Introducing gender in finance education
in a European Business School:
lessons, recommendations and challenges

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Abstract

Gender disparities in the financial industry may be molded during the educational years. In this paper, we study students' school performance and behavior at a leading European Business School as a function of gender. We analyze students' performance in the first-year finance mandatory course, as well as their finance specialization choices during their studies. Further, using an innovative simulation platform called SimTrade, we develop an experiment to study how students react to gender-related news in financial markets. Throughout, we follow an "action research" to co-create the gender-related content of the experiment with students.

This allows us to better grasp students perceptions related to gender. We present the methodology and the lessons learned and conclude by proposing some recommendations to decrease the gender blindness of finance education in business schools.

1 Introduction

One of the prominent explanations regarding the relatively low female participation in the financial industry has been that women shy away from competition (Niederle and Vesterlund, 2007) and, therefore, self-select into other industries. Interestingly, while career choices and self-selection into different industries may be shaped during the educational years, business schools fail to take into account students "perceptions and experiences" related to gender, as pointed out by Marvin, Bryans and Waring (2004). In addition, studies have documented that differences in financial behavior across genders may also be molded during the educational period (Barber and Odean, 2001).

In this paper, we shed light on whether gender disparities in the financial industry are rooted in the educational years. To do so, we study students at ESSEC Business School. In particular, we focus on the school performance and behavior of first-year students as a function of their gender. In particular, we examine whether female and male students perform differently in the mandatory finance course, and whether female students select away from finance specialization in subsequent years. Also, we use a novel online simulation platform called SimTrade, to build a financial experiment where we test students' reaction to gender-related news in financial markets. The advantage of SimTrade over classical experiments is that its design allows us to contextualize the social environment, in which the experiment takes place.

In terms of methodology, we collected data regarding female and male students performance in the first-year mandatory finance course, and data about students specialization and career choices in finance. Our sample is composed of 403 students for the year 2016. Also, we designed a laboratory experiment using the online simulation trading platform, SimTrade, to test participants reaction to gender-related news. Compared to traditional lab experiments, SimTrade offers the advantage to contextualize the trading experience. This is important because market trading does not occur in a vacuum but is situated in a social reality of which gender may be a relevant dimension. In particular, in the simulation we build, we observe whether participants bought or sold after the announcement of the nomination of the company CEO, which can be either a woman or a men.

Finally, as an overarching methodology, we have used an "action research" approach for the research design and implementation (Kurt, 1946). We follow McNiff and Whitehead (2009) definition of action research, as a "systematic enquiry made public with educational intent".

Within this approach, we have aimed to follow a "participant action research" by involving students in the research design and an "experimental action research" by co-creating the experiment together with our students, using the terms defined by Chein, Cook and Harding (1948) as discussed in Susman and Evered (1978).

In short, we find that while female and male performance in the first-year mandatory finance course is not statistically different in terms of success rate, female students are significantly overrepresented at the top of the grade distribution. Yet, our data also shows that female students are less likely to select the finance specialization track and also to choose a career in finance upon graduation. Regarding the lab experiments, we find that when a female CEO is nominated, female traders react more positively to this news announcement, while male SimTraders react more negatively to it. When a male CEO is nominated, female traders react more negatively to this news announcement. On the opposite, male traders react more positively to it. We discuss these results in relation to the existing literature. Finally, regarding our interaction with students which was fostered through the "action research" approach, we find that students hold strong gender stereotypes regarding the corporate functions men and women are supposed to fill.[4] Also, interacting with students made us aware of our own gender biases, since in the simulation, despite the fact that either a man or a women will replace the CEO, the exiting CEO is a man. Finally, while our students seem to easily appropriate the financial content of this research and the implementation of lab experiments, they found it harder to apprehend and integrate the gender dimension in their reasoning and overall analysis.

