regressions that include the degree to which individuals reported enhanced ethical standards from their business school experience (*Gain ethics* × *MBA*). To control for other aspects of program quality, several characteristics of the business school are also included in the regressions, including a variable representing individuals' self-reported skills (other than ethics) gained through business school (*Enhanced skill*). Column (ii) reports results of an OLS regression, while column (iii) reports results of a regression including individual fixed effects.[20] The primary variables of interest, *Gain ethics* × *MBA* and its interaction with *Female*, are both statistically significant in the preferred regression, that which includes individual fixed effects. Men who reported enhanced high ethical standards as a result of their MBA curriculum received lower wages (by 6.5%), holding several aspects of the business school and unobserved time-invariant personal characteristics constant. Women who reported the same thing, however, earned a significant 5.5% *higher* wages (the sum of the *Gain ethics* × *MBA* and *Gain ethics* × *MBA* × *Female* coefficients). It is possible, of course, that any significance on these coefficients may be explained by the endogeneity of survey responses. For instance, men who achieve poor job placement after business school may find it desirable to justify their business school experience by claiming to have gained ethical standards. It seems unlikely that this response bias would act in the opposite way for women, however. It also seems unlikely that this type of bias would effect the enhanced ethical standards question and not the enhancement of other skills, which is included as a control variable and is found to be insignificant.[21]

Tables 4 and 5 present the results of regressions including ethics-related reputations of graduate business schools. Though they suffer from a general lack of statistical significance, the signs of the coefficients on the ethics-related interactions are consistent with results in Table 3. For example, the variable *Ethics rep.* × *MBA* represents Bachhuber's (1994) school-reported evaluation of their reputation in the area of ethics. As seen in columns (i) and (ii) of Table 4, the coefficient on this variable was estimated to be negative in both the OLS and fixed effects specifications. The same variable for females has a positive estimated coefficient. While these estimates are not statistically significant, they have the same signs as the results found previously, indicating that graduating from schools that place a higher emphasis on ethics may adversely affect the return to an MBA for males, while it may positively affect the return for females.[22]

The regressions including variables indicating the ethics rankings of programs by Beyond Grey Pinstripes (1999) also yielded interesting results (columns (iii) and (iv), Table 5). *Cutting edge* indicates programs that were considered by the report to be "on the cutting edge" of social and environmental stewardship. *Significant* indicates programs "with significant

[15] As a robustness check, we also ran each regression specification separately for males and females. Results corresponding to Table 3 are displayed in Appendix Table A4. Although some coefficients are estimated somewhat less precisely due to smaller sample sizes, estimates of coefficients on the ethics variables, and in general the control variables as well, are qualitatively very similar to those from the pooled (male and female) regressions. In fact, when all the coefficients are allowed to vary by gender, the estimates of the coefficients on *Ethics* and *Female* × *Ethics* are both statistically significantly different from zero at the 5% level. The overall similarity in the majority of slope coefficients for males and females may be due to the fact that, as compared to other datasets, our sample is relatively homogeneous in terms of education and commitment to their careers (to the extent that everyone has taken the GMAT and is employed full-time).

[16] In particular, their paper demonstrates that the apparently insignificant return of a full-time MBA outside the top 25 becomes significant and positive once fixed effects are included, a difference that might be explained by individuals who do not obtain MBAs being stronger in certain workplace skills than individuals who do obtain MBAs at such programs. A direct comparison between their results and ours is difficult, however, due to our necessary inclusion of several MBA program characteristics, interactions and significantly more control variables.

[17] A positive return for math ability but no return for verbal ability has also been found for undergraduates (Arcidiacono, 2004; Paglin and Rufolo, 1990).

[18] This gender gap represents the comparison of "unethical" males and females. Note that this gap is cut in half when comparing "ethical" individuals.

[19] It should be noted that not including the religion variable results in an even more negative coefficient on *Ethics* for males, and still a non-significant result for females.

