

# **Insider trading and gender**

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## Intro: (Legal) trading by corporate insiders

Trades by people employed by (or on the board of) a corporation. Although *inside trades*, allowed, but:

- ▶ Trades must be disclosed to the market
- ▶ Blackout periods (e.g. accounting statements).
- ▶ Can not trade if have *material* information. (e.g. merger negotiations.)

Why allow?

- ▶ Give insiders incentives.
- ▶ Move stock prices towards informed price.

# Intro: Why gender and insider trades?

Insider trades – useful laboratory to investigate differences between economic decisions of females/males

- ▶ Important economic decisions
- ▶ Gender behind decision observable.
  - Corporate position is what determines obligation to report, need not worry which family member makes decisions.
- ▶ Incentive situation behind decision clear.

## Intro: Possible gender issues to investigate

- ▶ Are there gender differences in inside trading?
- ▶ Is gender important for corporate governance? (Board gender quotas).
- ▶ Are female executives more risk averse than their male colleagues?

Oslo Stock Exchange

Corporate insider trades 1986–2016, self reported.

Insider position:

- ▶ Primary (top executives, directors)
- ▶ Others

Additionally: board info, other financial data.

# Data: Sample

	1986–2016		1986–1997		1997–2016	
	N	%	N	%	N	%
Total insider transaction records	47,429		23,213		24,223	
Records with <i>gender identified</i>	38,504	100%	17,098	100%	21,412	100%
of which by <i>primary insiders</i>	21,663	56%	5,660	33%	16,009	75%
of which are <i>non-routine</i>	19,108	88%	4,484	79%	14,630	91%

## Data: Aggregate

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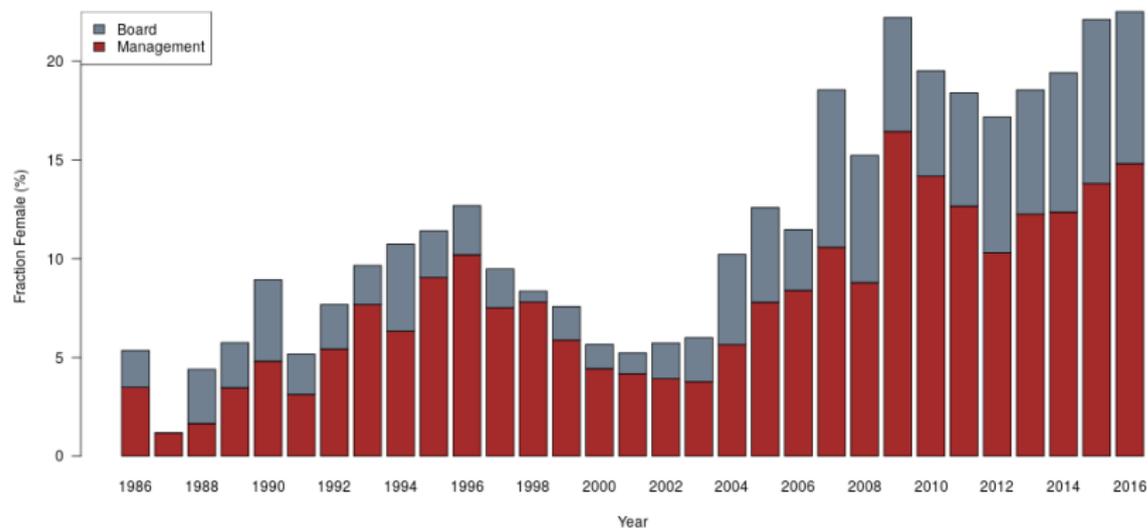
	<b>Primary Insiders</b>			
	Total	Male	Female	Female(%)
Number of firms	556	554	302	54.3
Number of distinct insiders	7118	6100	1028	14.4
Total transaction value (mill.)				
Buys	68628	67729	899	1.3
Sells	69583	68341	1242	1.8
Number of transactions				
Buys	16063	14387	1676	10.4
Sells	5600	5195	405	7.2
Average transaction (1,000)				
Buys	4272	4708	536	
Sells	12425	13155	3066	
Median transaction (1,000)				
Buys	119	130	62	
Sells	415	446	137	