Our research contributes to the literature that seeks to explain the rarity of female in the financial industry (Bertrand, Goldin and Katz, 2010), and especially in Wall Street (Roth, 2006). Both Bertrand, Goldin and Katz (2010) and Roth (2006) study the careers of MBA from top business schools after graduation as function of gender. More generally we study the determinants of the gender gap in labor force participation across sectors (Goldin, 2014) by focusing our analysis on the experience *during* the educational experience.

Our experimental design is close to Niessen-Ruenzi and Ruenzi (2015) who study investment decisions in index funds as a function of the gender of the index fund manager. In our

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[4] In particular, students associated HR and Marketing directorship positions with the female gender, while CEO, CFO, COO positions are associated with the male gender. Yet, students made no distinction in terms of educational background for female and male, which were similar.

experiment, we study participants decision to buy or sell stocks of a company as function of the gender of the newly appointed CEO. Lee and James (2003) and Ola and Proffitt (2015) study stock market fluctuations as response to CEO nomination announcements. Ola and Proffitt (2015) results suggest that investors reaction is independent of the gender of the CEO, contradicting Lee and James (2003) which found a negative reaction to female appointments. We contribute to the study of the consequences of the gender of appointed CEOs appointments, but from an experimental perspective. Experimental economics has extensively studied gender differences in behavior and implications for understanding , as summarized by Azmat and Petrongolo (2014). In particular, they discuss differences in preferences across gender in terms of bargaining, taste for competition, and risk-aversion.

Within economics, gender differences expressed in the educational sphere has also been investigated. For instance, Örs, Palomino, and Peyrache (2008) study students' performance in entry exams to HEC, also a leading European Business School. They find that female students selected into HEC perform better in non-competitive exams, while they perform worse in the school's admission exam for the *Grande École* program. In line with their analysis, we find that ESSEC female students outperform male students during their years at the school. While Örs, Palomino, and Peyrache (2008) focus on gender differences in performance to entry exams to explain gender differences under different competitive environments, we focus on the career choices realized during their studies in the school and post-graduation.

Finally, the management literature has analyzed the role of management education in perpetuating gender inequality and its potential for fostering change in a variety of settings (Flynn, Haynes and Kilgour, 2015). In particular, Finstad-Milion and Morin-Esteves (2015) study management education in the French context and trace labor market inequality in France to the career decisions of female and male management students. They discuss the role of the association *Conférence des Grandes Écoles* in fostering awareness and making gender issues more salient. They document that even in their first job, female graduates earn less than their male classmates, which they attribute partly to the fact that management education is gender blind: "The majority of the schools do not have a strategic approach to gender equality". Our research complements their study by focusing on student's experience and in our bottom-up approach. Finally, within management schools we focus on finance since as Flynn, Cavanagh and Bilimoria (2015) point out, it is the field where the gender gap is highest, both in terms of faculty, doctorate students and master and bachelor students specialization.

The ambition of this paper is also to contribute to the spreading of "action research"; we do hope that by co-creating content and using the reflexive approach within the context of this approach contributes to presenting a setting where we have managed to take action to learn and shape our environment. Therefore, we conclude the paper discussing the lessons learned during the realization of our research. For instance, we discuss a series of recommendations and challenges for Business Schools wishing to introduce gender in finance education.

The paper is organized as follows. Section 2 describes the methodology. Section 3 presents the main findings. Section 4 concludes and presents future work and challenges faced to decrease the gender blindness of finance education within business schools.

2 Methodology

In this part, we present our research methodology. In particular, the data collection regarding students' performance and career choices in finance, the design of the laboratory experiments using the online simulation platform, SimTrade, and the "action research" approach which we have followed throughout the project.

2.1 Data collection

While admissions to ESSEC Business School are gender-balanced, the ex-post career choices, as well as specialization choices within the studies are not so. To quantify this phenomenon, we have collected information on field specialization after the first year, as well as career choices after graduation.

Also, to assess whether such choices may be driven by performance differences we complement this data collection by collecting and analyzing information regarding students performance in the first-year mandatory finance course.

