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Behavioral Assumptions and Management Ability

By Benito Arruñada and Xosé H. Vázquez

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Behavioral Assumptions and Management Ability*

Benito ARRUÑADA
Pompeu Fabra University
benito.arrunada@upf.edu

Xosé H. VÁZQUEZ
University of Vigo
xhvv@uvigo.es

Abstract

The paper explores the consequences that relying on different behavioral assumptions in training managers may have on their future performance. We argue that training with an emphasis on the standard assumptions used in economics (rationality and self-interest) is good for technical posts but may also lead future managers to rely excessively on rational and explicit safeguarding, crowding out instinctive relational heuristics and signaling a “bad” human type to potential partners. In contrast, human assumptions used in management theories, because of their diverse, implicit and even contradictory nature, do not conflict with the innate set of cooperative tools and may provide a good training ground for such tools. We present tentative confirmatory evidence by examining how the weight given to behavioral assumptions in the core courses of the top 100 business schools influences the average salaries of their MBA graduates. Controlling for the self-selected average quality of their students and some other schools’ characteristics, average salaries are seen to be significantly greater for schools whose core MBA courses contain a higher proportion of management courses as opposed to courses based on economics or technical disciplines.

Keywords: evolutionary psychology, economics, management, relational heuristics, rationality, self-interest.

JEL codes: A23, B41, D01, D87, M12, M51.

1. Introduction

The social model of managers contains a set of beliefs that influence their interpretation of the environment and the way they interact with others (Nadkarni and Barr, 2008). Instilling into them what to expect from human behavior therefore affects their ability to design and implement

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effective cooperative strategies (Cyert and Williams, 1993). This is precisely the rationale of a strand of literature criticizing the increasing influence of economics in managerial training (Goshal and Moran, 1996; Ferraro, Pfeffer and Sutton, 2005), and subsequent work contesting this argument (Williamson, 1996; Bazerman, 2005; Felin and Foss, 2009).

Economics has long been subject to criticisms for its lack of realism and the subsequent damage to the quality of predictions (Lester, 1946). A more recent strand of critiques, however, has been phrased in terms of a self-fulfilling prophecy, in that exposure to self-interest assumptions would trigger self-interested behavior. The argument is that behavioral assumptions in economics cause certain psychological biases that lead to opportunistic conduct. Confirming this conjecture in the lab, several studies have observed that students of economics display greater selfishness (Carter and Iron, 1991) that inhibits cooperation (Frank, Gilovich and Regan, 1993, 1996), leads them to free ride (Marwell and Ames, 1981; Cadsby and Maynes, 1998) and even makes them more corruptible (Frank and Schulze, 2000). Although more selfish students could be self-selecting into economics (Frank and Schulze, 2000; Frey and Meier, 2005), these results have been often interpreted as a symptom of how economics is instilling in students how they should behave (Frank, Gilovich and Regan, 1993, 1996).

In the business area, Ghoshal and Moran (1996) analyze how economic assumptions could preclude cooperation within firms and hence condemn them as progressively uncompetitive. They argued that managers who presume their workers are distrustful would resort to hierarchical controls (fiat, monitoring, and piece rate pay) at the expense of alternative social controls. This should result in more compulsory compliance and work-to-rule over voluntary effort (Deci and Ryan, 1985; Pfeffer, 1994). Additionally, workers would also tend to reciprocate by developing more subtle forms of opportunistic conduct (Fehr and Falk, 2002; Vazquez, 2004), which would in turn make managers intensify supervision (Strickland, 1958). The process then becomes once again a self-fulfilling prophecy, since assuming self-interest and opportunism calls for managerial controls that stimulate the very same behavior they intend to prevent. In the end, “the cost of removing these controls will grow until it is no longer an option for the organization” (Ghoshal and Moran, 1996, 27).

All this literature reflects a main concern: assuming a single human type that will behave opportunistically when given the chance leads individuals to overemphasize the hazards of transacting. Thus, even if managers believed that most people are honest most of the time, training in economics would push them to design contracts and establish relations in general “just in case” (Vázquez, 2006; Williamson, 1993b, 1996). This may harm individuals trying to play a leadership and team-building role by crowding out their instinctive “relational heuristics”: the innate decisional mechanisms which have been hardwired in our minds in order to interact with other human beings, including an aptitude for mind-reading and empathic relations and the ability to infer intentions from facial and oral expressions (Arruñada, 2008). However, a calculative safeguarding approach to transacting does not necessarily entail bad managerial consequences; it depends on the type of tasks managers have to perform. We argue in this paper that economics may actually offer a good managerial education, but only for tasks in which performance is closely tied to one’s specific stock of quantitative tools and capacity to carry out objective calculations (production planning, financial assessment, venture capital, tax optimization, cost accounting, logistics or market research).

Our argument does not therefore follow the economics-bashing literature, nor does it aim at defending economics from any academic conspiracy. Organizational phenomena are often

sufficiently complex to allow for militant views. Economists may certainly be responsible for the social consequences of economics and will be more successful once we find the way of applying economics successfully. We therefore offer a nuanced perspective that aims to throw some light on why and how human assumptions may make managers more effective. We suggest that educating managers requires instilling into them ambiguous and even contradictory assumptions of human nature, a perspective that is consistent with the existence of human relational heuristics and is better represented in the diversity of organization theories. In contrast, a more rigorous and unique version of human nature based on calculative “hyperrationality” may offer good training for relatively marginal and more technical staff but at the expense of crowding out relational heuristics, which are essential for successful performance in more integrative and central managerial posts.

We test our arguments by showing with an econometric model how managers’ salaries are affected on average by the relative importance that alternative behavioral assumptions had in their graduate education. As far as we know, this is the first empirical study to test the effect of alternative behavioral assumptions on performance. Notice that the controversy about whether opportunism is an appropriate assumption has mainly consisted of theoretical exchanges (Tsang, 2006), whereas most empirical work on the normative value of economics not only aimed at testing whether economic assumptions self-fulfill, but were also confined to experimental and case evidence (Frank and Schulze, 2000; Frank, Gilovich and Regan, 1993, 1996; Ferraro, Pfeffer and Sutton, 2005).

The paper is organized as follows: Section two presents the theoretical framework. We start by describing the role that cognitive science grants to our relational heuristics with regard to human interaction. A brief account on how economics and management theories address rationality and cooperation follows. We use this background to build a testable hypothesis on the compatibility of both perspectives with the insights of cognitive science. This leads to the empirical part of the paper: Section three describes the data and presents the model, whereas section four discusses results. Section five concludes.

2. Relational heuristics in economics and management

2.1. The role of relational heuristics in social exchange

Recent developments in cognitive sciences have improved our understanding of social exchanges by throwing light on how we decide to cooperate and with whom. Experimental psychologists have proved, for instance, that human beings err systematically in simple logical problems and assess probabilities poorly. This supports the view held by biologists that the human mind is economical, meaning it spends only those resources required to succeed in a given environment. Thus, if we did not evolve into scientists, able to comply perfectly with mathematical logic and the laws of probability theory, it was not because we lacked mental computing power but because it would have been wasteful. Our mind does not produce scientific solutions with general validity, but solutions that are good enough to master the local environment.