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## Data: Per trader

	Primary insiders		
	All	Female	Male
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Number of trades in year			
Buys	1.21	1.13	1.23
Sells	1.13	1.06	1.14
Annual transaction value (thousands)			
Buys	1310	273	1484
Sells	7569	1427	8240

# Data: Fraction females among primary insider trades



# Gender difference in long term performance

## Source of gender differences?

Insider trades reflect knowledge/understanding/experience of

- ▶ Own company
- ▶ Industry in which company operates

Gender differences may reflect differences in

- ▶ Access to inside information
  - ▶ Position in company
  - ▶ Network inside company
- ▶ Access to industry
  - ▶ Network, e.g. board memberships
  - ▶ Experience

Inci, Narayanan and Seyhun (2017)

# Gender difference in long term performance

## Idea

- ▶ Construct portfolio incorporating information in insider trades
- ▶ Compare portfolio performance - “male” vs “female” portfolios

## Methods

### **Portfolio construction**

- ▶ “Buy signal” - equally weighted portfolio
  - all stocks with insider buys
- ▶ Match aggregate portfolio of insiders
  - ▶ ownership weights
  - ▶ value weights
- ▶ → Monthly series of portfolio weights.

# Gender difference in long term performance - ctd

## Performance evaluation

- ▶ Returns based evaluation
  - Estimate “alpha”
    - ▶ Fama-French four-factor regression
    - ▶ Estimating time-varying portfolio risk
- ▶ Holdings based evaluation
  - ▶ Can changes in (inside) portfolio weights predict later performance?

## Results of long term performance comparison

Point estimate: Females do (slightly) better.

Statistically: No significant performance differences between male and female inside portfolios.

# Gender differences in short term market reaction

Stock price reaction to announced insider trades reflect

- ▶ Timing by insiders (insider knowledge)
- ▶ Market's evaluation of the fact that an insider traded.

→ Investigate reaction to announced insider trades.

Method: Event study

$$r_{it}^e = a_i + b_i r_{mt}^e + \Gamma D_{it}^{event} + \varepsilon_{it},$$

$D^{event}$  dummy variable equal to one in the event window of  $\tau$  days around insider trade

Estimate of Cumulative Abnormal Return:

$$\widehat{CAR} = \tau \widehat{\Gamma} \quad \tau = \begin{cases} 3 & (-1, 1) \\ 7 & (-1, 5) \\ 27 & (-1, 25) \\ 52 & (-1, 50) \end{cases}$$

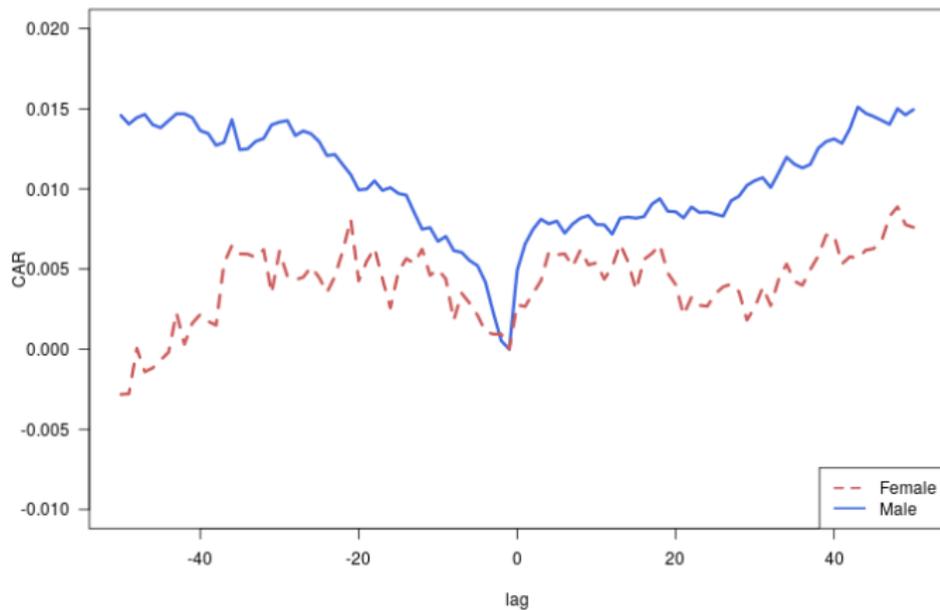
# Gender differences in short term market reaction