2.2 Lab experiments

To analyze the behavior of students as a function of their own gender, but also of gender-related financial information, we use an online simulations trading tool, SimTrade. Compared to traditional lab experiments, SimTrade offers the advantage to contextualize the trading experience. This is important because market trading does not occur in a vacuum but is situated in a social reality of which gender may be a relevant dimension. We next describe in detail SimTrade, the SunCar Simulation, and our experimental design.

2.2.1 SimTrade

To carry out our research, we use the SimTrade simulation platform freely available on www.simtrade.fr. SimTrade is a tool used to teach and learn finance (both market finance and corporate finance). SimTrade is also a tool used for research to conduct experiments to better understand the behavior of individuals in terms of financial decisions.

The originality of SimTrade is to propose simulations with a trading platform to buy and sell stocks, a mathematical model based on Monte Carlo simulation techniques to simulate realistic strategies of other traders, and also firms whose stocks are traded on the SimTrade platform. By simulating both markets and firms, SimTraders can have an *impact* on the market in terms of market prices and transaction volumes. Compared to other designs in experimental economics, SimTrade added value is contextualization: like a trader in a trading room of an investment bank, SimTraders live a full trading day (10 minutes at your watch) with exciting trading opportunities, stock market prices going up and down, positive and negative news announcements about the firm, its sector and in the economy as general that has to be interpreted.

2.2.2 SunCar simulation

To study the gender issue in finance, we build the SunCar simulation. A few words about the SunCar company: SunCar designs, produces and sells low-speed electric vehicles for city use. The batteries of these solar powered cars (roof equipped with photovoltaic panels) can, if need be, be refilled at public charging points. The company was founded by Jacques Dallara in 2001. Its team of designers, engineers and specialists in renewable energy create innovative vehicles that meet the regulatory requirements of the European market. Due to a severe illness, Jacques Dallara, the CEO, will be relinquishing his operational duties in the near future. At midday, SunCar is expected to announce the name of Jacques Dallara's successor as head of the group. The two candidates for his replacement are: Anna Farrell and Henri Villa. For our experiments based on simulations, we have randomized the simulations: when the SimTrader launches the simulation, he or she will play sometimes the simulation where Anna Farrell is nominated to be the next CEO, and sometimes the simulation where Henri Villa is nominated to be the next CEO (the probability of each variant being equal to 50%). During the simulations obtained from the experiments, students launched 299 simulations, 130 with Anna Farrell being nominated to be the next CEO (43% of simulations) and 169 with Henri Villa being nominated to be the next CEO (57% of simulations).

2.2.3 Experimental design

The experiments were carried out with first-year students of the *Grande Ecole* program at ESSEC Business School in Spring 2016. An interesting fact about the classes of this program is the proportion of women and men: about 50% over the last few years. This is in line with most of French Business Schools where female and male students are equally represented (Finstad-Milion and Morin-Esteves, 2015).

The experiment was proposed during the first-year mandatory finance course, which in 2016 counted 403 students registered including 214 female students (53%) and 189 male students (47%).

The grading system for this course is composed of two individual mid-term and final exams; students may also increase their grade with bonuses based on a series of exercises done in groups of 3 students every week, two mini exams and the participation to the SimTrade experiment. For the SimTrade experiment, we announced to the students that they would get bonus points for their grade (under the condition that they will pass the course):[5] 1 point of participation to the experiment and then 0.5 point or 1 point according to their financial performance in the simulation (the bottom 50% SimTraders would get 0.5 point and the top 50% SimTraders would get 1 point). The bonus would be 1.5 point or 2 points, added to their grade (originally computed from their grades at mid-term and final exams).

The participation to the experiment was voluntary, and attracted 157 students including 89 female students (57%) and 68 male students (43%). The experiment was presented as an opportunity to learn about financial markets and to be involved into a research project to better understand how people react to news in financial markets: buy, sell or do nothing. The gender aspect of the research project was not displayed to the students as it is usually the case in such experiments.

