

CEO and CFO gender and firm-wide insider trading

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Insider trading and CEO&CFO gender

- Does gender matter for within-firm information sharing and IT behavior?
 - We find that insiders trade less profitably when the executive is a female relative to a male.
- Results consistent with *common identity bias*: private information flow between same-gender insider/executive.
 - Results for male-to-male, but not for female-to-female dyad.
- Possible mechanisms explaining results (*monitoring role* of female execs):
 - Tone-at-the-top: do female execs change the tone-at-the-top?
 - FRQ channel: do female execs change FRQ, which reduces IT opportunities?
 - ITRs channel: do female execs change corporate governance mechanisms that limit insiders' access to trading?

Information Asymmetry and Insider Trading

- Insiders are individuals with access to non-public information about the company: Employees, directors, large shareholders, etc.
 - When such individuals trade with the firm shares, it is called 'insider trading'
- **IT is profitable:** Insiders earn abnormal returns from trading in the shares of their companies (Rozeff and Zaman 1988; Syehun 1998; Jagolinzer et al. 2011). Access to private information when IT is allowed may:
 - Crowd out research into the firm shares (Fernandes and Ferreira 2009)
 - Lead to actions that garble the accounting signal, to create information asymmetry (Zhang and Zhang 2012).
- Regulators have tried to limit IT with a number of regulations, including SOX, and firms have increasingly (voluntary) adopted IT restrictions (ITR).

Information transfer channel: Common identity

Thus, for IT to be profitable, insiders should have access to private information. We argue that access to and use of private information depends on:

- The quality of the firm information environment. **Is it better under female CEO/CFOs?**
 - Female CEOs/CFOs produce higher quality accounting information (Barua et al. 2010; Francis et al. 2015). Thus, information asymmetry may be lower under female CEOs.

H1: Insider trading behavior is affected by the presence of female top executives.

- The information flows within the firm. **Who has access to private information and does gender matter?**
 - Akerlof and Kranton (2000) ‘identity’ or the sense of belonging to relatively abstract categories, such as “male” and “female”, affects interactions.

Information transfer channel: Common identity (II/II)

- Perception of similarity leads to trust and affects decision-making
 - Gender may influence communication and private information sharing
 - Managers' perceptions of their sales reps' performance is higher when they have the same gender (McNeilly & Russ 2000).
 - Men and women appeared to build networks equally well, but each gender tended to interact with itself (Brass 1985).
 - Gender appears to be a stronger identification factor for men than for women
 - Male loan officers are more likely to lend to male borrowers than female borrowers based on soft information (Campbell et al 2018).
 - Male students give lower evaluations to female University instructors (Mengel et al. 2018)
 - Male members of scientific committees evaluate females more harshly when a woman is also in the committee (Bagues et al. 2017)

H2: Same-gender insider-executive dyads yield higher IT profitability

Alternative channels: Female-to-all vs. F2F / M2M

- Ample literature suggests males and females differ in terms of risk preferences and over confidence (e.g., Baber and Odean 2001), also of gender-based discrimination, tokenism and 'glass cliffs' (e.g., Ryan and Haslam 2005, 2007).
 - Female executives may set a different tone at the top (may be more ethical, invest differently, etc.)
 - Female executives may frown upon IT, and impose IT restrictions.

Research design and results

- **Full sample:** 41,461 insiders (4,270 females) and 3,344 firms with complete data on gender, corporate governance, financial & insider trading info (1995-2016)
- **IT profitability:** BHAR (size-adjusted)

$$Profitability_{i,t} = \mu + \beta_1 Female_exec_{i,t} + \delta \sum Controls_{i,t} + \gamma_i + \tau_t + \varepsilon_{i,t}$$

- *Female_exec* = 1 if the CEO/CFO or both are female, 0 otherwise
- *Controls* for firm performance, size, leverage, corporate governance, ownership and CEO characteristics.

Table 1
Summary Descriptive Statistics.

