E vs. G:
Environmental Policy and Earnings Management in China

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ABFER 12th Annual Conference

May 19, 2025

Presented by Darwin Choi

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- Despite the growing interest in ESG, empirical evidence directly documenting these conflicts remains limited

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  - Choi, Mukherjee & Zheng (2025) show that stock prices of brown firms dropped more than those of green firms after the introduction of the monitoring system

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  - Choi, Mukherjee & Zheng (2025) show that stock prices of brown firms dropped more than those of green firms after the introduction of the monitoring system
  - Given heightened regulatory scrutiny and negative public perception, polluting firms may choose to engage in dishonest behavior $\rightarrow$ G may deteriorate

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- Local governments are under pressure to improve air quality after the system is established $\rightarrow$ They will likely push polluting firms to reduce pollution

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- Zang (TAR 2012) shows that real activities manipulation and accrual-based earnings management serve as substitutes
  - The automatic monitoring system increases the costs associated with manipulating air pollutant data, raising the likelihood that firms engage in earnings management

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- Our paper highlights the conflict between E and G, as well as the unintended consequences of environmental policies

Data

- Financial and accounting information from the China Stock Market and Accounting Research Database (CSMAR)
- Polluting industries are defined in The Directory of Classified Management of Environmental Protection Verification
  - Issued by the Ministry of Environmental Protection (now called the Ministry of Ecology and Environment) in 2008
  - 16 categories including thermal power, steel, cement, electrolytic aluminum, coal, and metallurgy, etc.
- Non-financial and non-ST (Special Treatment) firms listed in Shanghai and Shenzhen
- Sample period: 2009–2014
- 11,040 firm-year observations from 759 polluting firms and 1,696 non-polluting firms

Discretionary Accruals

- Modified Jones (JAR 1991) model

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \tag{1}$$

$$DA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \hat{\beta}_1 \frac{1}{A_{i,t-1}} - \hat{\beta}_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} - \hat{\beta}_3 \frac{PPE_{i,t}}{A_{i,t-1}} \tag{2}$$

- where $TA_{i,t}$ denotes the total accruals, defined as the operating income minus operating cash flows; $A_{i,t-1}$ is the lagged total assets; $\Delta REV_{i,t}$ is the change in revenue from year $t-1$ to year t; $\Delta REC_{i,t}$ is the change in account receivables from year $t-1$ to year t; and $PPE_{i,t}$ is property, plant, and equipment

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- The coefficients in (1) are estimated cross-sectionally for industry-year groups with at least 10 observations
- $DA_{i,t}$ is the discretionary accruals, defined as the difference between firms' actual accruals and the normal level of accruals, serving as a proxy for earnings management

Main Test

- Difference-in-Differences

$$|DA|_{i,t} = \beta_1 AMS_t \times Pollute_i + \beta_2 Controls_{i,t} + \alpha_i + \alpha_t + \varepsilon_{i,t} \quad (3)$$

- where $|DA|_{i,t}$ is the absolute value of discretionary accruals
- A positive (negative) $DA_{i,t}$ suggests that firm i has made income increasing (decreasing) accrual adjustments in year t, which indicates positive (negative) earnings management

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- Controls: Size, Leverage, ROA, Loss dummy, # Directors, % of independent directors, CEOChairman, % shares held by top 5, Big 4 auditor, SOE

Discretionary Accruals: Magnitude

	(1)	(2)	(3)	(4)	(5)	(6)
Sample			First	Second	Third	
Dependent Variable	$\|DA\|$	$\|DA\|$	$\|DA\|$	$\|DA\|$	$\|DA\|$	$\|DA\|$
$AMS_t \times$ Pollute	0.0176***	0.0182***				0.0154**
	(4.29)	(4.50)				(2.48)
LMS $\times$ Pollute			0.0157***	0.0164***	0.0382**	
			(3.66)	(2.60)	(2.59)	
$AMS_{t-2} \times$ Pollute						-0.0051
						(-0.78)
$AMS_{t-1} \times$ Pollute						0.0088
						(1.30)
$AMS_{t+1} \times$ Pollute						0.0187***
						(2.93)
$AMS_{t+2} \times$ Pollute						0.0261***
						(3.84)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	Yes	Yes
Observations	11,006	11,006	9,508	8,430	8,182	11,006
R^2	0.3326	0.3391	0.3532	0.3525	0.3548	0.3397

