Is Gender in the Pocket of Stock Market Investors? Identifying Gender Homophily Towards CEOs in a Lab Experiment

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Job market for CEOs: Few female CEOs

- Fact #1: Women are persistently underrepresented in CEO positions.
    - US / Europe / Asia
- Broad research question in management: WHY do we observe so few female CEOs over time?
- Answers based on the supply-side (CEOs) and demand-side (firms) of the CEO job market
- On the demand-side: **glass ceiling** related to invisible barriers for women to advance in the corporate hierarchy, and *in fine* to become CEO
    - Internal barrier *inside* the firm related to the decision-making process (boards / hiring commitees) not to appoint many female CEOs
    - NEW IDEA DEVELOPED IN OUR PAPER: External barrier *outside* the firm related to the reaction of investors who can trade (buy/sell) stocks following the appointment of a new CEO (because of the impact of the CEO on the market value of the firm).

Stock market: Negative reaction to female CEOs appointment

- Fact #2: Negative stock market reaction following the appointment of a female CEO as found in Lee and James (2007) and Zhang and Qu (2013)
- Our research question: WHY do we observe such a negative stock market reaction?
- This question is *important* because:
  - OUR VIEW: Firms may anticipate a negative stock market reaction from investors and then may be "discouraged" to appoint female CEOs (feedback effect from the stock market to the job market for CEOs).
  - Indeed, there may be a link between internal barrier (firm decision-making process) and external barrier (stock market reaction). Endogeneity issue.
- Existing answers based on the determinants of market behavior:
  - Preferences: beliefs, stereotypes and prejudice (taste-based discrimination by Becker, 1957, "think manager, think male" by Schein, 1973)
  - Information: role of media (Lee and James, 2007 and Dixon-Fowler et al., 2013)
  - Endowment

Focus of our paper: The role of preferences

- Study of the *primitives* of the aggregate stock market reaction
  - If preferences matter, we have to look at *individuals* because preferences are at the individual level.
  - For our research design, we choose a lab experiment to study the preferences at the *individual* level. In practice, we use a trading simulation to study the *trading reaction* of participants.
- Recent idea in the management literature: in-group preferences
  - Homophily: “tendency for people to be attracted to those who are similar to themselves.” Within the context of gender: “gender homophily”
  - Board gender composition and CEO gender (Matsa and Miller, 2011) / Start-up investors in the primary market (Snellman and Solal, 2019) / Financial analysts’ recommendation (Jannati et al., 2019)
- Focus of our research: gender homophily among investors (in the secondary stock market) related to the CEO
  - We study the trading reaction of male/female market participants following the appointment of a male/female CEO

Previous literature and our hypothesis

- Previous literature : negative stereotypes against female CEOs or "Think CEO, think male" idea
  - When a *male* CEO is appointed, stock market participants *buy* stocks.
  - When a *female* CEO is appointed, stock market participants *sell* stocks.
- Our hypothesis: gender homophily among stock market participants
  - Market participants *buy* stocks when a CEO of their *own* gender is appointed.
  - Market participants *sell* stocks when a CEO of the *opposite* gender is appointed.
  - When a *male* CEO is appointed, male participants *buy* stocks and female participants *sell* stocks.
  - When a *female* CEO is appointed, female participants *buy* stocks and male participants *sell* stocks.

Our method: simulation-based lab experiment

- Use of a realistic simulation tool SimTrade
  - Simulation of the stock market for a firm (SunCar)
  - Series of events that unfold during the day. One of the events is the appointment of the new CEO for SunCar.
- Operationalization of our theoretical construct (preference towards the appointed CEO): **revealed** preferences through the trading activity of market participants.
  - You buy if you like the CEO. You sell if you don’t like the CEO.
- Randomized simulations with either a male CEO (50%) and a female CEO (50%)
  - Experiments provide better statistical results than empirical studies with always very few observations of firms led by a female CEO
- Participants
  - Students from a French business school witch a balanced population of female and male students
- Consequential experiment for participants
  - Incentive: bonus for the Finance course based on their performance in the simulation (the GPA is very important to go abroad for an exchange)