Cosmides and Tooby (1992) speak of an “ecological” rationality, which is economical not only because it is subject to constraints, but because it is well adapted to our ancestral environment. We can thus explain not only why human rationality is bounded (Simon, 1957), but also why our daily conduct relies on instincts (Simon, 1962): modular decision systems which are better than mere calculative rationality on evolutionary recurrent tasks, such as recognizing objects, acquiring grammar, comprehending speech or—most importantly here—cooperating with others (Cosmides and Tooby, 1994). Non-conscious processes in general constitute most of the electro-chemical activity in our brains (Camerer, Loewenstein and Prelec, 2005, 18), and this fact is also at the root of why we are subject to continuous mental conflict (McClure et al. 2004). Our contradictory desires and beliefs are the result of evolutionary adaptation, since calculating the best tradeoff would have been inefficient in a context of scarce computational resources (Livnat and Pippenger, 2006).

The need for individuals to cooperate (like physical functions such as sighting, recognizing or grabbing objects) therefore involved the development of instinctive solutions that can often lead individuals to apparently contradictory or incoherent behaviors. Evolution endowed humans with innate relational heuristics that help us discriminate partners by, for instance, interpreting intentions from others’ expressions and attitudes, paying special attention to cooperation-related information, or signaling our commitment toward principled behavior. Other innate heuristics help us to enforce cooperation. The simplest are linked to genetic relatedness, which grounds cooperation between relatives. The most complex are the instinctive systems that support cooperation between total strangers: Commitment strategies based on strong reciprocity (Fehr and Falk, 2002), the choice of partners upon instinctive heuristics designed to detect potential and real cheaters or generate empathic relations (Evans and Chang, 1998), a complex moral sense grounded on emotions that constantly extends its scope (Frank, 1988); a fondness of individuals for conformity with mainstream behavior in a group, as well as for discrimination against heterodox conduct or against those outside the group (Nicholson, 1997); the thirst for gossip (Dunbar, 1996); and a whole set of relational (mainly distributional) frameworks that are triggered by certain environmental circumstances, like serious exogenous risk (Fiske, 1991; Tooby, Cosmides and Price, 2006).

Evolution has accordingly made us live in a permanent quarrel with ourselves, leading us to different behaviors depending on the particular traits of the interaction we are carrying out, the characteristics of our partners, or the actual context in which we interact with others. In principle, we may lie, deceive or betray to further our long term interests. We are apt to easily fall into self-deception because in a world of walking lie detectors, believing your own lies is often adaptive. We even tend to unconsciously mimic basic feelings like anger, disgust, fear, joy, sadness or surprise to enhance our chances of cooperation with others. But at the same time and for the same reason, natural selection installed cooperation and generosity in our minds. Our first ancestors who were friendly, charitable and generous “prospered not by their own calculation but because the feelings made it worth their neighbors’ while to cooperate with them” (Pinker; 1997, 406). We feel solidarity, sympathy, tolerance and trust toward not only our family, but also toward our “artificial relatives” whom we make by gathering information on who joins which groups or who resembles who. And when our potential partners are total strangers, we use other relational heuristics based on guessing intentions.

Results from agent-based simulations and experiments are consistent with this view. For instance, Frank, Gilovich and Regan (1993) showed that, by allowing players in a Prisoner’s

Dilemma game to interact for 30 minutes before playing, they could improve their predictions on who would cooperate and who would defect with regard to other studies without this experimental condition. Furthermore, other studies have repeatedly questioned the existence of a unique human type who behaves in a more or less honorable manner when confronting cooperative dilemmas. Simulations have proved that populations often contain groups of individuals with different prevailing strategies of interaction (Dugatkin and Wilson, 1991; Aktipis, 2004). Several experiments have also confirmed that a substantial proportion of individuals in a population is principled, whereas many others tend to free ride and shirk. Moreover, all of them may change their behavior, however, under the influence of institutional constraints and other circumstances, and in fact individuals do not cluster perfectly (Burton and Obel, 1988; Nagin et al., 2002; Kurzban and Houser, 2005). The typology of human nature is therefore more complex, variable, context-dependent and ambiguous than Hobbesian or Rousseauian simplifications embrace, and the arsenal of cooperative tools in our minds is much more diverse and sophisticated than mere calculative rationality.

2.2. Rationality and cooperation in Economics and Management

Business schools transmit two main sets of paradigms to future managers on decision-making and human interaction. The first is based on economics, which entails a unique description of human nature by which all humans are of the same type: hyperrational and self-interested. The second paradigm is implicit in the managerial “jungle of theories,” and it conveys a plural and sometimes contradictory nature of human beings.

Starting with economics, its most salient trait regarding human assumptions is its explicit, coherent and unified perspective on human nature. According to economics, individuals maximize their utility, guided by their preferences and tastes and restricted by the information available. Decision-making is therefore considered a production process that is subject to limited resources (Stigler, 1961). This instrumental or calculative rationality has been challenged by those authors for whom human beings “satisfy” and operate under conditions of “bounded rationality” (Simon, 1957; Williamson, 1975, 1985). Individuals would thus take decisions under the restrictions defined by their capacity to process information and by the complexity of the environment they live or work in. Although considering a wider set of costs complicates the analysis, there is little today in mainstream economics against this idea. Williamson’s bounded rationality does not accordingly entail a radical change with respect to the presence of costly information in economic analysis to the extent it is still grounded on conscious (i.e., rational) mental processes. Hence, his claim on the rationalizing role of organizations, which is mostly absent from mainstream economics, is more helpful for understanding how organizations behave in the market than how individuals decide within organizations.

Economics is also explicit and unambiguous about self-interest, which has generally been used together with an assumption of perfect information. Both assumptions define a framework within which individuals always keep their promises. However, when information is imperfect and unequally shared amongst participants, then the same assumption of self-interest leads to problems of non-fulfillment. This situation has been labeled “opportunism” after Williamson (1975), who defines it as “self-interest seeking with guile,” i.e., an extreme form of self-interest which leads the parties to go further than they would through a more innocent form of self-

interested conduct (1985, 43-52 and 64-67). Related concepts widely used in economics such as adverse selection and moral hazard, are simply a consequence of self-interested conduct in a context of asymmetric information. The change with respect to the purely neoclassical model does not therefore refer to the behavioral assumption but to the structure of available information.

In contrast with economics, the reliance of management theories on different human assumptions and the implicitness of such assumptions trains students in several perspectives on rationality and cooperation. Managerial training includes concepts such as “bureaucracy” and “Taylorism,” for instance, which instruct students on ideas of pyramidal authority, written rules, a clear description of job contents, specialization, impersonality or time and motion analysis. These transmit a rational optimizing perspective on organizational structures and productive systems. There is consequently an implicit message that indoctrinates students on the need to act rationally by adopting these rationalistic practices. Simultaneously, however, other managerial theories like contingent or systems’ theories (Pfeffer, 1982) tell the same students that our societies and organizations are not actually systems running towards a steady state in a rational equilibrium. In contradiction with what they have just studied about Taylor or Weber, they learn that there is no optimum strategy or structure. They are furthermore taught that, in contrast with the implicit assumptions of Taylorism and Weberism, decision making is not mainly a “rational” process. Decision making could actually be subject to cognitive restrictions (Cyert and March, 1963) and is significantly affected by emotions (Argyris, 1957; Etzioni, 1988). Often such a diverse message on rationality is even conveyed in the same management courses.