[20] Recall that the regressions including individual fixed effects cannot include variables with constant values throughout the sample period. We also carried out a random effects specification. The results were generally similar to those found using fixed effects. In particular, the estimate of the *Gain ethics* coefficient was found to be −0.066 and statistically significant, while the coefficient on *Gain ethics* × *Female* was estimated to be a significant 0.080. The most significant differences between the random effects and fixed effects specifications occurred with *Other adv. degree* and *Married*, with both coefficient estimates being significantly larger in the random effects specification. A Hausman test was done to test between the random effects and fixed effects specifications, and the null hypothesis was strongly rejected, suggesting that the use of random effects is not justified in this context.

[21] Allowing the skill index to be affected by gender resulted in no significant differences.

[22] It is worth noting that because Bachhuber only included what they deemed to be the top 50 MBA programs, the number of observations identifying the variable representing ethics reputation (as well as all the other MBA interactions) is limited in these regressions.

Table 4
Log wage regression results: MBA program ethics variables.

	(i)		(ii)	
	Coeff.	*t*-stat.	Coeff.	*t*-stat.
Ethics	−0.045**	−2.52	–	–
Female × Ethics	0.052*	1.89	–	–
Ethics rep. × MBA	−0.028	−1.16	−0.026	−0.99
Ethics rep. × MBA × Female	0.058	1.59	0.034	0.74
MBA	−1.231	−1.65	0.543	0.59
Part-time × MBA	−0.020	−0.35	−0.048	−0.90
Executive × MBA	0.197**	2.16	0.058	0.67
Top 10 × MBA	0.047	0.68	0.076	0.89
Top 25 × MBA	−0.034	−0.63	−0.037	−0.63
Public × MBA	−0.092*	−1.92	−0.111**	−2.13
Avg. GPA × MBA	−0.074	−0.69	−0.037	−0.33
Avg. GMAT × MBA	0.003**	2.37	0.000	−0.11
Accredited × MBA	0.063	0.78	−0.065	−0.54
Female × MBA	−0.150	−1.42	−0.133	−0.93
Other adv. degree	0.080**	3.90	−0.013	−0.64
Married	0.054**	4.19	0.026**	2.11
Children	0.019*	1.99	0.021**	2.71
Self employed	0.048	1.25	0.063**	2.80
Lower level manager	0.006	0.50	0.019*	1.82
Upper level manager	0.121**	8.00	0.077**	5.85
Undergrad. GPA	0.042**	2.55	–	–
Quantitative GMAT	0.010**	9.69	–	–
Verbal GMAT	0.001	1.20	–	–
Female	−0.082**	−3.31	–	–
Mother's edu.	0.000	0.11	–	–
Skill index	0.002*	1.66	–	–
Wealth important	0.025*	1.93	–	–
Family important	0.065**	4.31	–	–
Career important	−0.011	−1.08	–	–
Religion important	−0.029**	−2.19	–	–
Individual fixed effects	No	Yes		
Obs.	6866	7229		
R-squared	0.422	0.549		

Regressions also included a cubic in time and experience, and in the case of OLS, race and regional dummies. Standard errors are clustered at the individual level.

* Coefficient is statistically significant at the 10% level.
** Coefficient is statistically significant at the 5% level

activity", while *Moderate* indicates programs with "moderate activity". The coefficients on these variables are relative to the omitted category, which includes programs that were not rated to be in any of the three categories and programs that did not respond to the 1999 survey. Since the omitted category does not necessarily reflect the programs that have the least developed ethics curricula, it is appropriate to consider the results of the three included categories relative to each other. For males, the only statistically significant result is on the *Cutting edge* variable in the OLS specification (column (iii)). This estimate was negative and large in magnitude, indicating that graduating from an MBA program that was considered to be on the cutting edge of social and environmental stewardship results in a 19.4% lower return than from institutions not in any of the ranked categories. A large negative estimate was also found in the fixed effects specification (column (iv)), although the result is not significant. The fixed effects point estimates also seem to reflect an increasing return for decreasing ethics emphasis. The corresponding coefficient estimates for the analogous variables for females are generally not significant. As compared to males, however, the estimates may be interpreted as reflecting a higher return to programs with greater emphasis on ethics, with the only negative and significant (at the 10% level) coefficient being on the lowest category in the fixed effects specification.