We performed the experiments in the ESSEC experimental lab, called the Knowledge Laboratory (K Lab), which is equipped with a data lab to conduct experiments in a rigorous way in a controlled environment.[6]

2.3 Action research

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[5] The minimal grade to pass the course is 8/20 and the maximal grade is 20/20.

[6] At the beginning of the experiment, we asked students to read and sign a form, which explained the context of the experiment and the use of personal data as required by the French authority (Cnil) in charge of numeric issues.

We next describe the "action research" approach that we have followed throughout the project, which was developed thanks to the support of the Centre d'Innovation et de Recherche en Pédagogie de Paris (CIRPP), which is part of the Chamber of Commerce and Industry of Paris Ile-de-France. In particular, from September 2014 to June 2016, we have benefited from collaboration with Virginie Descoutures (sociologist and professor at Université Picardie-Jules Verne). That is, to introduce gender in finance education we have aimed to follow a reflexive approach questioning our research design thanks to our interactions with colleagues and, most critically, with students themselves. We discuss our action research approach in detail in this section and in the findings section.

2.3.1 Creating the characters for the simulation

First, we asked a group of students to create the characters for our simulation. Students (2 women and 1 men) were asked to work independently, and to provide us with a description of characters including their names, and educational backgrounds, for several job functions within the company, including the CEO, the CFO and the COO, as well as the HR director, Marketing director.

2.3.2 The sociological dimension of the characters gender

Second, we collaborated with Professor Descoutures to reflect on the gender dimension of the characters for the simulation using a sociological perspective. In particular, while in our baseline simulation we follow a "gender as a variable" approach we worked out a "gender as a social construct" approach where we enrich the description of the characters for the simulation. From an experimental setting this would allow us to tease out whether gender matters per se or due to the "social meaning of gender".

2.3.3 Students feedback on alternative scenarios of the simulation

Following the elaboration of these alternative scenarios of the simulation, we decided to seek the feedback from students with which we interacted regularly and organized a meeting. Before the meeting we had sent them the simulations and asked them to play the simulation and to provide feedback during the meeting.

2.3.4 Deepening our interaction with students

Given the students valuable feedback, we decided to deepen our involvement and cooperation with students by proposing the topic "gender and finance" to first year students who

were proposed to follow a research first year project. Two students, female and male, worked together with us during the year. In cooperation with the students we decided to improve our analysis of gender by increasing its salience.

3 Findings

3.1 Students performance and career choices in Finance

The study of students' performance in the first-year mandatory finance course shows that both female and male students have similar success rates: 92.99% for female students and 90.48% for male students. However, female students perform better than male students on average: the average grade is 14.37/20 for female students and 13.28/20 for male student. Female students perform also noticeably better than male students at the top (students with the maximal grade of 20/20): there are 32 female students and 14 male students.

Although female students perform better male students in the classroom, there are less female students deciding to pursue their studies at ESSEC in finance. At ESSEC, courses for second and third year students are organized through tracks to propose a relevant cursus for students. Among the students of class 2015 who had already decided to do the Finance track, 21 were female students and 43 were male students.

Looking a few years ahead, the same difference is observed for the choice of career as 41 female students and 76 male students work in the financial sector after graduation (graduated classes 2013-2016). [7]

To summarize, female students perform better than male students in the classroom but are less numerous to decide to continue to study finance and to embrace a career in finance.

3.2 Lab experiments

Simulation results are reported in Table 1. This table gives the statistics of trading activity by SimTraders according their gender (female or male) following the nomination of the new CEO of SunCar (a female/male CEO) during the simulation SunCar. In this simulation, information about the candidates are their names, Anna Farrell or Henri Villa, from which SimTraders can deduce the gender of candidates according to their first name. In each cell, we

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[7] Except for the success rate in the finance course, for all other characteristics (average grade, top students, choice of the Finance track, and choice of career in the financial sector), the differences between female and male students were statistically significant (for a threshold value of 5%).

indicate the percentage of SimTraders who bought or sold after the announcement of the nomination, the mean of the duration between the time of the order sent to the market and the time of the nomination announcement, the mean of the quantity of assets bought or sold and the percentage of market order, which represents the aggressiveness to trade.[8]

We consider the first simulation launched by each SimTrader and the first order sent to the market during this simulation within one hour after the nomination announcement of the next CEO at 10:40 am in the simulation (time-period window: 10:40-11:40).