Similarly, the perspective on human interaction implicitly transmitted by management theories shows a high diversity that often leads to contradictory perspectives. Future managers learn from classics like Taylor, Fayol or Weber that piece rates, hierarchy and standardization are crucial not only to coordinate individuals but also to control their propensity to shirk. Conversely, they also learn from Human Relations Theory that individuals are influenced by social needs and not only by economic incentives, especially in advanced societies. The message is that piece rates and many of the bureaucratic features are “dehumanizing” (Etzioni, 1971) and therefore harm workers’ motivation in terms of “disaffection” and “suspicion” (Dore, 1973). Treating workers’ productivity as if it was an engineering problem would therefore be a mistake. Humans actually show a complex hierarchy of needs (Herzberg, 1968) that involve individual and collective motivations. The study of personality is thus very relevant (Hall and Lindzey, 1970) because human diversity makes generalizations difficult. And when it comes to foreseeing the opportunistic propensity of individuals, textbooks discussing intrinsic motivation (Deci and Ryan, 1985) and psychological contracts (Rousseau, 1989) warn future managers about the ambiguous consequences of their actions. Again, the implicit message is that individuals are neither altruistic nor opportunistic; their propensity to shirk or to cooperate depends to a great extent on how they perceive they are being treated.

2.3. Hypothesis

By concentrating on a series of mechanical models under the assumptions of rationality and self-interest, economics instructs managers in specific modeling mechanisms to reach optimal solutions. This perspective stimulates their skills for technical tasks in which performance is

closely tied to one's specific stock of quantitative tools and objective calculations. Posts in production planning, financial assessment, venture capital, tax optimization, cost accounting, logistics or market research might consequently involve "optimal tasks for optimizing managers". Cognitive sciences, however, provide three interrelated reasons as to why training in economics can be bad for posts in which personal elements are crucial, such as those requiring trust, exercising leadership or building teams in a intendedly cooperative environment.

First, economics indoctrinates future managers in a *single human type* characterized by individuals' proclivity towards opportunistic conduct. This not only means that type selection is disregarded as an interaction strategy but furthermore entails that relational heuristics, which have been evolutionarily developed to distinguish human types, are made superfluous for human interaction.

Second, economics sees decision makers as traders and recommends them to align their incentives through a *calculative and safeguard-optimizing* contractual process. However, in a world of instinctively rational individuals with different capacities for commitment, our innate ability to screen cooperators *ex ante* may be more efficient than explicit safeguarding. Moreover, regardless of whether our screening heuristics succeed, intensifying our rational safeguarding efforts may interfere with more emotional and definitely less conscious interaction mechanisms. Transaction costs will then increase and trade opportunities will be jeopardized. This is what happens, for example, when, calculative safeguard-building provokes a sort of Eisenberg effect by activating automatic cheater detection mechanisms or hindering the development of empathy relations. Parties who exhibit opportunistic assumptions thus risk being classified by potential partners as opportunistic, and may trigger non-cooperative first moves even in repeated games (Forges, 1992).

Finally, emphasis on rationality and optimization leads to overapplication of economic calculus to morally-loaded issues. Hence, even if economics does not obviously encourage managers to act immorally, managers may be perceived as immoral when decision making is performed in inadvertent violation of social norms. In so doing, managers tend to overlook relevant issues such as, for example, their partners' desire for procedural and distributive justice (Cohen-Charash and Spector, 2001; McFarlin and Sweeney, 1992) which, despite being subject to cultural differences, also reflect hardwired instincts related to our conformity with mainstream ideologies, gregarious behavior, drive for status, loss aversion and many others (Pinker, 1997, Nicholson, 1997). The fact is that people care deeply about being treated fairly, and managers depend on the approval of others to be successful. By stressing strategies and reforms in an absolute sense, economics disregards how our hardwired instincts make us perceive them. Economics training may thus incline managers to explicitly apply cost and benefit analysis to issues which, for many people, should not be considered on such an economic basis or, at least, should not be *explicitly* considered on such a basis and which are inside an expanding and intuitively shared "moral circle" (Singer, 1981; Brown, 2000). Considering such issues in terms of economic tradeoffs is judged immoral by most people (Tetlock et al., 2000). The consequence is a tendency of economics-trained managers to inadvertently signal themselves as antisocial and immoral types, whatever their true type is in that particular context.

To put it briefly, therefore, the normative explicitness on human behavior makes the whole contractual process a matter of *ex ante* rationalizing of *ex post* costs and benefits. This is the reason why instructing managers explicitly on self-interest and opportunism may be positively right but normatively wrong: It advises individuals to perform a sophisticated fine-tuning of

hypocrisy that collides with our innate relational heuristics. The result is an increase in transaction costs (by provoking distrust among exchanging partners and confusion as to what good ex ante strategies are) that may delay, deteriorate, or even frustrate economic exchanges. Alternatively, the implicit and plural nature of human assumptions in management theories entails a more considered weight for rationality and opportunism, thus fostering the use of our adaptive relational heuristics to individualize each transaction and act accordingly.

From this perspective, the debate about whether economics or management theories are epistemologically superior does not help much in assessing whether they serve for properly instructing future managers. What matters most is their effect on the ability of future managers to employ their adaptive relational heuristics. False beliefs are useful when they trigger adaptive behavior. For example, regardless of whether believing in God is a scientific, rigorous deduction, beliefs in a punishing god may constitute an effective way of enforcing a moral code without relying on external enforcement. Similarly, when interacting with people capable of identifying potential cheaters, self-deception may allow a cheater to pass undiscovered, and this may compensate for other costs imposed by self-deception. By the same token, de-emphasizing opportunism may therefore be adaptive *even if wrong* if, for instance, it helps people to signal their cooperative nature and contract more often with cooperators. Expectations of cooperation can thus become self-fulfilling.

Moreover, the effect of relying on single and plural behavioral assumptions is reinforced by the predominant way in which both economics and management are taught. Economics mostly relies on deduction, which explicitly starts featuring the human assumption. Conversely, management education relies on induction, especially when using the case method, which allows for different emphases and starting points. Students have to discuss—rather than calculate—which conducts and decisions are more suitable in a particular situation, so they are confronted with the full array of human traits. They are forced to focus on facts, but do so while interpreting factual situations and real human characters according to their own instinctive judgment (Greenhalgh, 2007). Most cases allow different perspectives and do not even afford anything like a “solution.” Students also know that the situations they will have to navigate in the future will differ and will require attention to the full sets of facts and characters. As summarized by Rubinstein (2006, c8) when criticizing the mathematical bias of economics, class discussion of case studies fosters more *comprehensive thinking* about real life problems and instills in students the need to balance conflicting interests.

These arguments lend support for our proposition that, compared to the single human nature embedded in economics, the plural, implicit and sometimes even incongruent approach of management theories is thus better adapted to the nature of the cognitive problem of cooperation; a problem characterized by the intrinsic contradictions between selfishness and altruism, trust and suspicion, teamwork and shirking.