Thus, while Montgomery and Powell (2003) and Grove et al. (2011) find that obtaining an MBA may help to diminish the gender earnings gap, our results suggest that the gendered effects of an MBA are largely dependent on which type of MBA program an individual attends. In particular, the degree to which a program emphasizes ethics appears to be correlated with one's realized earnings upon graduation, and this relationship varies greatly by gender.

Results derived from variation in characteristics of MBA programs must be interpreted with some caution, however. While several controls for alternative sources of program heterogeneity have been included in the analysis, it remains a possibility that differences in returns to the MBA degree, while appearing to be due to differences in ethics curricula of the programs, may actually be resulting from correlated unobserved heterogeneity in program quality. Even if this is not the case, interpreting a negative coefficient as a causally negative effect on earnings due to ethics may be incorrect. An alternative explanation, for example, would be that MBA programs that greatly emphasize ethics do so at the expense of

Table 5
Log wage regression results: MBA program ethics variables, cont.

	(iii)		(iv)	
	Coeff.	*t*-stat.	Coeff.	*t*-stat.
Ethics	−0.033**	−2.17	–	–
Female × Ethics	0.037	1.55	–	–
Cutting edge × MBA	−0.194**	−2.60	−0.114	−1.39
Significant × MBA	0.101	1.37	0.032	0.41
Moderate × MBA	0.088	1.63	0.082	1.45
Cutting edge × MBA × Female	0.054	0.40	−0.048	−0.35
Significant × MBA × Female	−0.001	0.00	0.129	1.02
Moderate × MBA × Female	−0.088	−1.14	−0.130*	−1.72
MBA	−0.294	−1.45	−0.076	−0.37
Part-time × MBA	0.031	1.23	−0.032	−1.24
Executive × MBA	0.190**	3.99	0.012	0.28
Top 10 × MBA	0.190**	3.48	0.087	1.39
Top 25 × MBA	0.053	1.15	−0.031	−0.67
Public × MBA	−0.064**	−2.60	−0.041*	−1.76
Avg. GPA × MBA	−0.008	−0.14	−0.052	−0.89
Avg. GMAT × MBA	0.000**	2.03	0.001**	2.08
Accredited × MBA	0.094**	2.80	0.070**	2.35
Female × MBA	−0.006	−0.22	−0.053**	−2.11
Other adv. degree	0.078**	4.18	−0.020	−1.10
Married	0.049**	4.41	0.019*	1.80
Children	0.016**	1.99	0.015**	2.34
Self employed	0.043	1.29	0.065**	3.30
Lower level manager	0.005	0.50	0.015*	1.72
Upper level manager	0.118**	8.75	0.071**	6.33
Undergrad. GPA	0.053**	3.82	–	–
Quantitative GMAT	0.009**	10.42	–	–
Verbal GMAT	0.001	0.94	–	–
Female	−0.078**	−3.58	–	–
Mother's edu.	0.000	−0.13	–	–
Skill index	0.003**	2.48	–	–
Wealth important	0.024**	2.12	–	–
Family important	0.054**	3.99	–	–
Career important	−0.015	−1.63	–	–
Religion important	−0.024**	−2.14	–	–
Individual fixed effects	No	Yes		
Obs.	8939	9380		
R-squared	0.432	0.575		

Regressions also included a cubic in time and experience, and in the case of OLS, race and regional dummies. Standard errors are clustered at the individual level.

* Coefficient is statistically significant at the 10% level.

** Coefficient is statistically significant at the 5% level

in depth coverage of other, more practical and economically beneficial topics. This explanation fails to explain differential effects by gender, however.