What do we observe? When a female CEO - Anna Farrell - is nominated, female SimTraders react more positively to this news announcement as there are 55% of buyers and 45% of sellers among them.[9] On the opposite, male SimTraders react more negatively to this news announcement as there are 27% of buyers and 73% of sellers among them. The mean of the duration between the time of the order sent to the market and the time of the nomination announcement is very similar for buyers and sellers irrespective of the gender of SimTraders: around 25/30 minutes. The mean of the quantity of assets bought or sold presents more diversity: female SimTraders tend to sell more (53 assets on average) than to buy (50 assets) just as male SimTraders (71 assets sold and 40 assets bought). Looking at the type of order (market orders *vs* limit orders), female SimTraders who buy are more aggressive (91% of market orders) than those who sell (56% of market orders); male SimTraders presents the same aggressiveness when they buy or sell (100% of market orders).

When a male CEO - Henri Villa - is nominated, results are the opposite: female traders react more negatively to this news announcement as there are 33% of buyers and 67% of sellers among them. On the opposite, male traders react more positively to this news announcement as there are 63% of buyers and 37% of sellers among them. The mean of the duration between the time of the order sent to the market and the time of the nomination announcement is very similar

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[8] The market environment proposed by SimTrade is based on the limit order book (this type of market microstructure is nowadays mostly used by exchanges around the world as electronic markets are progressively taking over physical markets). In such markets, investors can send orders to the market of different types; the two main types of order are market orders and limit orders. With market orders, investors want to buy/sell as soon as possible at the market price. With limit orders, investors want to buy at a maximum price and to sell at a minimum price; the price limit is a characteristic of the order set by investors. With markets orders, investors favor quantity over price as they controlled the quantity executed; inversely, with limit orders, investors favor price over quantity as they controlled the execution price. The use of market orders reflect the aggressiveness of investors to trade.

[9] Note that we consider the first simulation launched by each SimTrader and the first order sent to the market during the time-period 10:40-11:40.

for buyers and sellers irrespective of the gender of SimTraders: around 26 minutes for female and 30 min for males. The mean of the quantity of assets bought or sold presents more diversity: female SimTraders tend to sell more (42 assets on average) than to buy (30 assets) just as male SimTraders (73 assets sold and 40 assets bought). Looking at the type of order (market orders *vs* limit orders), female SimTraders presents the same aggressiveness when they buy or sell (100% of market orders); male SimTraders who buy are more aggressive (92% of market orders) than those who sell (86% of market orders).[10]

3.3 Action research

3.3.1 *Creating the characters for the simulation*

Our interaction with a first group of students that were asked to create the characters for our simulation confirmed strong gender stereotypes. Regardless of their own gender, all students chose men as characters for the CEO, CFO, COO, while HR and Marketing directors were women. All other characteristics, in terms of educational background were similar. This meant, from a research point of view, that the design of a simulation where the CEO of the company is replaced by a female candidate would be disruptive, given the stereotypes prevalent among our population of students. We therefore designed the simulation to include two variants, one where a female candidate wins the nomination, one where the male candidate does so.