Based on this support we propose the following hypothesis: *Managers indoctrinated in rationality and opportunism are less valuable than managers whose training encourages the use of their innate relational heuristics.*

3. Data and analysis

We test this hypothesis by examining how the market for managers evaluates the influence of the alternative behavioral assumptions used in MBA programs on the earnings of their graduates. We measure professional success as the average weighted salary of each school, controlling for several other factors. Data on the presence of different behavioral assumptions in each MBA program has been compiled by reviewing how each of their core courses was described in the programs' websites during the month of February 2003. In particular, the performance of each MBA program was estimated through its graduates' average weighted salaries three years after graduation from the 2001, 2002 and 2003 *Financial Times* (FT) surveys. These figures were given in US dollars and measured as the average "salary today" adjusted for salary variation between industry sectors (*Salary*). Using salaries right after graduation should lessen the relevance of other alternative measures of managerial value like non-monetary rewards. Moreover, given a competitive labor market for MBAs, salaries will reflect the willingness of employers to pay for the attributes embodied in a program's graduates.

Reliance on two different behavioral assumptions is measured through the weight of each assumption in the courses that form the mandatory core of each MBA curriculum. This weight was based on the course content, as described in the respective MBA web site and after reviewing the recommended literature of the course where appropriate. Whenever a course's description suggested it was based on rational and self-interested agents, such as courses on economic theory and some dealing with strategy or finance (Rocha and Ghoshal, 2006, 586), it was classified as *Economics*. Whenever a course's description revealed more plural assumptions, under which human conduct sometimes reflects opportunism and sometimes responds to altruistic or at least group-beneficial motives, such as Human Resources Management, Leadership or Organizational Behavior, it was classified as *Management*. We have separated *Ethics* courses from the management field because they tend to recommend a more explicit and univocal strategy for exchange: "Being honest is profitable". To this extent, they might be moving individuals to cooperate in excess. (Econometric analysis using survey data supports that miscalibrating trust is costly in which ever direction, even if exceeding in mistrust is more costly than exceeding in trust [Butler, Giuliano and Guiso, 2009]). Other business ethics courses, which take a more calculative perspective on moral action, make the contractual process a matter of ex ante calculation of costs and benefits, as in economics. Results do not change, however, whether explicit ethics courses are included or not with other management courses. Finally, technical courses that do not reveal a prominent behavioral assumption are taken as default. This is the case, for example, of Statistics, Financial Accounting, Operations Management or Writing Skills. We take *Technical* courses as the default variable, with the sum of *Economics*, *Management*, *Ethics* and *Technical* variables equal to 100.

The classification was performed by two raters. The comparison of these individual scores revealed rating differences in the courses with a "hybrid" set of behavioral assumptions—those which for some topics rely on economic theory and for others on other disciplines. For example, marketing courses often include an economics-based part dealing with distribution channels and pricing and a more psychological part dealing with advertising, consumer behavior and brand management. Rating discrepancies were discussed by the two raters in order to reach a consensual assessment. The annex shows examples of how these classifications were performed for Harvard and Wharton.

To better identify the effect of the curriculum, the models control for several potential factors related to the inputs, process and environment of each school: the relative size of the MBA core, the influence of students' quality, the value added by the MBA and the possible effect of local markets.

The relative size of the MBA core (*Core Weight*) reflects the percentage of core courses in the total number of courses required for graduation. For 15 schools the total number of courses was imputed from the data. Results do not substantially change when these observations are not used.

Students' quality is considered both in terms of their previous work experience and potential academic performance. Previous work experience of the students is measured through the number of months they had been working before entering the MBA (*Experience*). Their academic quality, on the other hand, is proxied through the average score obtained in the Graduate Management Admission Test (*GMAT*). Notice, however, that the use of this variable as provided by the FT generates an endogeneity problem in our model. We expect higher *GMAT* scores to be associated with higher salaries, but we also expect that good students, those with the best *GMAT* scores, will tend to have gone to the best schools. Therefore, their average quality will also depend on the school's average expected salaries. This is why both variables are treated as endogenous. The second equation in our model seeks to obtain the predicted values of *GMAT* according to several explanatory variables. These predicted values of *GMAT* are the ones actually used in estimations (3) and (4) explaining average salaries.

The value added by the MBA is measured through several variables: the total cost of the MBA in tuition and living expenses, the duration of the program, the size of the students' body at each school, the homogeneity of students, the quality of research and a rank measure of each program reputation. The annual budget recommended for attending the program (*Budget*) includes tuition fee and living expenses in US dollars. Social interaction, often considered a value for this kind of program, both in itself and in terms of future professional networking, is proxied via the total number of full-time MBAs in the school (*Enrollment*). The homogeneity of students (Table A.1) is measured by an index (*Homogeneity*), built as the first principal component of three variables measuring the dispersion of students with respect to their *GMAT* score (*Gmatdisp*), age (*Studentage~p*) and previous work experience (*Workexpdisp*). Each of these three variables was calculated by dividing the difference from the lower to the upper 80% bounds of the corresponding score by the average score for each school. The impact of *Research* is measured with an index obtained through principal component analysis (Table A.2) from three indicators given by the FT survey. These indicators are: the percentage of faculty with a doctorate (*Faculdoct*); a ranking based on the number of doctoral graduates from the last three academic years, with additional weighting for those graduates taking up a faculty position at one of the top 50 schools in the 2002 survey (*Doctorrank*); and a ranking of research based on a rating of faculty publications in 40 international academic and practitioner journals, with points accrued to the school at which the author is currently employed and points adjusted by faculty size (*Researchrank*). *Research* is standardized to have mean zero and standard deviation one. Lastly, we include the ranks of the schools to consider the influence of program reputation on salary variation (*Rank*).

The effect of local markets is controlled by the schools' geographic area, which is considered through two dummies, *USA* and *Europe*. Both take value one if the school is located there, and zero otherwise. Finer geographical proxies do not modify our results.

Finally, three additional variables are used as instruments to tackle the endogeneity problem caused by *GMAT*: the performance of placement services, the gender position and the internationalization of business schools. The performance of placement services is measured with the *Placement* variable, i.e., the percentage of 1999 alumni that gained employment with the help of career advice. Given that in the 2003 survey this data is presented as a rank, the variable is recoded as a reverse ranking to make higher numbers represent better quality. Gender position is measured through the *Feminine* index (Table A.3), built as the first principal component of the percentages of female faculty (*Womenfacul*), female students (*Womenstud*) and female board members of each school (*Womenboard*). Similarly, the *International* index (Table A.4) combines the percentages of foreign faculty (*Intlfaculty*), foreign students (*Intlstudent*) and foreign board members (*Intlboard*), as well as indexes of students' mobility (*Intlmobility*) and international exposure (*Intlexperr~k*), plus the working languages required (*Languages*).

Table 1 presents the main descriptive statistics of the variables and shows that the dataset combines data from two main sources: the *Financial Times* 2003 survey of the best MBA programs, mostly based on 2002 data (*Financial Times*, 2003), and the profiles of each program in the *Business Week* database (Business Week, 2002; Merritt, 2002). For a few observations, part of the data was collected from the programs' websites at the beginning of 2003. All five indices used (*Research*, *Homogeneity*, *Placement*, *Feminine* and *International*) are standardized to have mean zero and standard deviation one. Table A.5 presents the correlations among the variables in our models.