(A) Full Sample Descriptive Statistics of Profitability and Independent Variables

<i>Variable</i>	Full sample - All firms				Full sample - Female firms				Full sample - Male firms			
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Median</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Median</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Median</i>
Prof_BHAR_SA	381912	-0.005	0.397	0.013	33691	-0.022	0.382	-0.003	348221	-0.003	0.399	0.015
LnMV_day	381912	14.763	1.641	14.595	33691	14.846	1.655	14.679	348221	14.755	1.639	14.588
BTM_day	381912	0.403	0.444	0.305	33691	0.402	0.509	0.288	348221	0.403	0.438	0.306
ROA	381912	0.054	0.127	0.062	33691	0.067	0.126	0.069	348221	0.052	0.127	0.061
Zscore	381912	1.763	1.719	1.87	33691	1.937	1.467	2.036	348221	1.746	1.741	1.856
InvEindex	381912	-1.818	1.76	-2	33691	-2.027	1.764	-2	348221	-1.798	1.758	-2
InstOwner	381912	0.576	0.323	0.68	33691	0.574	0.34	0.687	348221	0.576	0.321	0.68
BdIndep	381912	0.206	0.332	0	33691	0.215	0.341	0	348221	0.205	0.331	0
BHARPRE_SA	381912	0.194	0.586	0.088	33691	0.193	0.526	0.112	348221	0.194	0.592	0.086
sd of ret	381912	0.027	0.014	0.023	33691	0.026	0.014	0.022	348221	0.027	0.014	0.023
Age_CEO	324739	53.577	7.579	54	30168	53.215	7.624	53	294571	53.614	7.574	54
Age_CFO	212669	50.632	6.654	51	21819	49.771	6.19	50	190850	50.731	6.697	51
tenureceo	381912	6.519	6.214	5	33691	6.196	6.014	4	348221	6.55	6.232	5
tenurecfo	304946	3.922	3.057	3	28191	3.756	3.115	3	276755	3.939	3.051	3
tdclceo	372901	4255.127	1.00E+04	2098.154	33099	4925.968	7858.368	2357.316	339802	4189.782	1.02E+04	2080.095
tdclcfo	301563	2065.461	2900.653	1297.343	27848	2110.561	3021.891	1394.309	273715	2060.872	2888	1285.089

(B) Trade Value and Profitability

		<i>Male Insiders</i>			<i>Female Insiders</i>		
		<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>N</i>	<i>Mean</i>	<i>Median</i>
Purchases	<i>Trade Value</i>	47230	\$344,089	\$36,400	4229	\$201,000	\$17,500
	<i>Prof_BHAR_SA</i>	47230	0.091	0.008	4229	0.074	0.016
Male CEO and CFO	<i>Trade Value</i>	43551	\$329,000	\$36,500	3522	\$210,000	\$18,100
	<i>Prof_BHAR_SA</i>	43551	0.091	0.009	3522	0.067	0.002
Female CEO or CFO	<i>Trade Value</i>	3679	\$523,000	\$35,500	707	\$157,000	\$14,600
	<i>Prof_BHAR_SA</i>	3679	0.089	-0.007	707	0.107	0.047
Sales	<i>Trade Value</i>	301393	\$1,610,000	\$318,000	29060	\$1,030,000	\$281,000
	<i>Prof_BHAR_SA</i>	301393	-0.019	0.015	29060	-0.027	0.002
Male CEO and CFO	<i>Trade Value</i>	277527	\$1,570,000	\$314,000	23621	\$991,000	\$264,000
	<i>Prof_BHAR_SA</i>	277527	-0.017	0.017	23621	-0.027	-0.001
Female CEO and CFO	<i>Trade Value</i>	23866	\$2,080,000	\$373,000	5439	\$1,190,000	\$350,000
	<i>Prof_BHAR_SA</i>	23866	-0.042	-0.01	5439	-0.026	0.02

Male insiders trade more than females. Male insiders make more profitable trades when the CEO/CFO is also male.