3.3.2 *The sociological dimension of the characters gender*

Thanks to our collaboration with Professor Descoutures sociological background we decided to build two types of simulations. In the first one, we follow a "gender as a variable" approach. Two candidates can win the nomination: Henri Villa and Anna Farrell. They replace the former CEO, Jacques Dallara. In the second approach, we follow a "gender as a social construct" approach where we provide more information regarding each of the candidates in terms of their educational and family background. In particular, we built 6 variants where the two candidates vary in terms of two dimensions: gender (female/male) and availability (strong

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[10] From a statistical point of view, the difference between female and male SimTraders is the most significant when a male CEO is nominated as the equality of the percentages of buyers and sellers is rejected at the 5% level (comparison of column in Table 1). The difference between the nomination of a female or male CEO is the most significant for female SimTraders as the equality of the percentages of buyers and sellers is rejected at the 5% level (comparison of lines in Table 1). There was little statistical difference in trading aggressiveness between buyers and sellers by comparing the mean of the duration between the time of the order sent to the market and the time of the nomination announcement, the mean of the quantity of assets bought or sold and the percentage of market orders.

versus weak family constraints). This would allow us to tease out whether gender matters per se or due to the "social meaning of gender".

3.3.3 Seeking feedback on alternative scenarios of the simulation

The first interesting comment regarding the alternative scenarios of the simulation provided by the students was that the status quo was that a man (Jacques Dallara) former CEO that was to be replaced. In that sense, by not randomizing the gender of the former CEO we transmit some gender stereotypes, probably reinforcing them. This may influence trading after the nomination.

A second comment was related to the fact that the "gender" dimension was not very salient, given the amount of information available in the simulation which includes other news related to the economic activity of the firm. This also indicated to us that it was not "enough" to include gender to make students aware of this dimension or to make them self-reflect on their own reaction to it. This confirms that students had not been exposed to think of gender as a relevant managerial dimension within the context of finance. We also discussed how students perceived the issue of gender in the financial sector where some of them were making their internships.

3.3.4 Deepening our interaction with students

Thanks to our cooperation with the two students in the framework of the first year research project, we decided to improve our analysis of gender by increasing its salience. In particular, we worked with students to create videos where the announcement of the replacement of the CEO, and the two candidates was presented. By using a video, we increase the salience of the gender dimension which may otherwise stay blurred specially within a context of financial trading where students have not been trained to think about the social context.

Together with the students, the simulations were played by about 39% of the students attending the first-year mandatory finance course (402 students). In the spirit of "action research" we also provided questionnaires to get direct feedback on students experience. They overall found the experiment interesting and a good supplement to the course.

Finally, our two students who worked on the project presented their work. They explained how the rest of the first year students had been following their research project with interest. While most of their emphasis was on the experimental setting and the realization of the

video material, there was little discussion on the meaning of gender. Furthermore, it was easier to appropriate the simulation and finance aspect of their research than the gender aspect, which they had a harder time coping with.

3.3.5 *Reflecting on the benefits of the Action Research Approach*

Thanks to the exchange with the students and collaborators such as Professor Descoutures, our project evolved in directions that we did not anticipate, highlighting both our own biases and also student's biases that we could not fully foresee ex-ante. Indeed, the action research approach provided a novel framework to investigate how to "gender unblind" management education in our business school. It turns out that implicit avenues (including gender as a variable in trading related exercises) is not sufficient. Explicit discussions and exchanges are needed, at least in a first step.

4 Conclusion

This paper addresses the gender issue in the financial industry by analyzing whether differences in female and male presence in the industry may be molded during the educational years. Using a leading European Business School such as ESSEC, where admission to the school is gender balanced, we document that fewer females choose to specialize in finance during their studies. This is the case despite the fact that female students outperform male students in the first-year mandatory finance course especially at the top of the grade distribution. To better understand whether educational years may perpetuate or ignite gender differences that have career consequences, we have followed an "action research" approach to co-create our research design with the students. This has allowed us to pay attention to their potential biases and to our own biases.

Together with students, we have created a trading simulation experiment where participants trade in response to news, including the nomination of the new CEO, a man or a women. We do so thanks to the novel simulation trading platform, SimTrade, which allows to contextualize the trading environment to include socially relevant information. We find that when a female CEO is nominated, female participants are more likely to buy stocks while male participants are less likely to do so, a situation which we interpret as evidence of gender homophily (Edo, Jacquemet and Yannelis, 2013), which is the idea that individuals express a preference for interacting with individuals of their own type (in our case of their own gender).