Table 2 presents the econometric analysis. We have estimated two models and the Table presents two specifications, showing results with and without non significant parameters. The first model is an OLS estimation of the average salary earned by the graduates of each MBA as a function of behavioral assumptions (*Economics* and *Management*), and the control variables. The second model, which renders similar results, tries to deal with the possible endogeneity of student quality through a system of simultaneous equations estimated using three-stage least squares (3SLS). Thus, we propose in the second equation that average student quality depends on the school's average salary, the performance of its placement services, its research quality, student homogeneity and the position of the school in terms of gender and international background.

We thus posit a simultaneous and reciprocal influence between *GMAT* and *Salary*. The higher the average GMAT of each MBA program, the higher the potential of its students to achieve outstanding results after they graduate. Yet, since average salaries are made public through sources like FT, MBAs whose graduates are successful in terms of remuneration will also attract more and better students, among whom business schools will choose the best qualified (those with a higher GMAT). We therefore argue that there is a matching of schools and students. This is the justification for the presence of *Salary* as the dependent variable in the first equation and as an independent variable in our second equation. Other variables included in this second equation have already been described: the performance of the placement services, student homogeneity regarding GMAT, age and work experience, the performance of schools' research, gender position and internationalization of the faculty.

4. Results and discussion

Results confirm our main argument because the greater the weight of Management courses the greater the average salary of the school. For 1% more weight of management in the MBA core, MBA graduates earn around 1,000 USD more. However, no significant relation appears between average salaries and the percentage of Economics and Ethics courses. Thus, the model supports the hypothesis that MBA graduates who have taken a higher percentage of management courses are more valued than their colleagues who have taken a higher proportion of subjects based on economic and technical assumptions, as well as explicit courses on ethics (no significant difference is noted between economics, ethics and technical courses). These results do not significantly change with alternative measures of success taken from the FT survey, such as the extent to which alumni fulfilled their goals, the degree to which alumni recommend recruitment from each school, and several other measures that were calculated three years after graduation: the simple average of salaries, the percentage increase in salary, the rate of return for each dollar spent and the degree to which alumni have moved up the career ladder.

Incidentally, the *Core Weight* coefficient is significant and positive, which suggests that MBA programs with a higher proportion of core courses yield a better education for future managers. This result is consistent with the presence of conflicting interests between students and professors. Professors, being interested in more specialized and scientific courses, may tend to impose cores that are too small, probably leading to incoherent learning, and too many courses that rely on allegedly more scientific, but managerially unproductive, behavioral assumptions. In the light of this result, recent switches to smaller cores by some top schools may be misguided.

Other control variables yield the expected results. Both *GMAT* and *Experience* augment the success of the MBA program. As expected, smarter and more experienced students “teach” their classmates better. *Budget*, which measures the cost of the investment in each MBA, also shows a positively significant correlation with average salary, which proxies the gross return from the investment. The *Enrollment* coefficient, on the other hand, suggests there is a positive relation between the average salary of the MBA program and its visibility in the labor market, perhaps through brand positioning, graduate associations, social interaction during the MBA and networking resources for the future. Also as expected, students’ homogeneity has a detrimental effect on salaries. Finally, graduates from the USA and Europe also earn more than their counterparts on Asian and Australian programs. As shown in Table 2, graduates from the USA earn between 12,099 and 13,844 more dollars than Asian-Australian graduates. European graduates, in turn, earn between 9,339 and 11,322 more. It is worth recalling here that the school location dummies were meant to control for the effects of local markets. Performance differences stemming from location may therefore tell us not so much about the quality of schools but rather about, among other issues, graduates being more inclined to stay in the country from which they graduate, which may furthermore show a lower cost of living (thus leading to a lower average wage).

The estimation is less clear about two variables *Duration* and *Research*, which present insignificant coefficients. Within our framework, it could be argued that a lengthier education can enhance the analytical capacity of graduates but adds little to managerial abilities. The insignificant coefficients of *Research* are also consistent with an interpretation that the market is asking MBA programs to generate the proper competences, capacities and abilities in their graduates, regardless of whether the information they receive is at the edge of scientific

knowledge. This would be consistent with the emphasis of MBA programs on teaching (Trieschmann et al., 2000).

We interpret these results as supportive that, because management theories are less dogmatic, more open, more descriptive and sometimes even inconsistent among the different branches, they are more coherent with what cognitive science shows is normal human behavior: diverse and contradictory. This interpretation is consistent with previous finding that managers trained in business schools that rely more on the case study method also earn more money (Tracy and Waldfoegel, 1997). Also with the argument put forward by Ghoshal and Moran (1996, 39): by assuming the worst, managers indoctrinated in economics could be bringing out the worst in economic behavior. Managers with training in management theories not only appreciate the value of contractual safeguards but, more importantly, can discriminate in which relational frameworks they should apply them.

Our argument suggests that indoctrination in rationality and self-interest may be harmful in jobs requiring a full set of human abilities, but not in all jobs. A curriculum loaded with economics might make MBA graduates more analytical, which can be an excellent skill in many staff and technical posts. In such posts, even if personal interactions with others play a role, performance hinges more on one's specific stock of quantitative tools and capacity to carry out objective calculations as, for instance, in production planning, financial assessment, tax optimization, cost accounting, logistics or market research. Economics can therefore offer a better education than management for many jobs. But any attempt to widen the scope of economics education for leadership tasks requires, as a necessary condition, adapting economics principles to the particular traits of the transactions at stake. This may be a fruitful exercise if psychology and sociology insights are incorporated in economics reasoning, as for example in Baron and Kreps (1999) and Cowen (2007). It may not be sufficient, however, to the extent that rational calculation may crowd out more effective ("better-than-rational") heuristics.

The point is that managers do not only play a technical role—they are actually above technical jobs in terms of both hierarchy and salary. To perform successfully, they need to deal with personal relations and politics, requiring an extensive use of heuristics. This explains why courses based on plural and implicit human assumptions can help managers to deal with their workers, suppliers or clients: such courses do not interfere with managers' relational heuristics. On the contrary, they encourage their use to instinctively characterize each interaction and each partner, and to act accordingly. They do not indoctrinate individuals to presume their counterparts are opportunistic. Managers whose education has been based on management theories do not therefore tend to engage in safeguarding activities that often risk intensifying distrust among potential partners. And finally, management courses do not propose *ex ante* calculation of optimum safeguards that would damage managers' relational capital by making them neglect the hardwired instincts of their partners. Their cost-benefit analyses can therefore include a much wider range of considerations.

Our results may well be consistent with other explanations. For instance, it is possible that students self-select into business schools according to students' and schools' characteristics and that the observed differences in schools' average salaries are caused by unobserved students' characteristics (e.g., sociability) which are also driving their choice of school. In other words, more sociable students would choose schools with less economics in their curricula and will succeed professionally not because there they have less training in economics but because they started graduate school with better social skills. We find this explanation unsatisfactory,

however, because according to survey evidence the choice of school is driven by other factors, such as prestige and global recognition, career options the school affords or quality and reputation of faculty (Punj and Staelin 1978; Chapman, 1998).

We also find unlikely that remaining differences in salaries could be explained by a perception or reputational argument, according to which company hiring practices would be based on the fact that an MBA from a top school is worth paying more for than one from a lower ranked school, regardless of the type of courses each school provides. Most of these effects should be captured by our control variables. Furthermore, several surveys conducted by the Graduate Management Admission Council suggest that companies are clear about where to recruit: what they expect from an MBA is based on experiential factors (the success of alumni hired by the recruiters' companies and their own experiences recruiting at the school), school's curriculum, quality of faculty, and their ability to produce candidates with leadership potential and communication skills (Olkin, 2004; GMAC, 2007, 2008).