IT Profitability under Female CEO/CFO

Full sample

VARIABLES	prof_bhar_sa
any_fem_exec	-0.019*** (-6.339)
Controls	YES
Constant	-0.308*** (-10.115)
Year & Industry FE	YES
Observations	381,868
R-squared	0.035

Economic significance:
Reduction in one-year size-adjusted
buy-and-hold abnormal returns of
\$16,348 for a trade at the mean value
of \$860,434 (~2%)

Research design and results

- **Concern:** The appointment of a female CEO/CFO is an endogenous choice. To alleviate concerns that it is unobservable changes that drive both IT profitability and this choice, we use an Instrumental Variables (IV) approach
 - **Instrument:** Extent to which US state is friendly to gender equality (Sugarman and Straus 1988; Di Noia 2002). The higher gender equality in a state, the higher the probability of appointing a female executive.

$$Female_i = \varphi + \rho \text{ Gender Equality Index}_i + \theta \text{ Controls}_{i,t} + \tau_t + \varepsilon_{1,i,t}$$

$$Profitability_{i,t} = \mu + \beta \text{ Instrumented Female}_i + \theta \text{ Controls}_{i,t} + \tau_t + \varepsilon_{1,i,t}$$

IT Profitability under Female CEO/CFO

Full sample (IV Approach)

(B) Full sample - Instrumental variable results

	First stage FemaleIV	T-stat	Second stage prof_bhar_sa	T-stat
Gender Equality Index	0.115***	(11.481)		
FemaleIV			-1.248***	(-7.532)
Constant	-0.003	(-0.237)	-0.240***	(-8.935)
Observations	374,278		374,278	
F-statistic	132.22			
p-value	0			
<i>Controls included</i>	<i>Yes</i>		<i>Yes</i>	
<i>Year and industry FE</i>	<i>Yes</i>		<i>Yes</i>	

Research design and results

- **Concern:** Unobservable change in culture / corporate governance coincides with female appointment, but it is not female CEO/CFO that lead the effect.
 - Male-to-Female-to-Male switches (39 firm). If culture has changed, in the last shift, there should be no effect.

(C) Male-to-Female-to-Male tests

	Profitability	T-stat
Post	0.084***	(4.242)
Constant	-0.286	(-1.213)
Observations	3,177	
R-squared	0.309	
<i>Controls included</i>	<i>Yes</i>	
<i>Year and industry FE</i>	<i>Yes</i>	

Research design and results

- **PSM sample:** Evidence on discrimination where only good governed firms appoint females (Garcia Lara et al. 2017), and on 'glass cliffs' (Ryan and Haslam 2005, 2007).
 - DiD using a PSM matched sample;
 - First difference: changes in CEO/CFO; 150 male-to-female; 1,031 male-to-male
 - Second difference: before and after the change
 - PSM, match on 'treatment', i.e., probability of having a female CEO/CFO. Firms should be identical in the determinants of appointing a female CEO/CFO, but treatment firms are male-to-female, and control firms are male-to-male.

$$\begin{aligned} \textit{Profitability}_{i,t} = & \mu + \beta_1 \textit{Post}_{i,t} + \beta_2 \textit{Treat}_i + \beta_3 \textit{Post}_{i,t} * \textit{Treat}_i + \\ & + \delta \sum \textit{Controls}_{i,t} + \nu_i + \tau_t + \varepsilon_{i,t}, \end{aligned}$$

IT Profitability under Female CEO/CFO

PMS match on observables

(B) Difference in means between the treatment and control groups after matching

	Control	Treatment	Difference	p-value
Size	7.41	7.43	-0.02	0.91
BTM	0.44	0.51	-0.07	0.11
ROA	0.06	0.05	0.01	0.37
FirmAge	20.38	22.70	-2.33	0.18
BoardSize	1.81	1.83	-0.01	0.58
Concentration	0.00	0.00	0.00	0.75
FemEmpl	37.11	35.94	1.17	0.54
BoardIndep	0.24	0.29	-0.05	0.28
InvEIndex	-1.62	-1.82	0.20	0.34
Return	0.14	0.06	0.08	0.14
lzscore2	2.05	1.91	0.14	0.40

IT Profitability under Female CEO/CFO

PMS sample results

(C) PSM DID - The effect of female top executives on insider trading profitability

	Profitability	T-stat
Post	0.085***	(10.743)
Treat	0.079***	(6.536)
PostTreat	-0.103***	(-7.600)
Constant	-0.058	(-0.450)
Observations	23,922	
R-squared	0.127	
<i>Controls included</i>	<i>Yes</i>	
<i>Year and industry FE</i>	<i>Yes</i>	