To better understand our results, in future work we plan to use Implicit Association Test

(IAT) following Niessen-Ruenzi and Ruenzi (2015) who are the first to use this type of test in a finance experiment, to better understand the stereotypes and biases of participants.

We also plan to enrich our experiments to reflect that fact that gender stereotypes may not be due to the sex *per se* (to be a woman or a man) but to the context surrounding the person (a man or a woman aged 30 with 2 children and a busy partner may be less appreciated than a man or a woman aged 50 with grown-ups).

Attention is also an important dimension in financial markets and also in our experiment setting that we plan to explore in continuing research. In financial markets investors are submerged by information (news flow) and may not pay attention to key pieces of information for their investments (see Lim and Teoh (2010) for interesting examples and economic models of limited information). In SimTrade simulations participants to our experiments may not have paid attention to all information made available to them. In the second level of SimTrade simulations, we plan to present information in such a way that the attention of SimTraders may be improved using pictures and videos to present the news.

We next discuss the lessons we identify to decrease the gender blindness of finance within business schools. First, while most of the efforts to decrease the gender blindness of management education is done through the *Conférence des Grandes Écoles (CGE),* which follows a top-down approach we believe that co-creating with the students, following an "action research" approach, would allow students to appropriate the content developed to increase awareness of gender disparities within business school.

Second, including gender in finance within management schools education is challenging and our findings suggest that it cannot be done overnight. This is the case because it requires involvement from both the staff and academics to question their own biases and to discuss gender not only as a variable but as a social construct, among themselves and with the students. This is specially challenging for finance since gender disparities are also present among the finance faculty, which according to the AACSB International, Business School Questionnaire 2013, as discussed by Flynn, Cavanagh and Bilimoria (2015) is male-dominated.

Third, efforts should also be made in the systematic collection of data regarding career choices by gender, which were difficult to access, and in presenting gender issues to students during the presentation of specialization tracks, specially in finance which tend to attract mostly male students.

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5.2 Webography

www.simtrade.fr: simulation platform used for the experiments.

www.cnil.fr: official website of the *Commission Nationale de l'Informatique et des Libertés*, the French Authority, which regulates the use of personal data in France.

Table 1. Statistics of trading activity

	Female CEO (130 simulations)	Male CEO (169 simulations)
Female SimTraders (89/157)	**Buy: 55%** Duration: 25 mn Quantity: 50 assets Market orders: 91% **Sell: 45%** Duration: 23 mn Quantity: 53 assets Market orders: 56%	**Buy: 33%** Duration: 27 mn Quantity: 30 assets Market orders: 100% **Sell: 67%** Duration: 26 mn Quantity: 42 assets Market orders: 100%
Male SimTraders (68/157)	**Buy: 27%** Duration: 30 mn Quantity: 40 assets Market orders: 100% **Sell: 73%** Duration: 31 mn Quantity: 71 assets Market orders: 100%	**Buy: 63%** Duration: 23 mn Quantity: 40 assets Market orders: 92% **Sell: 37%** Duration: 37 mn Quantity: 73 assets Market orders: 86%

Note: this table gives the statistics of trading activity by SimTraders (female/male SimTrader) following the nomination of the new CEO of SunCar (female/male CEO) in the SunCar simulation. In this simulation, information about the candidates are their names, Anna Farrell or Henri Villa, from which SimTraders can deduce their gender according to their first name. In each cell, we indicate the percentage of SimTraders who bought and sold after the announcement of the nomination, and the mean of the duration between the time of the order sent to the market and the time of the nomination announcement, the mean of the quantity of assets bought or sold and the percentage of market orders. We consider the first simulation launched by SimTraders and the first order sent to the market by SimTraders within one hour after the nomination announcement (time-period window: 10:40-11:40). Experiments were done in a controlled environment in ESSEC Data Lab. Participants were first-year ESSEC *Grande Ecole* students (class 2016).

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