## Event Study Results

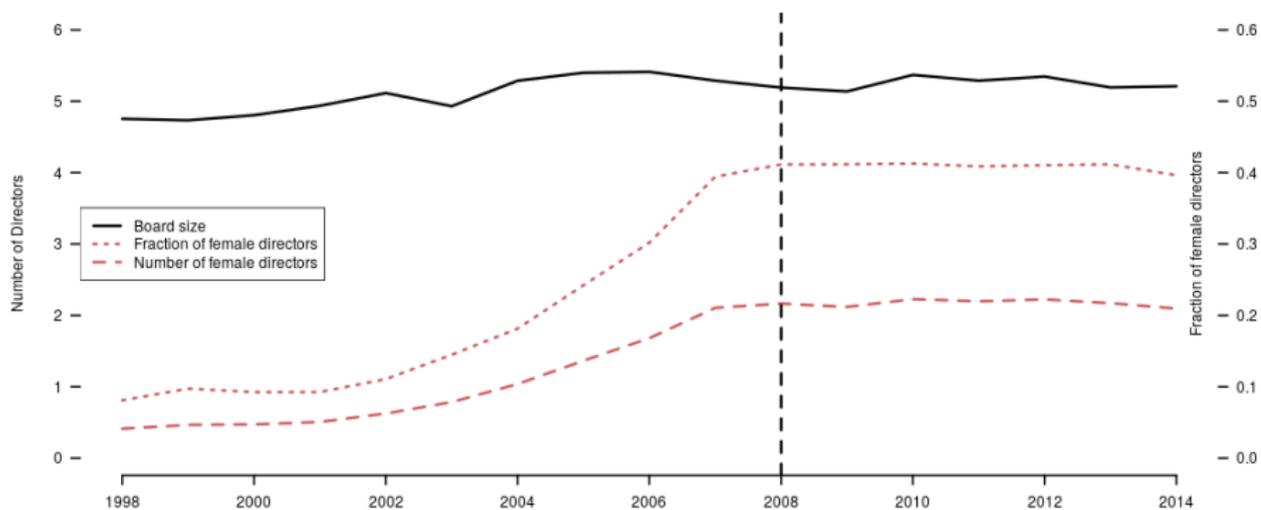
Magnitude of immediate market reaction to female trades lower than reaction to male trades.

Event windows:	(-1, 1)	(-1, 5)	(-1, 25)	(-1, 50)
<b>A: Female Insiders</b>				
CAR	0.012*** (0.001)	0.014*** (0.001)	0.007 (0.0004)	0.005 (0.0003)
Obs.	643,261	643,261	643,261	643,261
$\bar{R}^2$	0.030	0.030	0.030	0.030
<b>B: Male Insiders</b>				
CAR	0.015*** (0.001)	0.014** (0.001)	-0.001 (0.001)	-0.016 (0.0004)
Obs.	1,013,513	1,013,513	1,013,513	1,013,513
$\bar{R}^2$	0.005	0.005	0.005	0.005

# Gender differences in short term market reaction



# Norway's forced board gender-balancing



# Norway's forced board gender-balancing

## Consequences of influx of female directors

If new female directors are less connected, and less experienced, expect

- ▶ their insider trades to perform “worse”
- ▶ the market to react less to their trades