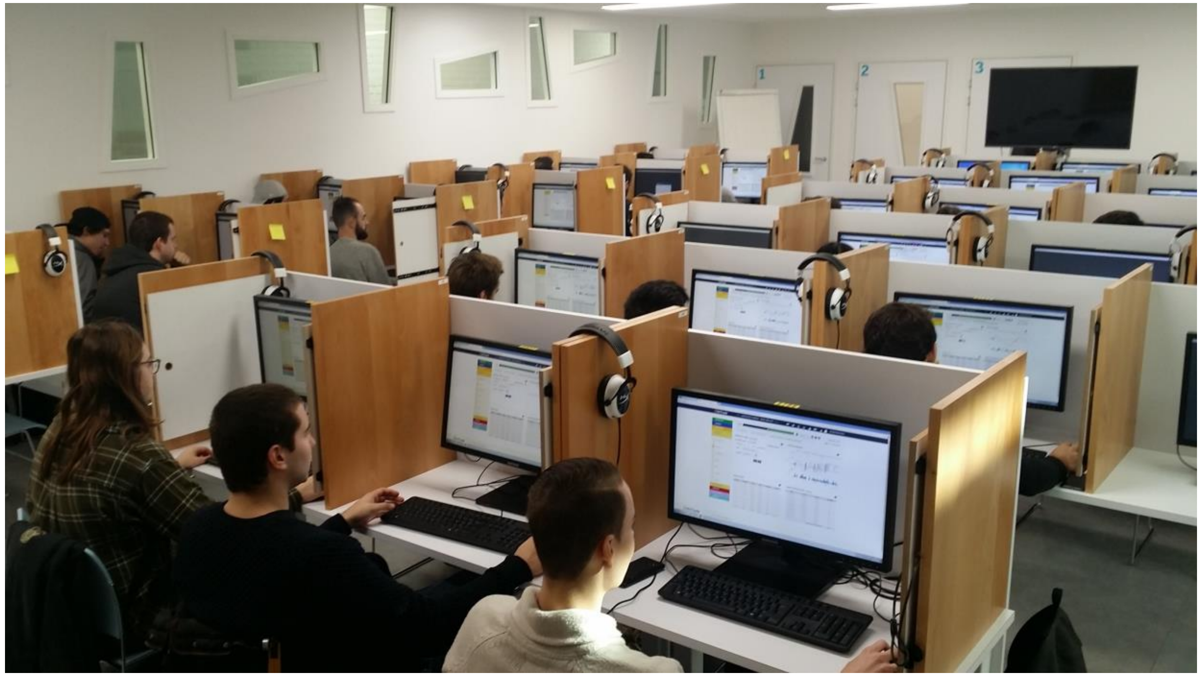
Advantages of simulation-based lab experiments

- Factors influencing the stock market reaction to CEO appointments:
  - The relative past performance of the firm (overperformance/underperformance)
  - The departure type (forced /voluntary)
  - The succession type (outsider/insider)
  - The firm characteristics relevant for the appointment (composition of the board, existence of nomination committee, involvement of the departing CEO, and gender diversity with the firm).
- Neutralization of these factors in our simulation
  - Same firm in the simulations except for the gender of the CEO
  - We study **a pure gender effect** about the CEO.
  - Similar to the experiment by Adams, Kräussl, Navone and Verwijmeren (2017) to study the impact of the gender bias on pricing of art