Common identity bias

- **Results so far:** IT profitability is lower under female CEO/CFO, supporting **H1**.
- **Common identity bias:** Is this due to different access to information under female CEO/CFO?
 - Separately study trades made by males and females.
 - We are not only interested in whether males always trade differently than females, but on whether males and females trade differently when the CFO/CEO is a male vs. when is a female.

$$Profitability_{i,t} = \mu + \beta_1 Mexec_{i,t} + \delta \sum Controls_{i,t} + \gamma_i + \tau_t + \varepsilon_{i,t}$$

Common identity bias results

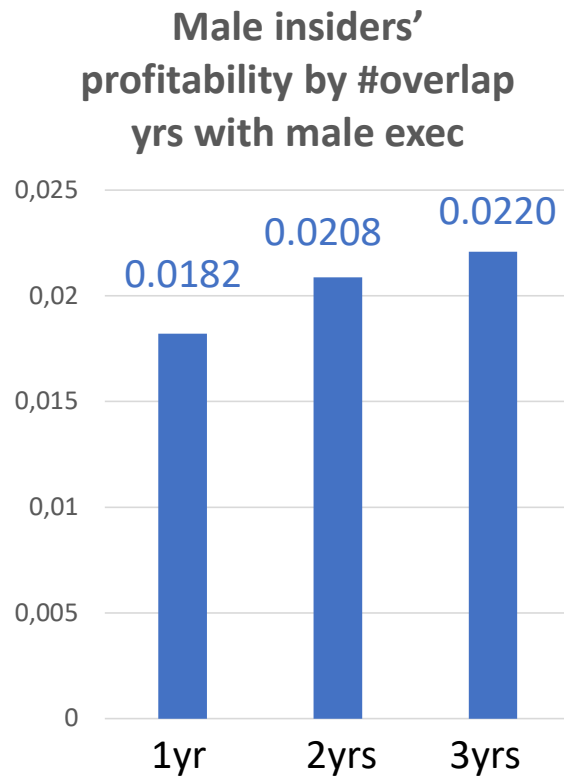
Full sample: Profitability under male CEO/CFO

VARIABLES	<i>Male insiders</i>		<i>Female insiders</i>	
	prof	bhar sa	prof	bhar sa
Mexec	0.021***		0.002	
	(7.265)		(0.299)	
Controls	YES		YES	
Constant	-0.311***		-0.445***	
	(-10.099)		(-5.554)	
Observations	348,587		33,281	
R-squared	0.037		0.036	
Year and industry FE	YES		YES	

PSM DID: Effect of appointing a female CEO/CFO

VARIABLES	<i>Male insiders</i>		<i>Female insiders</i>	
	prof	bhar sa	prof	bhar sa
post	0.098***		0.053***	
	(11.114)		(2.845)	
Treat	0.085***		0.041*	
	(6.624)		(1.913)	
PostTreat	-0.120***		-0.015	
	(-8.145)		(-0.564)	
Controls	YES		YES	
Constant	-0.084		-0.010	
	(-0.607)		(-0.056)	
Observations	20,871		3,051	
R-squared	0.133		0.226	
Year and industry FE	YES		YES	

Common identity bias results



VARIABLES	Overlap = 1yr prof_bhar_sa	Overlap= 2yrs prof_bhar_sa	Overlap = 3yrs prof_bhar_sa
Mexec	0.007 (1.062)	0.049*** (6.262)	0.080*** (8.065)
Controls	YES	YES	YES
Constant	-0.287*** (-4.964)	-0.216* (-1.770)	-0.554*** (-3.680)
Observations	95,235	42,907	27,752
R-squared	0.041	0.091	0.101
Year and industry FE	YES	YES	YES

Monitoring (I): Tone-at-the-top channel

A weak tone-at-the-top is associated with profitable insider trading (Skaife et al 2013)

Male and female execs set different tone-at-the-top in the firm.

- Female directors are more likely to take up monitoring positions on audit and corporate governance committees (Adams & Ferreira 2009).
- The presence of at least one female board member is associated with an improved tone-at-the-top and a decline in the number of financial restatements (Abbott et al 2012).

Do female executives (CEOs and CFOs) set a stronger tone-at-the-top, which translates into less profitable insider trading?