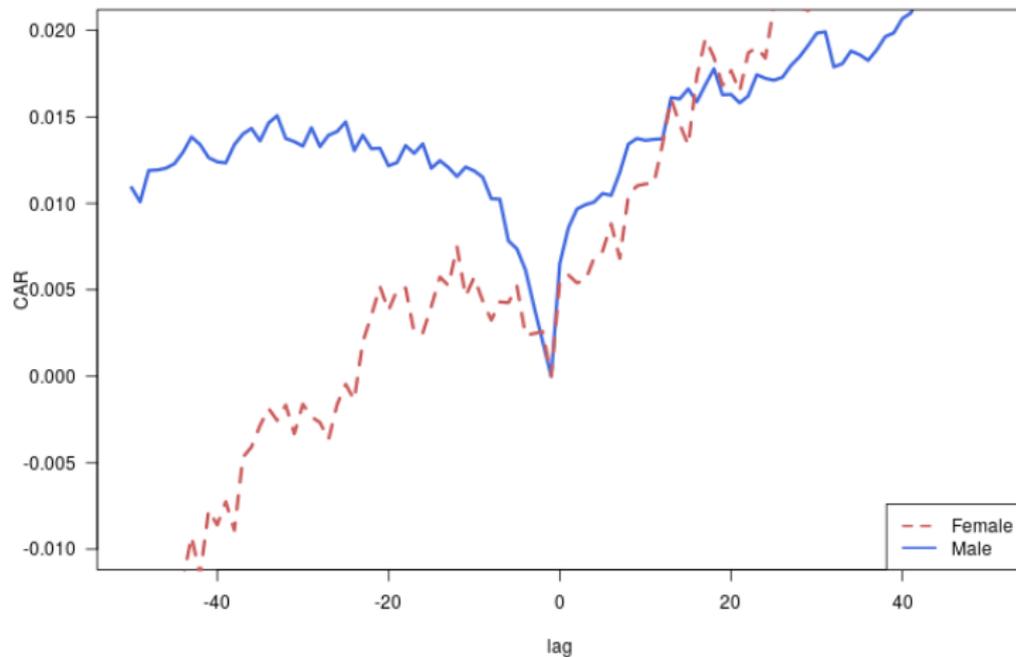
## Findings

Results not consistent with this view

- ▶ No performance differences between “female” and “male” inside portfolios.
- ▶ Magnitude of market reaction to female trades closer to corresponding reaction to male trades post board reform.

# Norway's forced board gender-balancing

## Event study - post reform



# Risk aversion and gender

Gender differences in risk aversion – generally

? (Survey):

- ▶ Females are more risk-averse than males (experimental studies) (??)

But – we do not investigate a random sample of females.

Rather – sample of female *executives* and *directors* (board members).

?: Survey directors in Swedish listed companies in year 2005.

Argue female executives and directors are, if anything, *less* risk averse than their male counterparts.

This study: Gender-sorted actual economic decisions of executives and directors allows direct comparison of risk aversion.

Setting: Financial crisis of 2008.

# The financial crisis, risk aversion and gender

Financial crisis 2008–2010.

Insider reactions to fall in stock prices:

1. → buy stocks to rebalance portfolios.
2. → higher potential for inside view to differ from consensus view (increase inside holdings if positive view).

Both decisions influenced by risk aversion

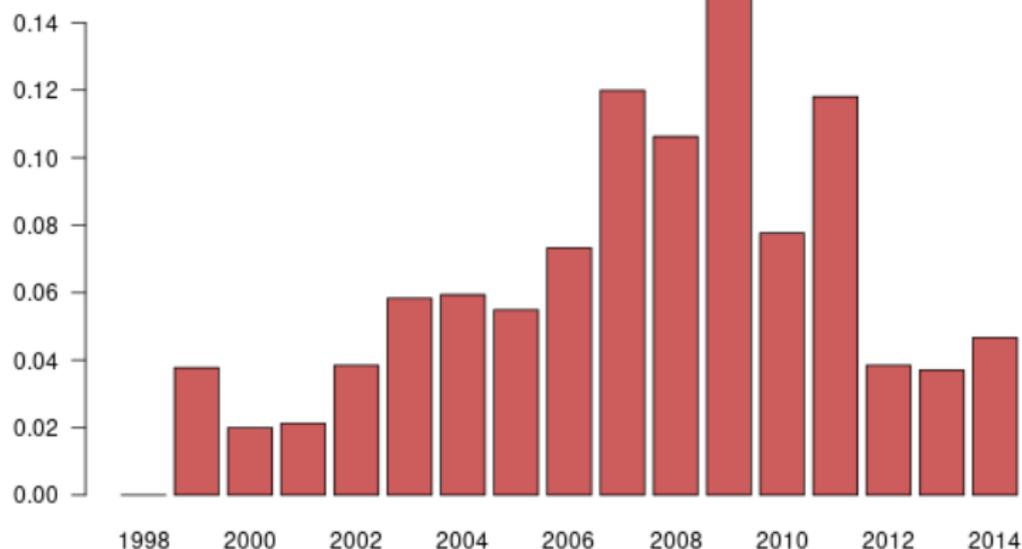
More risk averse:

1. → Less equity in optimal portfolio
2. → Less willing to lower diversification to concentrate holdings in own company stocks.

Prediction: More risk averse individuals will buy less equity following the 2008 fall in stock prices.