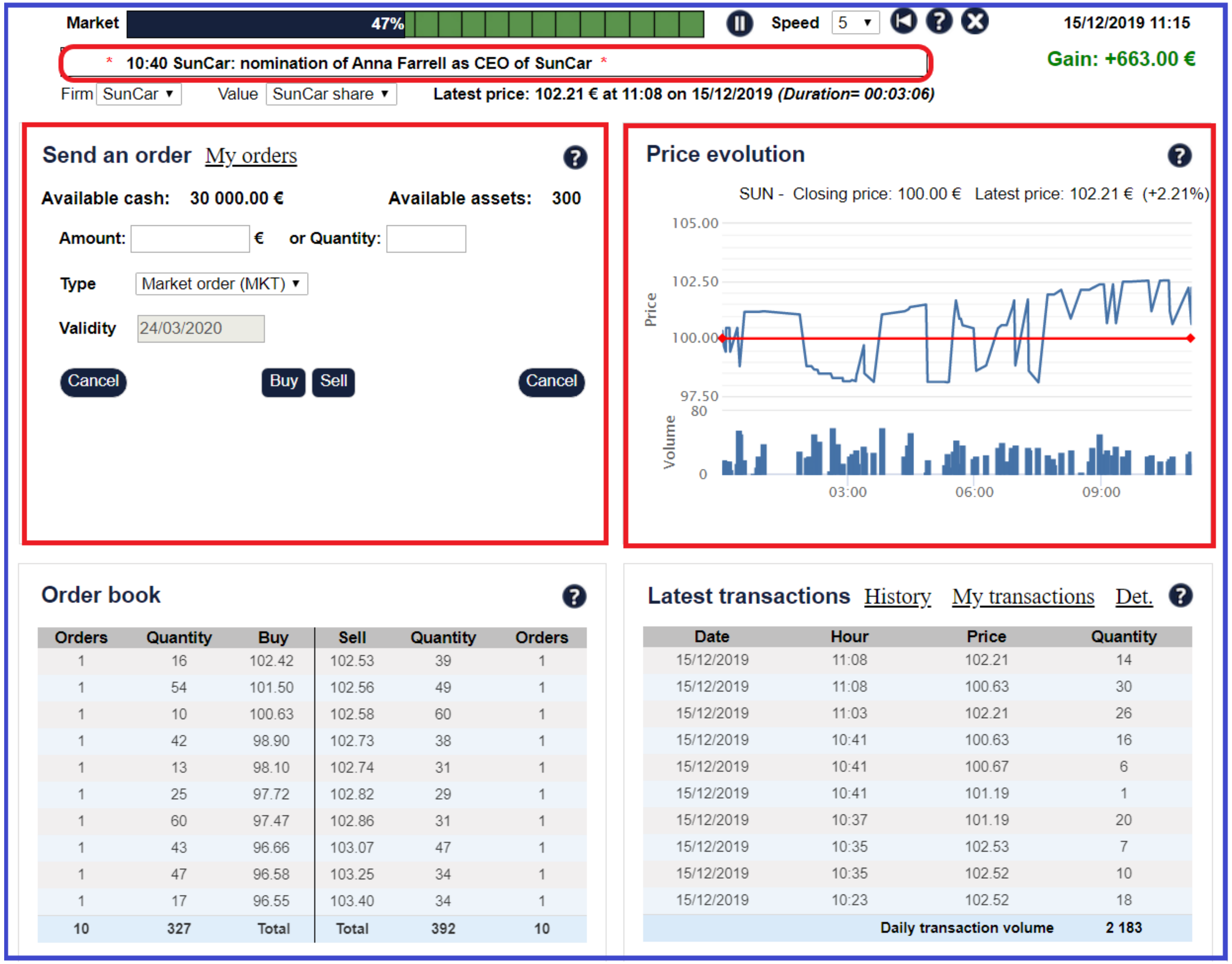
Advantages of simulation-based lab experiments

- Informational issues:
  - The exact date of the public announcement of the CEO appointment
  - The release of other news at the time of the CEO appointment
  - The strategic communication of the firm
  - The presentation of the event by the media
  - The limited attention from investors.
- Internal validity