Discretionary Accruals: Direction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample			First Wave		Second Wave		Third Wave	
Model	OLS	Logit	OLS	Logit	OLS	Logit	OLS	Logit
Dependent Variable	$DA < 0$	$DA < 0$	$DA < 0$	$DA < 0$	$DA < 0$	$DA < 0$	$DA < 0$	$DA < 0$
AMS × Pollute	0.1032***	0.5536***						
	(5.25)	(4.50)						
LMS × Pollute			0.0862***	0.4415***	0.1262***	0.7930***	0.0604	0.3304
			(3.59)	(3.02)	(3.60)	(3.58)	(1.79)	(1.12)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster by Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,006	8,732	9,508	7,412	8,430	6,468	8,182	6,245
R^2/Pseudo R^2	0.3272	0.1710	0.3337	0.1710	0.3368	0.1710	0.3359	0.1690

Earnings Response Coefficients

$$BHAR_{i,t} = \beta_1 UE_{i,t} + \beta_2 UE_{i,t} \times AMS_t + \beta_3 UE_{i,t} \times Pollute_i + \beta_4 AMS_t \times Pollute_i + \beta_5 UE_{i,t} \times AMS_t \times Pollute_i + \varepsilon_{i,t} \quad (4)$$

$$BHAR_{i,t} = \prod_{m=1}^{12}(1 + R_{i,m}) - \prod_{m=1}^{12}(1 + R_{b,m}) \quad (5)$$

Dependent Variable	(1) BHAR-EW	(2) BHAR-FVW	(3) BHAR-TVW
UE × AMS × Pollute	-0.620**	-0.644**	-0.631**
	(-2.014)	(-2.093)	(-2.049)
Observations	9,858	9,858	9,858
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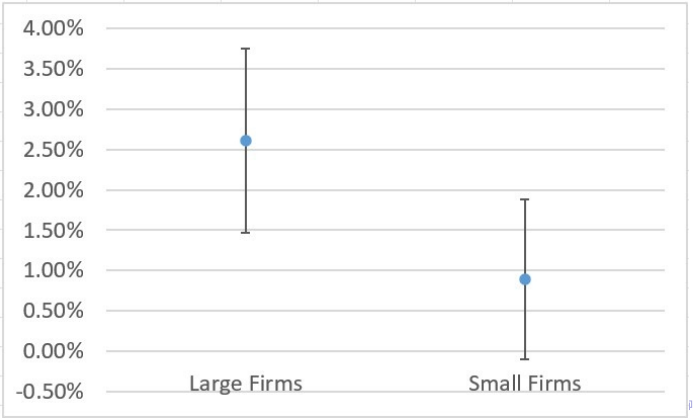
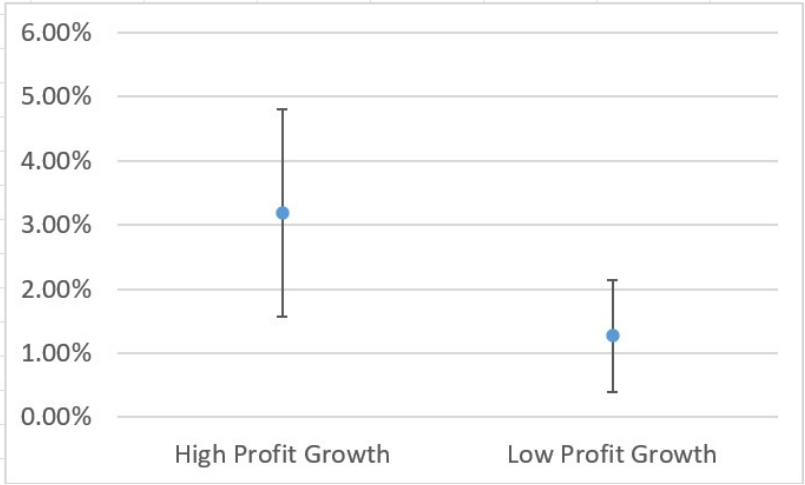
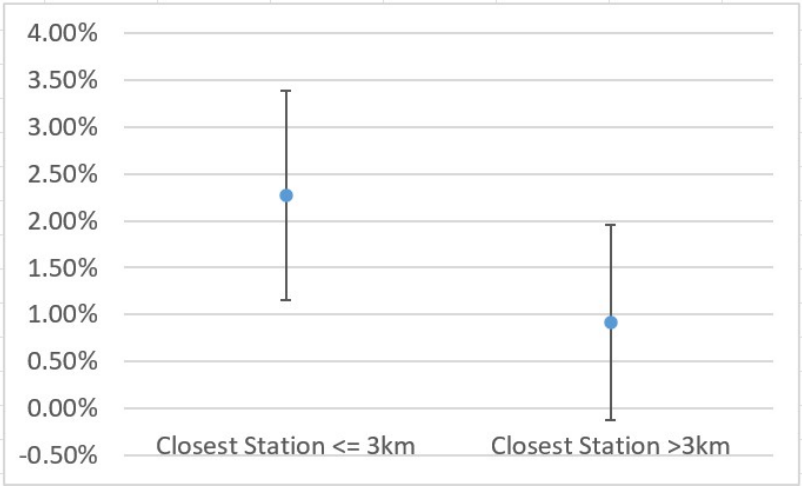