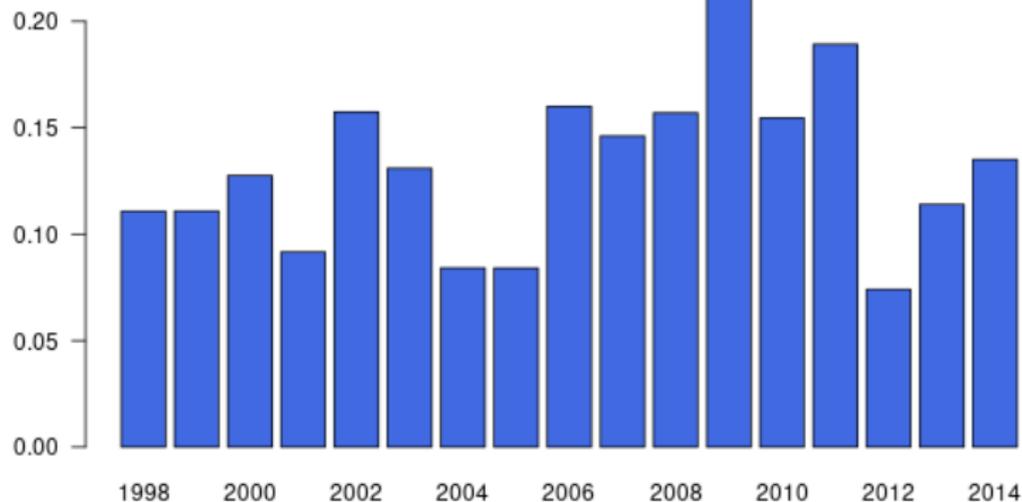
# The financial crisis, risk aversion and gender, ctd.

## Propensity to trade - Female board members



# The financial crisis, risk aversion and gender, ctd

## Propensity to trade - Male board members



# The financial crisis, risk aversion and gender, ctd

Alternative estimation, adding executives to the board members.

Estimate: Probability of an insider trade (probit)

- ▶ In a time interval
- ▶ For a given company
- ▶ For a given gender

Include company properties affecting likelihood of insider trades.

- ▶ Firm Size
- ▶ Idiosyncratic risk (volatility)
- ▶ Cost of trading the given stock (spread)
- ▶ Fraction of females on board
- ▶ Systematic risk (beta)

Measure differences in behaviour during crisis:

- ▶ Dummy for crisis (2008:08–2010:12)

# The financial crisis, risk aversion and gender, ctd.

## Results of probit estimation

	<b>Female primary insiders</b>		<b>Male primary insiders</b>	
	Purchases	Sales	Purchases	Sales
	(1)	(2)	(3)	(4)
Constant	-4.409*** (0.565)	-2.184** (1.043)	-2.680*** (0.357)	-1.873*** (0.436)
ln(Market Cap)	0.131*** (0.026)	0.037 (0.044)	0.087*** (0.017)	0.029 (0.020)
Stock volatility	-2.027 (2.951)	1.869 (5.201)	4.651*** (1.526)	3.945** (1.838)
Bid/Ask Spread	-1.437 (1.922)	-25.579*** (7.629)	-3.589*** (1.091)	-4.489*** (1.420)
Fraction women on board	0.359 (0.235)	-0.691* (0.370)	0.030 (0.145)	-0.579*** (0.177)
Stock beta	-0.124* (0.073)	-0.214* (0.115)	-0.013 (0.043)	0.115** (0.050)
Crisis 2008–10	0.364*** (0.104)	-0.021 (0.218)	0.115 (0.076)	-0.144 (0.104)
Observations	3,997	3,997	3,997	3,997

# The financial crisis, risk aversion and gender, ctd.

Conclude: Female board members and executives are, if anything, *less* risk averse than their male colleagues.

Consistent with:

*“If women must be more like men to break the glass ceiling, we might expect gender differences to disappear among directors.”*

— Renée Adams and Patricia Funk, *Management Science*

# Key takeaways

- ▶ Gender based performance differences?
  - No significant long term differences
  - Positive short term market reaction higher for male trades.
- ▶ Board reform: influx of female directors
  - Market reacts *more positively* to inside trades by females after board reform.
- ▶ Financial crisis and risk aversion
  - Female insiders increase equity buying during crisis.  
Not consistent with female executives being more risk averse than their male colleagues.

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