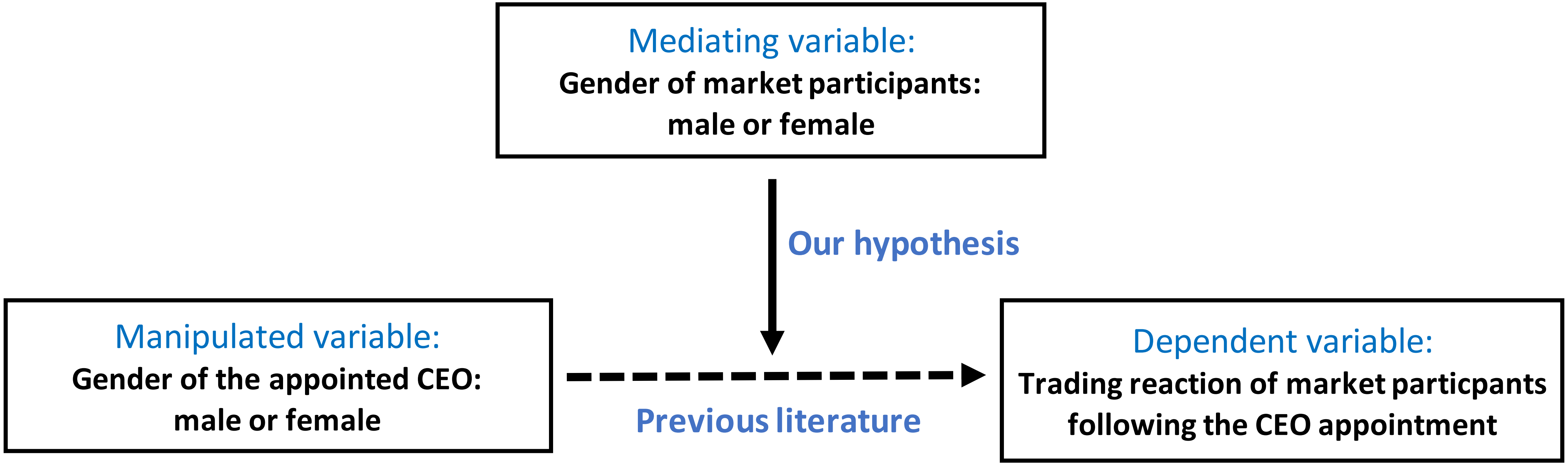
ESSEC lab experiment



SimTrade trading simulation platform



Relation between variables and our hypothesis



Data from our experiment

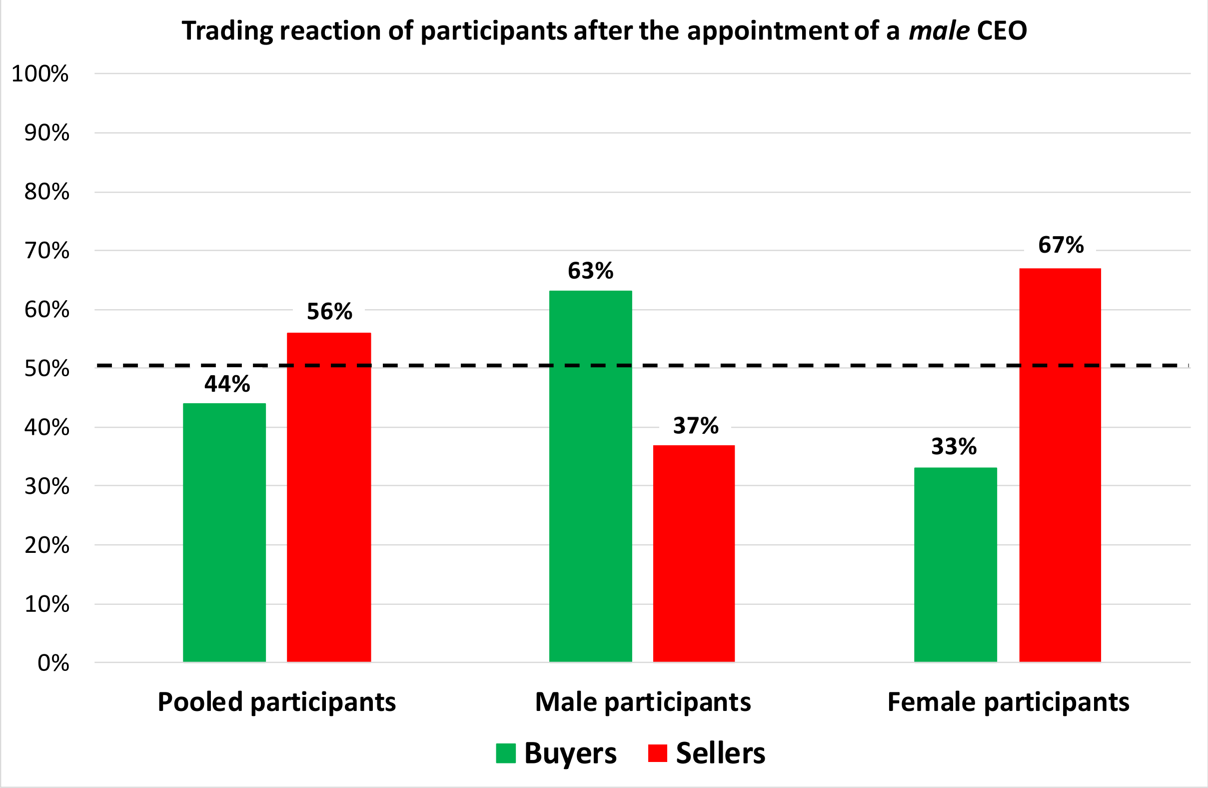
- Gender of the CEO (male/female depending on the variant of the simulation)
- Gender of the participant
- Trading reaction after the news about the CEO appointment (orders sent by participants to the market)