Finally, our results could also be consistent with a human capital explanation. Given that our wage data refers to starting salaries, the observed difference could be a consequence of managers with more economic training being hired for positions that in their first years compensate them relatively more in human capital. Testing this and many other explanations remains for future work. For the time being, the mere possibility of these alternative explanations does not, however, refute our argument that economics training may be having negative effects on some management abilities that are crucial for leadership and team building posts.

5. Concluding remarks

Humans interact by applying a nuanced mixture of decisional mechanisms: innate heuristics, learned cultural practices and conscious rational thinking, and some mechanisms may collide and provoke conflict. Assuming that human behavior is decided by only one of these mechanisms may be a necessary simplification in many scientific endeavors. Believing such an assumption, however, can lead us to implement wrong relational strategies in social and economic exchanges. Top managers are no exception. Like most humans, they are not highly reflective, strategic, rational, top-down planners (Mintzberg, 1973). They certainly think and plan, but usually on the run while they are fighting fires stemming from above, below, left and right. Thus, when indoctrination leads managers to overemphasize their analytical competences and presume all their counterparts are not trustworthy, they risk engaging in an intense safeguarding activity that interferes with these less "rational" and more "emotional" interaction mechanisms. This will often trigger distrust in their partners; delaying, worsening or even precluding valuable transactions. By contrast, when indoctrination in human assumptions pushes managers to use their relational heuristics in their daily interaction with their workers, suppliers and clients, cooperation strategies are often more successful. Our results, showing that graduates from management-oriented MBAs earn about USD 1,000 more a year for each 1% more weight of management courses in the program, are consistent with this view.

It is worth emphasizing that an analytical education based on rationality and self-interest is not necessarily wrong. The point is that although calculative safeguarding may play an important role in specific transactions, economic agents need to consider its tricky interaction with automatic relational heuristics. Hence, whereas economics may offer a good education for less

personal tasks, it may harm individuals playing a leadership role. MBA programs with a higher proportion of courses using management theories may therefore be producing more valuable managers not because of the epistemological quality of these theories but because their courses present a less dogmatic, more descriptive and diverse set of human assumptions. This probably helps the task of future managers when they need to identify the pertinent relational framework, therefore encouraging a contingent—and more successful—approach to economic and social interaction. Such tasks are at least not hindered by management theories. These not only handle concepts related to rationalistic opportunism but also involve others like trust, intrinsic motivation, ethical values or, more generally, emotions, which do not interfere with the adaptive nature of our relational heuristics.

Our results also hold important implications for contract theory, changing the nature of the contracting problem with respect to its common paradigm. If, as suggested by Stigler and Becker (1977), there were a single type of human beings prone to moral hazard or opportunism, the recipe would consist of designing incentive alignment mechanisms or, in Williamson's broader terms, "farsighted contracting." However, if there are actually several human types (and not humans with different reputations, as in Williamson, 1996, 13-14) or, if these types are context-dependent, so that individuals can be assumed to be "programmed" to respond differently depending on the particular situation and partners they face, then the main challenge in contracting is not necessarily to protect parties against opportunism but to discriminate potential partners and contracting situations in order to display a different relational strategy in each transaction. General, indiscriminate application of "farsighted contracting" or "incentive mechanism" designs is consistent with a world of identical individuals. It is not consistent, however, with a world in which individuals are endowed with an arsenal of instinctively cooperative commitments and type identifiers.

Finally, a by-product of our analysis is that it challenges the role of scientific knowledge and the relative importance of formal and informal education for all sorts of human interaction. It even holds an intriguing prospect for the relative value of social science and mere social knowledge. Specifically, it limits the application of rationality and self-interest assumptions to the normative area of individual decision-making, including not only management but also contracting and policymaking. It may even explain why the application of economic analysis to these normative areas has been less clear, since success in such areas probably does not depend on an epistemological judgment but on adaptation. Hence, in the normative area, economics and all other theories that explicitly rely on rationality and self-interest may be weak even if they provide the greatest explanatory power—normative success requires functional adaptation and epistemological truth is not necessarily adaptive.

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Table 1. Descriptive Statistics of the top 100 MBA programs

<i>Variable</i>	<i>Source</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>Salary</i>	FT	98	101386.4	27245.78	31184	176231
<i>Economics</i>	Built from MBA's Websites	98	35.40054	8.629844	16.66667	54.54546
<i>Management</i>	Built from MBA's Websites	98	14.626	5.771738	0	27.27273
<i>Ethics</i>	Built from MBA's Websites	98	.0189111	.030365	0	.0909091
<i>Core Weight</i>	Built from MBA's Websites	98	60.13617	15.34357	27.27273	100
<i>GMAT</i>	BW and Websites	98	648.9388	35.80397	557	723
<i>Experience</i>	BW	98	62.71429	13.30917	25	98
<i>Budget</i>	BW	97	34696.64	13527.68	4000	60000
<i>Duration</i>	BW	98	18.17347	3.763705	10	24
<i>Enrollment</i>	BW	98	378.0918	326.8504	26	1805
<i>Homogeneity</i>	Index built from BW data	98	0	1	-3.012106	2.099959
<i>Research</i>	Index built from FT data	98	0	1	-3.020171	1.829468
<i>Rank</i>	FT	98	--	--	1	98
<i>USA</i>	FT	98	.5816327	.4958273	0	1
<i>Europe</i>	FT	98	.244898	.4322376	0	1
<i>Placement</i>	FT	98	0	1	-1.705162	1.703757
<i>Feminine</i>	Index built from FT data	98	0	1	-2.155211	2.991765
<i>International</i>	Index built from FT data	98	0	1	-1.699146	3.03801
<i>Faculdoct</i>	FT	98	87.29592	18.70344	0	100
<i>Doctorrang</i>	FT	98	46.64286	27.32328	1	81
<i>Researchrank</i>	FT	98	49.44898	28.54012	1	95
<i>Gmatdisp</i>	Built from BW data	98	.1863082	.0531585	.0847458	.3442623
<i>studentage~p</i>	Built from BW data	98	.2780801	.1027466	.1071429	.7931035
<i>Workexpdisp</i>	Built from BW data	98	1.216132	.5233243	.3225806	3.84
<i>Womenfacul</i>	FT	98	20.66327	6.693502	0	36
<i>Womenstud</i>	FT	98	28.46939	7.401872	13	56
<i>Womenboard</i>	FT	98	14.61224	9.450503	0	50
<i>Intlfaculty</i>	FT	98	30.89796	19.46103	2	98
<i>Intlstudent</i>	FT	98	43.59184	21.21215	11	96
<i>Intlboard</i>	FT	98	19.64286	23.03617	0	95
<i>Intlmobility</i>	FT	98	48.96939	29.06851	1	100
<i>Intlexperr~k</i>	FT	98	49.70408	27.97171	1	98
<i>Languages</i>	FT	98	.1734694	.431385	0	2

Notes: FT: *Financial Times*' MBA ranking, 2003; BW: *Business Week*'s MBA Profiles, 2002.