Cross-sectional Tests: Profitability



Cross-sectional Tests: Distance to Monitoring Station



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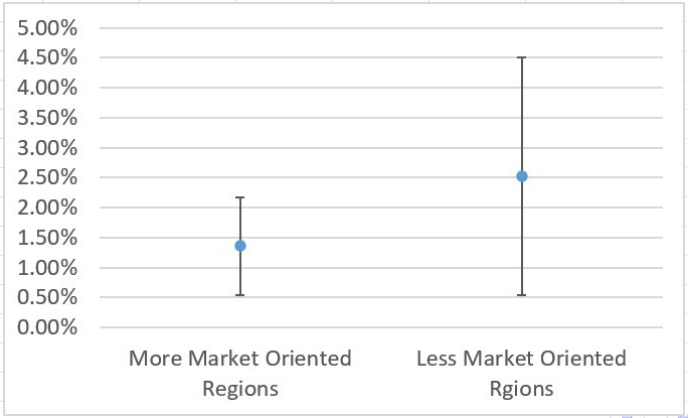

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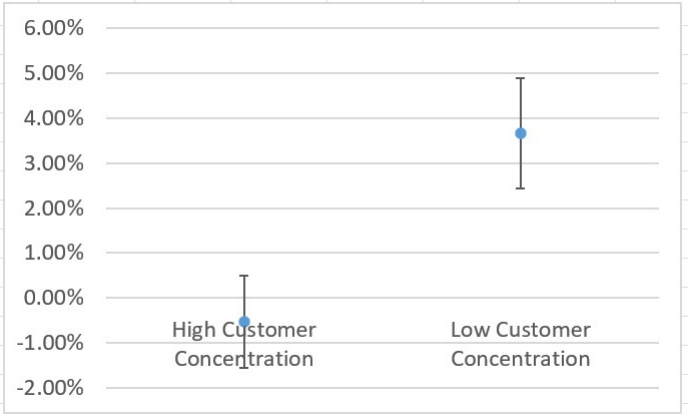

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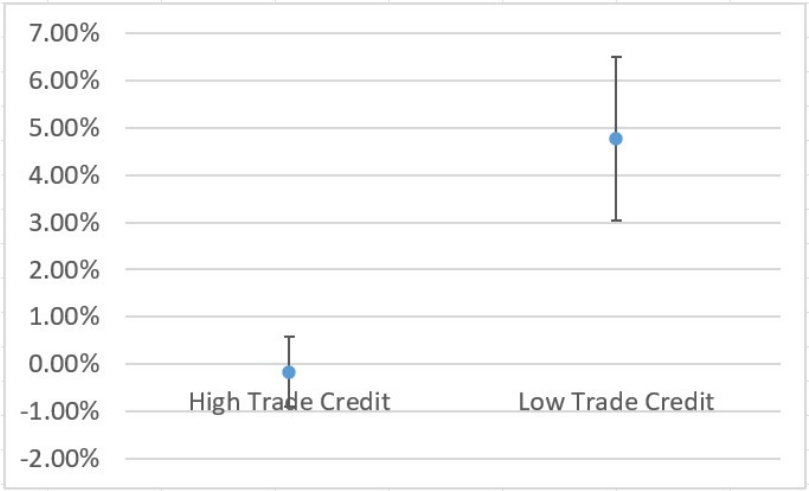

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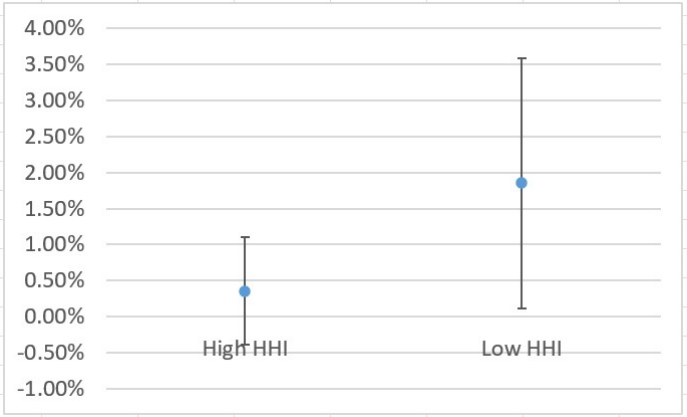

Conclusion

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