  - Participation to the market: yes (order) / no (no order)
  - Direction of the order: buy order / sell order
  - Quantity of the order: 100 stocks for example
  - Type of order: market order / limit order
  - Date/time of the order (time lapse after the news)

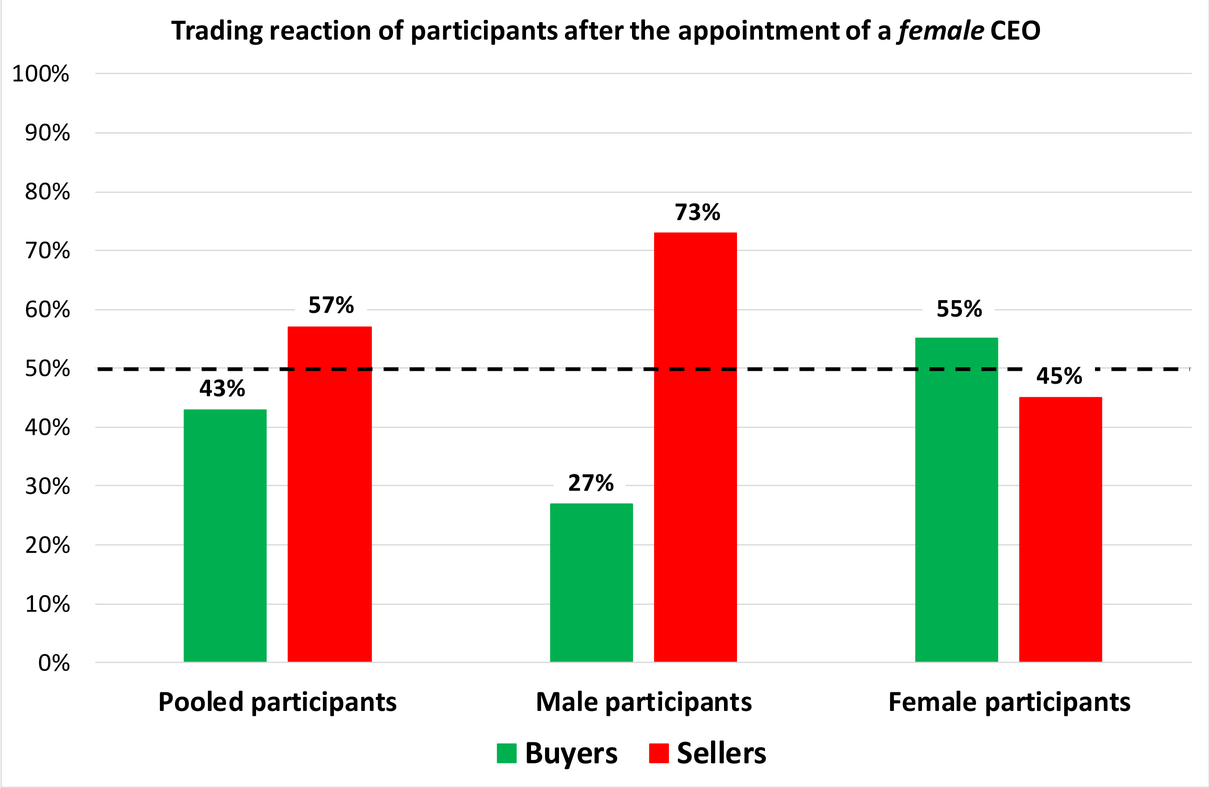
Trading reaction of male and female participants following the appointment of a male or female CEO