Table 2. Relation between behavioral assumptions used in the core courses of the top 100 MBA programs and their graduates' average salary

Variables	Single equation model (OLS)		Systems of simultaneous equations (3SLS)	
	Dependent variable:		Salary equations	
	(1)	(2)	(3)	(4)
<i>Economics</i> (% of courses based on self-interest in the MBA core)	104.27 (137.01)		62.54 (167.08)	
<i>Management</i> (% of courses based on “plural” human assumptions in MBA core)	1232.18*** (209.67)	1201.07*** (196.91)	1,246.47*** (200.87)	1,145.94*** (191.56)
<i>Ethics</i> (weight of a Business Ethics course in the MBA core, in %)	20541.52 (36316.2)		16,443.83 (34,325.32)	
<i>Core Weight</i> (% of compulsory courses in total number of courses required for the MBA)	230.93** (80.30)	234.63*** (76.506)	233.31*** (78.49)	200.44*** (74.03)
<i>GMAT</i> (average score of each school's students in the GMAT)	198.92*** (54.62)	203.96*** (53.40)	418.18* (216.52)	688.56*** (84.25)
<i>Experience</i> (average work experience of the school's students, in months)	341.48** (96.74)	331.45*** (96.41)	346.11*** (90.90)	305.38*** (85.35)
<i>Budget</i> (annual USD expenditure during the MBA, including tuition and living costs)	.47360*** (.1)	.48*** (.1)	0.49*** (0.10)	0.48*** (0.09)
<i>Duration</i> (normal time length of the MBA, in months)	58.98 (513.70)		-34.56 (508.04)	
<i>Enrollment</i> (total number of MBA full time students)	8.48* (4.95)	8.25* (4.81)	8.57* (4.90)	10.52** (5.07)
<i>Homogeneity</i> (index of students homogeneity in GMAT, age and work experience)	-3531.99*** (1308.26)	-3311.19** (1296.44)	-5,325.05** (2,223.57)	-6,956.60*** (2,040.27)
<i>Research</i> (performance index of the schools' research)	-2082.80 (1444.67)		-2,503.53 (1,438.67)	
<i>Rank</i> (MBA position in the <i>Financial Times</i> ranking)	-428.99*** (68.44)	-401.69*** (66.37)	-254.04 (169.68)	
<i>USA</i> (dummy variable = 1 for USA schools; 0 otherwise)	17594.35*** (4029.36)	15540.31*** (3764.08)	16,614.80*** (3,884.03)	9,644.50*** (3,737.01)
<i>Europe</i> (dummy variable = 1 for European schools; 0 otherwise)	7214.18* (4065.86)	8196.58** (3891.75)	8,908.67** (4,541.87)	10,523.03*** (3,655.05)
Constant	-96690.61** (40805.64)	-96181.51** (40753.28)	-293,776.09*** (85,420.24)	-422,047.56*** (57,184.34)
R-squared	0.8960	0.8921	0.8234	0.8229

Table continues in next page

Table 2. Relation between behavioral assumptions used in the core courses of the top 100 MBA programs and their graduates' average salary (continued)

	GMAT equations	
	(3)	(4)
<i>Salary</i> (average weighted salaries of each school, three years after graduation, in USD)	-0.00 (0.00)	
Rank (MBA position in <i>Financial Times</i> ranking)	-0.86 ^{***} (0.17)	-0.87 ^{***} (0.08)
<i>Placement</i> (performance index of the schools' placement services)	3.55 (2.96)	
<i>Homogeneity</i> (index of students homogeneity in GMAT, age and work experience)	7.56 ^{***} (2.24)	7.63 ^{***} (2.20)
<i>Research</i> (performance index of the schools' research)	2.09 (2.66)	
<i>Feminine</i> (index measuring feminine presence in the school)	-2.78 (2.02)	-3.16 ^{**} (1.39)
<i>International</i> (index measuring school's internationalization)	-5.53 ^{**} (2.34)	-7.02 ^{***} (1.73)
Constant	704.51 ^{***} (24.24)	691.26 ^{***} (4.20)
R-squared	0.6334	0.6327

Notes: Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

7. Annex

Table A.1. Principal components analysis used to build the Homogeneity index

<i>Component</i>	<i>Eigenvalue</i>	<i>Difference</i>	<i>Proportion</i>	<i>Cumulative</i>
1	1.76587	0.99975	0.5886	0.5886
2	0.76613	0.29813	0.2554	0.8440
3	0.46800	.	0.1560	1.0000
<i>Eigenvectors:</i>				
<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	
<i>Gmatdisp</i>	0.51138	0.80374	0.30411	
<i>studentage~p</i>	0.63774	-0.11775	-0.76120	
<i>Workexpdisp</i>	0.57600	-0.58321	0.57280	
<i>Scoring coefficients</i>				
<i>Variable</i>	<i>1</i>			
<i>Gmatdisp</i>	0.51138			
<i>studentage~p</i>	0.63774			
<i>Workexpdisp</i>	0.57600			

Table A2. Principal components analysis used to build the *Research* index

<i>Component</i>	<i>Eigenvalue</i>	<i>Difference</i>	<i>Proportion</i>	<i>Cumulative</i>
1	1.54898	0.68733	0.5163	0.5163
2	0.86165	0.27229	0.2872	0.8035
3	0.58936	.	0.1965	1.0000
<i>Eigenvectors:</i>				
<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	
<i>Faculdoct</i>	-0.58299	0.55703	0.59147	
<i>Doctorrang</i>	0.48575	0.82251	-0.29584	
<i>Researchrang</i>	0.65129	-0.11484	0.75009	
<i>Scoring coefficients</i>				
<i>Variable</i>	<i>1</i>			
<i>Faculdoct</i>	-0.58299			
<i>Doctorrang</i>	0.48575			
<i>researchrang</i>	0.65129			

Table A3. Principal components analysis used to build the Feminine index

<i>Component</i>	<i>Eigenvalue</i>	<i>Difference</i>	<i>Proportion</i>	<i>Cumulative</i>
1	1.43268	0.44317	0.4776	0.4776
2	0.98951	0.41170	0.3298	0.8074
3	0.57781	.	0.1926	1.0000
<i>Eigenvectors:</i>				
<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	
<i>Womenfacul</i>	0.66583	-0.32393	0.67211	
<i>Womenstud</i>	0.25157	0.94555	0.20651	
<i>Womenboard</i>	0.70241	-0.03158	-0.71107	
<i>Scoring coefficients</i>				
<i>Variable</i>	<i>1</i>			
<i>Womenfacul</i>	0.66583			
<i>Womenstud</i>	0.25157			
<i>Womenboard</i>	0.70241			

Table A4. Principal components analysis used to build the *Internationalization* index