Tone-at-the-top results

$$X = \mu + \beta_1 \text{Female_exec} + \beta_2 \text{Controls} + \gamma + \tau + \varepsilon$$

$$\text{Profitability} = \mu + \beta_1 \text{Female_exec} + \beta_2 X + \beta_3 \text{Controls} + \gamma + \tau + \varepsilon$$

VARIABLES	(1) tone_firm	(2) MWIC_firm
any_fem_exec	-0.005 (-0.065)	-0.072* (-1.769)
Controls	YES	YES
Constant	-3.006*** (-4.834)	-0.078 (-0.295)
Observations	13,386	13,461
Pseudo-R ²	0.0346	0.0510

VARIABLES	(1) prof_bhar_sa	(2) prof_bhar_sa
any_fem_exec	-0.020*** (-6.513)	-0.020*** (-6.509)
tone	-0.008 (-0.412)	0.005 (0.247)
MWIC	0.012* (1.896)	
Controls	YES	YES
Constant	-0.356*** (-6.472)	-0.354*** (-6.436)
Observations	217,269	217,269
R-squared	0.049	0.049

Monitoring (II): Blackout periods channel

- Women are more risk-averse in business (Barber & Odean 2001).
- Risk-aversion can make female executives want to minimize legal and reputational risks stemming from IT in their firms to greater extent than male executives.

Are female executives (CEOs and CFOs) more likely to impose insider trading restrictions, which translates into less profitable insider trading?

FRQ and ITRs results

$$X = \mu + \beta_1 \text{Female_exec} + \beta_2 \text{Controls} + \gamma + \tau + \varepsilon$$

$$\text{Profitability} = \mu + \beta_1 \text{Female_exec} + \beta_2 X + \beta_3 \text{Controls} + \gamma + \tau + \varepsilon$$

VARIABLES	(1) Abs_DA_MJ	(2) prof_bhar_sa
Abs_DA_MJ		0.009*** (8.134)
any_fem_exec	-0.035*** (-5.924)	-0.020*** (-6.460)
Controls	YES	YES
Constant	-0.059 (-0.994)	-0.300*** (-9.823)
Observations	380,897	380,512
R-squared	0.159	0.035
Year and industry FE	YES	YES

VARIABLES	(1) PctSafe	(2) prof_bhar_sa
PctSafe		0.010*** (2.929)
any_fem_exec	-0.001 (-0.269)	-0.024*** (-6.339)
Controls	YES	YES
Constant	0.421*** (12.680)	-0.275*** (-7.183)
Observations	238,960	238,825
R-squared	0.051	0.043
Year and industry FE	YES	YES

Table 8

Additional Robustness.

The effect of all male executives on the trading profitability and profits for male and female insiders, controlling for alternative channels.

	<i>Male Insiders</i>		<i>Female Insiders</i>	
	Profitability	Profits	Profitability	Profits
any_fem_exec	-0.016*** (-3.713)	-0.005* (-1.856)	-0.012 (-1.582)	0.006 (1.627)
tone	0.059*** (2.641)	0.052*** (3.606)	-0.150 (-1.015)	-0.076* (-1.704)
MWIC	-0.021** (-2.086)	-0.019*** (-2.939)	-0.011 (-0.423)	-0.002 (-0.107)
AbsDA_MJ	0.012*** (7.449)	0.006 (1.504)	0.013*** (5.117)	0.005*** (3.676)
PctSafe	0.016*** (3.845)	-0.009*** (-2.647)	0.035*** (3.867)	-0.004 (-0.873)
Constant	-0.572*** (-10.932)	-0.192*** (-6.491)	-0.811*** (-8.134)	-0.192*** (-3.784)
Observations	117,266	117,266	12,030	12,030
R-squared	0.076	0.031	0.067	0.039
<i>Controls included</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Year and industry FE</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>

Concluding remarks

- Insiders gain lower profits when the executive is a female relative to a male.
- Results are consistent with *common identity bias*: private information flow between same-gender insider/executive
- Alternative mechanisms potentially explaining results (**monitoring role** of female execs):
 - ✗ • Tone-at-the-top: do female execs change the tone-at-the-top?
 - ✗ • FRQ channel: do female execs change FRQ, which reduces IT opportunities?
 - ✗ • ITRs channel: do female execs limit insiders' access to insider trading?