- What do you expect?

	Male CEO simulations	Female CEO simulations
Male participants	Buy? Sell?	Buy? Sell?
Female participants	Buy? Sell?	Buy? Sell?

Trading reaction after the appointment of a CEO





Measures

- Dependent variable (DV): the trading reaction of individuals (stock market participants) following the appointment of the new CEO
- Two components of our DV:
  - Extensive margin (EM): *qualitative* measure of the trading reaction

    EM = Trading activity (order/no order) × Direction of the order (buy/sell order)
  - Intensive margin (IM): *quantitative* measure of the trading reaction

    IM = Trading activity (order/no order) × Direction of the order (buy/sell order) × Quantity of the order × Probability of execution × Promptness of execution

    We use three measures of the strength of the market participation: the quantity of assets bought or sold (intensity), the probability of execution related to the use of market or limit orders (aggressiveness), the promptness of execution related to the time lapse between the announcement of the new CEO and the stock market order sent by the participant (reactivity).

Statistical models

- Multinomial logit model for the extensive margin (EM)
- Linear regression model for the intensive margin (IM)
  - IM = $\alpha_0 + \alpha_1 \cdot$ *CEO gender* + $\alpha_2 \cdot$ *Participant gender*

    + $\beta \cdot$ *CEO gender* $\times$ *Participant Gender*

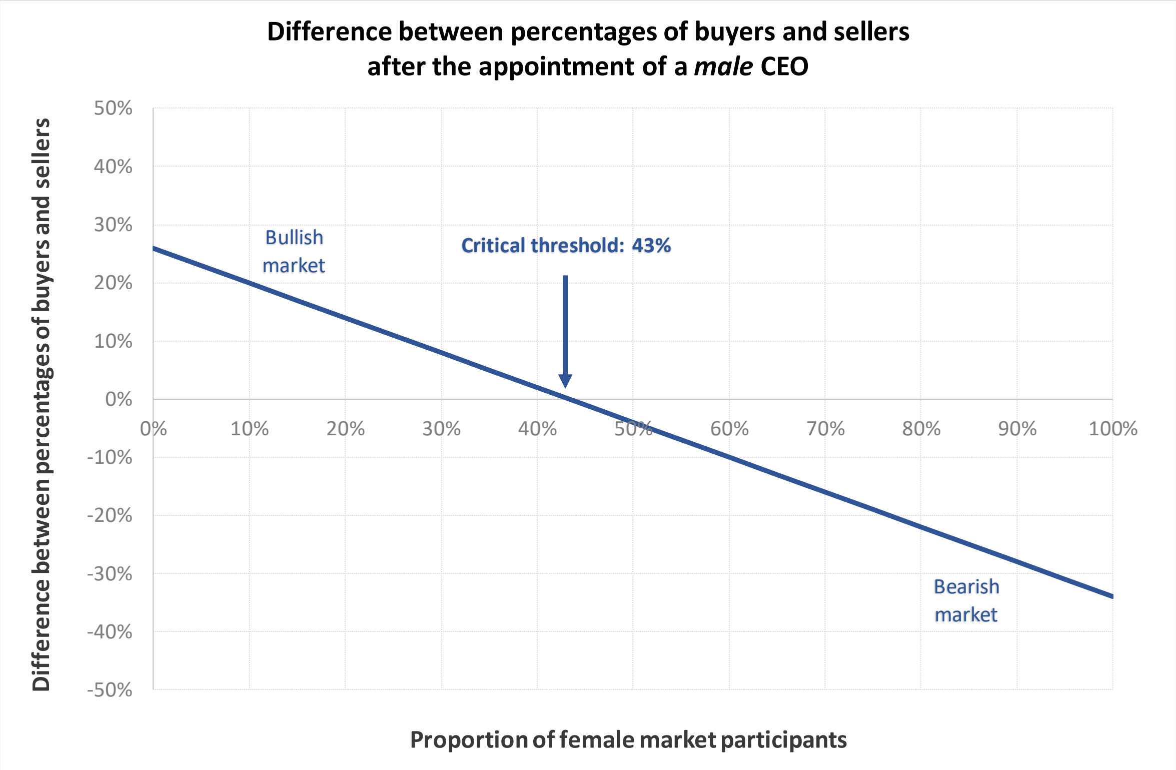
    + $\gamma \cdot$ Control variables + ε
  - *CEO gender*, *Participant gender* and the interaction term *CEO gender* $\times$ *Participant gender* are dummy variables (= 0 if male and 1 if female)
- Our "gender homophily" hypothesis predict: $\beta > 0$