<i>Component</i>	<i>Eigenvalue</i>	<i>Difference</i>	<i>Proportion</i>	<i>Cumulative</i>		
1	2.97799	2.05724	0.4963	0.4963		
2	0.92075	0.21422	0.1535	0.6498		
3	0.70652	0.07609	0.1178	0.7675		
4	0.63043	0.19332	0.1051	0.8726		
5	0.43711	0.10989	0.0729	0.9455		
6	0.32721	.	0.0545	1.0000		
<i>Eigenvectors:</i>						
<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
<i>Intlfaculty</i>	0.36063	0.48604	-0.59956	0.34175	-0.38227	0.10635
<i>intlstudent</i>	0.47198	0.22145	0.24096	-0.25833	0.31544	0.70986
<i>Intlboard</i>	0.45124	-0.06923	0.07919	0.54182	0.59431	-0.37222
<i>intlmobility</i>	-0.42727	-0.33467	-0.41510	0.38916	0.31777	0.52981
<i>Intlexperr~k</i>	-0.35413	0.45730	0.58073	0.53263	-0.14454	0.15373
<i>Languages</i>	0.36824	-0.62355	0.25813	0.29624	-0.52848	0.20471
<i>Scoring coefficients</i>						
<i>Variable</i>	<i>1</i>					
<i>Intlfaculty</i>	0.36063					
<i>intlstudent</i>	0.47198					
<i>Intlboard</i>	0.45124					
<i>intlmobility</i>	-0.42727					
<i>Intlexperr~k</i>	-0.35413					
<i>Languages</i>	0.36824					

Table A5. Correlations

	<i>Salary</i>	<i>Economics</i>	<i>Management</i>	<i>Ethics</i>	<i>Core Weight</i>	<i>GMAT</i>	<i>Experience</i>	<i>Budget</i>	<i>Duration</i>	<i>Research</i>	<i>Enrollment</i>	<i>Homogeneity</i>	<i>Rank</i>	<i>USA</i>	<i>Europe</i>	<i>Placement</i>	<i>Feminine</i>	<i>International</i>
<i>Salary</i>	1																	
<i>Economics</i>	.15	1																
<i>Management</i>	.28***	.06	1															
<i>Ethics</i>	-.01	-.15	-.35***	1														
<i>Core Weight</i>	-.05	-.11	-.03	.09	1													
<i>GMAT</i>	.70***	.21**	-.06	.05	-.14	1												
<i>Experience</i>	.01	.14	.21**	-.13	.07	-.17*	1											
<i>Budget</i>	.66***	-.03	.02	.14	-.10	.50***	-.08	1										
<i>Duration</i>	.13	-.22**	-.29***	.14	-.38***	.33***	-.56***	.58*	1									
<i>Research</i>	.42***	.09	-.13	.09	-.29***	.51***	-.20**	.44***	.37***	1								
<i>Enrollment</i>	.73***	.17*	.11	.04	-.08	.61***	-.15	.58***	.23***	.51***	1							
<i>Homogeneity</i>	.38***	.15	.01	.04	.07	.52***	.06	.31***	.14	.22**	.27***	1						
<i>Rank</i>	-.81***	-.05	-.05	-.04	.06	-.73***	.09	-.57***	-.18*	-.44***	-.69***	-.34***	1					
<i>USA</i>	.38***	-.09	-.22**	.15	-.39***	.43***	-.41***	.64***	.73***	.59***	.41***	.28***	-.31***	1				
<i>Europe</i>	-.12	-.01	.33***	-.05	.30***	-.37***	.48***	-.44*	-.72***	-.51***	-.33***	-.07	.16*	-.68	1			
<i>Placement</i>	.57***	-.05	-.04	.06	-.10	.64***	-.31***	.46***	.36***	.52***	.57***	.32***	-.67***	.51	-.39***	1		
<i>Feminine</i>	-.25***	.01	.08	-.15	.01	-.21**	.09	-.15	-.29***	-.01	-.15	-.21**	.18*	-.21**	.14	-.14	1	
<i>International</i>	-.10	.04	.20**	-.11	.30***	-.18*	.31***	-.12	-.62	-.38***	-.10	-.05	-.00	-.76***	.67***	-.26***	.06	1

* Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level

Table A6. Examples of course classification

<i>Content</i>	<i>Course</i>	<i>Description</i>
Economics (100%)	“Managerial Economics” (Wharton)	This course deals with applying microeconomic theory to the management of the firm in markets where the firm possesses market/monopoly power. Sophisticated pricing policies, transfer pricing, strategies in dealing with competitor firms, cooperation strategies, managing under uncertainty, asymmetric information, auctions and externalities will be covered. The course will concentrate on the way that microeconomics may be utilized to enhance decision making within the manager's organization. The student will develop an understanding of the economic environment in which the firm operates and how to think strategically within it. Students who have earned a B or better in an intermediate microeconomics and/or managerial economics course in the last seven years may request a waiver by credentials. Others who have taken a large number of economics courses are encouraged to take the waiver exam.
Management (100%)	“Leadership and Organizational Behavior” (Harvard)	This course focuses on how managers become effective leaders by addressing the human side of enterprise. The first modules examine teams, individuals, and networks in the context of: (1) The determinants of group culture. (2) Managing the performance of individual subordinates. (3) Establishing productive relationships with peers and seniors over whom the manager has no formal authority. The intermediate modules look at successful leaders "in action" to see how they: (1) Develop a vision of the future. (2) Align the organization behind that vision. (3) Motivate people to achieve the vision. (4) Design effective organizations and change them to achieve superior performance. (5) The final module introduces a model for strategic career management.
Ethics (100%)	“Ethics and Responsibility” (Wharton)	Ethics and Management considers the ethical responsibilities of managers and corporations. It examines difficult ethical conflicts and dilemmas. It does not attempt to convert sinners to saints, preach absolute truths, or deter the morally vulnerable. A successful module help students anticipate issues they will confront in their business career, and become clearer about how they think such issues should be resolved. Class sections consist of collaborative case discussions, exercises, and discussions of theoretical frameworks. By the time students have completed the module, they should have: (1) Improved their individual and group skills in identifying and analyzing ethical issues they will face as managers. (2) Become acquainted with common frameworks for exploring issues in business ethics, and learned to develop action plans that resolve ethical conflicts and dilemmas. (3) Discovered and learned to identify common patterns of success and failure in corporate ethics. (4) Become clearer about where they stand personally about critical ethical issues confronting managers.
Technical (100%)	“Technology and Operations Management” (Harvard)	This course enables students to develop the skills and concepts needed to ensure the ongoing contribution of a firm's operations to its competitive position. It helps them to understand the complex processes underlying the development and manufacture of products as well as the creation and delivery of services. Topics encompass: (1) Process analysis, (2) Cross-functional and cross-firm integration, (3) Product development, (4) Technology and operations strategy
Economics & management (50%/50%)	“Marketing Management (622): Strategy” (Wharton)	The primary objective of this course is to introduce you to the concepts and theories underlying marketing decision making. Marketing 622 builds upon Marketing 621 with a stronger emphasis on the strategic considerations that drive and integrate the decisions made for each element of the marketing mix. Principal topics include resource allocation, market entry/exit decisions, and competitive analysis. In addition to a mix of cases and lectures, the course relies on a comprehensive computer simulation game that helps highlight these issues and provides the class with a rich set of realistic examples for discussion and analysis. This game allows students to appreciate the real power and value of marketing concepts, develop a disciplined approach to the analysis of marketing situations, and further enhance their abilities to communicate and interact with peers in solving problems.
Economics & Technical (50%/50%)	“Finance I” (Harvard)	This course examines the role of finance in supporting the functional areas of a firm, and fosters an understanding of how financial decisions themselves can create value. Topics covered include: (1) Basic analytical skills and principles of corporate finance. (2) Functions of modern capital markets and financial institutions. (3) Standard techniques of analysis, including capital budgeting, discounted cash flow valuation, and risk analysis.