These considerations aside, the results found in Tables 4 and 5, which correspond to the use of more objective or external criteria with regard to MBA programs' emphasis on ethics, seem to support, or at least not contradict, the results from using the self-reported data of MBA graduates.

5. Discussion

Using data from a longitudinal survey of registrants for the Graduate Management Admission Test, this paper has investigated the relationship between a self-reported measure of individual ethical character and job market success as reflected in an individual's earnings. In addition, using several measures of the degree to which ethics is emphasized in business school curricula as an indicator for enhancement of individual ethical standards of students, variation in the returns to an MBA degree was investigated. Results differ substantially between males and females. It seems that on an individual level, having high ethical standards is bad for males' earnings. For females, however, it may be unimportant or even good. These results have some credibility for a few reasons. First, by looking at potential MBAs only, we consider a relatively homogenous group of people. Unobserved heterogeneity is likely to be less of a problem than it would be in the case of a sample of the general population. Second, a unique data set has allowed for a large number of control variables that are not commonly available to researchers. In particular, we control for spurious tendencies in response to skill possession questions or MBA skill enhancement questions by including an index of general responses to these skills separately from the responses dealing with ethical standards. We also control for other individual attitudes and beliefs, such as the personal importance of religion, in the regressions. Third, the results generally hold up under a number of specifications, including when individual fixed

effects are included, and when non-self-reported variation in ethics emphasis across graduate management curricula is used as a proxy for changes in ethical standards of graduates.

In addition to potential concerns previously raised, a possible objection to a causal interpretation of the results presented here relates to selection into jobs. Several studies show that the gender wage gap is significantly diminished when one takes into account different preferences by gender over fields of employment, types of jobs, and college major (Blau and Kahn, 1997; Fields and Wolff, 1995; Loury, 1997). Ethical character could be serving as a similar sorting mechanism. To be sure, the job related controls used in this study have been limited, and our ethics measure may be picking up differences in preferences over jobs. Even still, the ability to obtain certain types of jobs (or promotions or raises) is likely to be one way in which willingness (or unwillingness) to engage in ethical behavior manifests itself. At the very least, our results suggest that raw earnings differentials may exist not only across gender, but simultaneously across gender and ethical character. According to one specification, the wage gap between "unethical" men and women is estimated to be 7.1% (controlling for a rich set of covariates), but this gap is cut in half when comparing "ethical" individuals.

As a final caveat to any interpretation of the results presented here, it should be emphasized that this study has necessarily remained agnostic as to the definition of ethical standards. Indeed, much of the evidence presented here has relied on individual self-reported ratings of ethical standards, which should be viewed, at best, as an imperfect proxy for actual behavior in the workplace. In particular, this measure certainly depends on one's perception of ethics. It is possible that what women view as being ethical differs from the views of men. Indeed, in her pioneering work, Gilligan (1982) found that men and women use fundamentally different approaches in the way in which they make decisions about morality. The male approach involves the view that individuals have certain basic rights which must be respected. The female approach involves the view that people have certain responsibilities towards others. Thus, differences in perception, rather than differences in actual behavior, may be driving the results presented here. Of course, differences in individuals' perceptions of business ethics are also likely to result in differences in actual behavior. According to Gilligan, while the male approach to morality imposes restrictions on what one can do, the moral decisions of females are more likely to be driven by an imperative to care for others.

Some of the results presented here may thus be incorporating the combined effect of differences in perception or definition of high ethical standards and actual differences in ethics related behavior. More research is needed in order to zero in on (or rule out) a true causal relationship. In the absence of workers' behavioral data, however, this study provides a step towards gaining a better understanding of extent to which individuals in business may have financial incentives to act with more or less regard to ethical standards. It also underscores the idea that economically relevant behavioral and perceptional differences between men and women exist outside of the laboratory, even in a relatively homogeneous sample of individuals interested in obtaining an MBA. These differences need to be more carefully considered in applied work.

Appendix A.

Table A1
Selected variable definitions and sources.