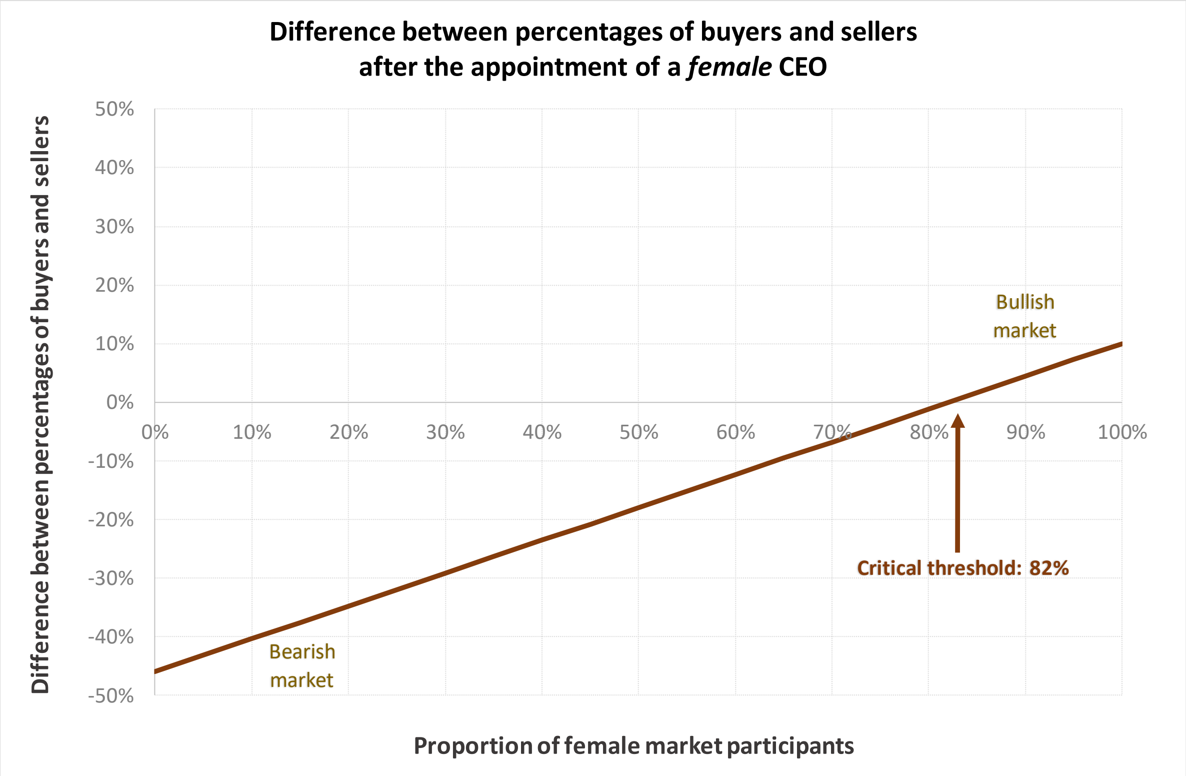
Regression results

	Dependent variable: participants' trading reaction			
	Extensive margin		Intensive margin	
	(1)	(2)	(3)	(4)
Intercept	0.241 (0.403)	0.578 (0.817)	2.642 (20.406)	-14.075 (39.240)
CEO gender	-0.860 (0.618)	-0.862 (0.621)	-47.367 (26.679)	-49.737 (29.822)
Participant gender	-0.624 (0.523)	-0.608 (0.527)	-24.957 (26.531)	-26.836 (26.627)
CEO gender × Participant gender	1.685** (0.823)	1.711** (0.828)	78.123* (39.808)	80.472** (40.032)
Trading performance		$5.89 \cdot 10^{-6}$ ($1.96 \cdot 10^{-5}$)		$1.02 \cdot 10^{-3}$ ($1.08 \cdot 10^{-3}$)
Course grade		-0.027 (0.063)		2.210 (2.996)
Pseudo R^2 / R^2	0.14	0.15	0.03	0.05

Our hypothesis:
gender homophily
$\beta > 0$

Economic significance: Market gender bias indicator





Our contribution (1/2)

- Our result: we find evidence of gender homophily among investors related to the gender of the CEO.
  - Male investors tend to buy (sell) stocks following the appointment of a male (female) CEO.
  - Female investors tend to buy (sell) stocks following the appointment of a female (male) CEO.
  - Differences in gender preferences between men and women (revealed in our experiment by their trading activity)
- Fact # 3: few female working in the financial industry (women represent only 16% of CFA holders for example)
- Combining our result and Fact #3: this creates a gender-biased stock market against female CEOs.

Our contribution (2/2)

- A gender-biased stock market against female CEOs (due to the differences in preferences between men and women, and the gender composition of the stock market) may explain the negative stock market reaction following the appointment of a female CEO as found in empirical studies (Fact #2).
- The stock market reaction may be a component of the glass ceiling (external barrier). The stock market reaction is also taken into account by the decision-making bodies (hiring committees and boards) in their decision to appointment or not female CEOs (endogeneity). This could explain the persisting underrepresentation of women in CEO positions (Fact #1).

Policy implication: our recommendations

- Gender is not only an issue at the corporate level reflected in the need to appoint more female CEOs but also an issue at the financial industry level reflected in the need **to increase its gender diversity** by attracting more women in investment occupations.
- Also an issue at the societal level reflected in the need to change **individual and collective gender stereotypes** about leadership through training programs organized by financial institutions to educate investors.

Takeaway

- The market is gendered!
  - Differences in gender preferences between male and female investors
- Our contribution
  - Differences in preferences between men and women resulting in gender homophily + Low female participation in the finance industry

  $\Rightarrow$ Gendered-biased stock market with implication for the CEO job market

Further research

- We propose other institutions to reproduce the experiment to improve the externality of our results
  - Different countries, different cultures, different types of participants

Thank you!