Variable	Description	Source
Ethics	Based on response to: "Please indicate the extent to which you think you have each of these characteristics or skills... High ethical standards." {1 = "very much", 0 = "somewhat", "not very much" or "not at all"}	GMAT Registrant Survey, Wave 1
Gain ethics	Based on response to: "Please indicate the extent to which these personal characteristics or skills were enhanced by your graduate management school experience... High ethical standards." {1 = "very much", 0 = "somewhat", "not very much", or "not at all"}	GMAT Registrant Survey, Waves 3 and 4
Ethics Rep.	Business school's self-evaluation of the reputation of the strength of ethics in its curriculum. {5 (strongest reputation), 4, 3, 2, 1 (lowest reputation)}	Bachhuber (1994)
Cutting edge	MBA from within group of "schools on the cutting edge" of incorporating social and environmental stewardship into their programs"	World Resources Institute and the Aspen Initiative for Social Innovation through Business (1990)
Significant activity	MBA from within group of "schools with significant activity" regarding incorporating social and environmental stewardship into their programs"	World Resources Institute and the Aspen Initiative for Social Innovation through Business (1990)
Moderate activity	MBA from within group of "schools with moderate activity" regarding incorporating social and environmental stewardship into their programs"	World Resources Institute and the Aspen Initiative for Social Innovation throughBusiness (1990)
Experience	Years of total full-time (>35 h per week) work experience	GMAT Registrant Survey
Hourly wage	Calculated from reported earnings and hours worked per week.	GMAT Registrant Survey
Quantitative GMAT	Actual quantitative GMAT score	GMAT Registration and ETS records
Verbal GMAT	Actual verbal GMAT score	GMAT Registration and ETS records
Undergrad. GPA	Overall average grade point average, out of 4.00.	GMAT Registrant Survey
Mother's edu.	Mother's education in years	GMAT Registrant Survey, Wave 1

Table A1 (*Continued*)

Variable	Description	Source
Children	Number of children	GMAT Registrant Survey
Skill index	Negative of the sum of 15 responses to: "Please indicate the extent to which you think you have each of these characteristics or skills. . ." (Each response: 1 = "very much", 2 = "somewhat", 3 = "not very much", 4 = "'not at all")	GMAT Registrant Survey, Wave 1
Lower-level manager	{1 = "I am/was a first or entry level supervisor or manager"; 0 otherwise}	GMAT Registrant Survey
Upper-level manager	{1 = "I am/was a middle or higher level manager"; 0 otherwise}	
Other adv. degree	Respondent reported having obtained a non-business graduate degree	GMAT Registrant Survey
Wealth important	Response to "We would like to know how important each of these aspects of life is for you." {1 = response of "very" (1); 0 otherwise}	GMAT Registrant Survey, Wave 1
Family important	Response to "We would like to know how important each of these aspects of life is for you." {1 = response of "very" (1); 0 otherwise}	GMAT Registrant Survey, Wave 1
Career important	Response to "We would like to know how important each of these aspects of life is for you." {1 = response of "very" (1); 0 otherwise}	GMAT Registrant Survey, Wave 1
Religion important	Response to "We would like to know how important each of these aspects of life is for you." {1 = response of "very" (1); 0 otherwise}	GMAT Registrant Survey, Wave 1
U.S. News Top 10	Attended MBA program ranked in the top 10 by U.S. News	U.S. News (1992)
U.S. News Top 11–25	Attended MBA program ranked between 11 and 25 by U.S. News	GMAT Registrant Survey and U.S. News (1992)
Public	Attended a public school for MBA	GMAT Registrant Survey and Miller (1994)
AACSB Accredited	Attended a school accredited by the AACSB	GMAT Registrant Survey and Miller (1994)
Average GMAT	Average GMAT of students at MBA program attended	GMAT Registrant Survey and Miller (1994)
Average GPA	Average undergraduate GPA of students at MBA program attended	GMAT Registrant Survey and Miller (1994)

Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.jebo.2011.03.005.

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