

# Who Gains from the blockchain-related announcements in China?

**Qing He**  
School of Finance  
Renmin University of China

**Xiaoyang Li**  
School of Accounting and Finance  
The Hong Kong Polytechnic University

**Chinese Path to Modernization, 2023**  
Helsinki, Finland

- Government support of blockchain innovation around the world
  - China: national strategy (by MIIT, CAC, Chairman)
  - India: national strategy (by MeitY)
  - Singapore: supported technology area (by National Research Foundation)
  - Korea: digital strategy of Korea (by MIST)
  - EU: blockchain strategy (European Commission)
  - US: policy support at federal and state level

- Past success of China's national policy
  - Highspeed railway
  - Electric vehicles
  - 5G technology
  - Even the Olympic Games

- Past success of China's national policy
  - Highspeed railway
  - Electric vehicles
  - 5G technology
  - Even the Olympic Games
- Strong support of blockchain innovation
  - Joint guidance from Ministry of Industry and Information Technology (MIIT) and Cyberspace Administration of China (CAC)
  - Chinese president: Endorse and advocate blockchain technology
  - Financial support: RMB 10 billion (USD 1.6 billion) blockchain innovation fund in 2018 in Xiong'an polit zone

## Mixed results on the effectiveness

- On one hand
  - China is one of the leading players in blockchain innovation
  - China files the most blockchain innovation patterns
- On the other hand
  - The quality of the innovations is less satisfactory
  - Only 19% are approved (as compared to 43% in South Korea)

## Mixed results on the effectiveness

- On one hand
  - China is one of the leading players in blockchain innovation
  - China files the most blockchain innovation patterns
  - An increasing number of firms registered to provide blockchain product / service (1,579 in Beijing)
- On the other hand
  - The quality of the innovations is less satisfactory
  - Only 19% are approved (as compared to 43% in South Korea)
  - Many are speculative and cannot deliver any product (only 476 officially registered blockchain projects, 0.3 projects / blockchain company)

- What's special about blockchain technology
  - Nascent and leading-edge technology
  - Aiming the leader's role

- What's special about blockchain technology
- **Research Question**
  - Can government promote the nascent technology innovation?
  - If so, how large should the governments' role be?



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  - Can government promote the nascent technology innovation?
  - If so, how large should the governments' role be?
- A more fundamental question...
  - “For [leading-edge] countries...what are the most effective policies for stimulating technological innovation?” (Bloom et al., 2019, pp.163.)

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- A more fundamental question...
  - “For [leading-edge] countries...what are the most effective policies for stimulating technological innovation?” (Bloom et al., 2019, pp.163.)
- In this paper
  - Classify corporate blockchain related announcement into speculative and non-speculative.
  - Related government support to 1) the determinants, 2) market reactions, and 3) long term policy and performance changes

- Rationales for government support
  - Spillover effects
  - Financial constraint
  - Consumers' benefit

- Rationales for government support
- Challenges
  - Edge-leading innovation
    - Security and privacy protection issues (Zhang et al., 2019)
    - Scalability concerns (Zhou et al., 2020)
    - Uncertainties in business applications
  - ➔ International evidence on blockchain speculation to ride on cryptocurrency hypes (Cheng et al., 2019; Autore et al., 2020; Akyildirim et al., 2020; Cahill et al., 2020; Cioroianu et al., 2021)

- Rationales for government support
- Challenges
  - Edge-leading innovation
  - Government-guided
    - Information disadvantage
    - High administrative and monitoring cost
    - Less transparent than market-oriented policies
    - Favorism
  - ➔ Government may not be able to distinguishing speculative firms and non-speculative ones
  - ➔ Incentives to ride on government support through speculative announcements

- Hypotheses 1

Hypothesis 1a: The likelihood of that the company issuing blockchain-related announcements increase with government support intensity.

Hypothesis 1b: The government support encourages more speculative announcements than the non-speculative ones.

- Cryptocurrency ban in China
  - Disentangles announcement return from cryptocurrency market performance
  - Market reacts based on project and firm quality

- Cryptocurrency ban in China
- Trust issues and skeptical investors
  - Fraud
  - Insider trading
  - Internet lending scandals
  - Etc..



- Cryptocurrency ban in China
- Trust issues and skeptical investors
- Blockchain related announcements
  - Whether firms truly engage in blockchain projects?
  - No: poor-performing firm in pursuit support of local government
  - Yes: estimate the quality of the firm and project → R&D capacity

- Cryptocurrency ban in China
- Trust issues and skeptical investors
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  - Whether firms truly engage in blockchain projects?
  - No: poor-performing firm in pursuit support of local government
  - Yes: estimate the quality of the firm and project → R&D capacity
- Government support
  - More speculations
  - → Negative assessment

- Hypotheses 1

Hypothesis 1a: The likelihood of that the company issuing blockchain-related announcements increase with government support intensity.

Hypothesis 1b: The government support encourages more speculative announcements than the non-speculative ones.

- Hypotheses 2

Hypothesis 2a: Market reacts negatively (positively) to speculative (non-speculative) blockchain announcements. The market reactions are negatively related with government support intensity.

Hypothesis 2b: Other things being equal, blockchain-related announcement return is positively correlated with firms' R&D intensity.

- Government support
  - More government support following blockchain announcement
  - Stronger for non-speculative firms

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- R&D intensity
  - Increased R&D intensity following blockchain announcement
  - Non-speculative firms only
- Abuse government support
  - Abuse of government support through tunnelling related activities and deteriorated accounting performance following blockchain announcement
  - Stronger for speculative firms

- Hypotheses 1

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- Hypotheses 3

H3: Both non-speculative and speculative announcements are positively correlated with subsequent increased government supports. The former is followed by intensive R&D activities, while the latter is associated with heavily insiders' rent seeking.

- Corporate blockchain-related announcement
  - Data from CNRDS between 2016-2020
  - Even study: 872 announcements from 382 listed firms

<b>Year</b>	<b>Non Speculative</b>	<b>Speculative</b>	<b>Total</b>
<b>2016</b>	<b>2</b>	<b>22</b>	<b>24</b>
<b>2017</b>	<b>7</b>	<b>62</b>	<b>69</b>
<b>2018</b>	<b>40</b>	<b>193</b>	<b>233</b>
<b>2019</b>	<b>53</b>	<b>199</b>	<b>252</b>
<b>2020</b>	<b>47</b>	<b>247</b>	<b>294</b>
<b>Total</b>	<b>149</b>	<b>723</b>	<b>872</b>

- 687 firm-year observations
- 1:1 industry-year-size matching (-55)
- Firm-year matched sample:  $632 * 2 = 1,264$  observations



- Corporate blockchain-related announcement
  - Data from CNRDS between 2016-2020
- Commitment to blockchain
  - Speculative announcements: cheap-talks
    - Vague plans for blockchain innovation
    - Cooperation arrangements with third-party blockchain service providers
    - Disclosing the blockchain background of the executives
  - Non-speculative announcements: verifiable applications
    - Name and usage of blockchain service / products
    - Or income generated
- Consistent with literature (Cheng et al., 2019; Autore et al., 2020; Cioroianu et al., 2021)

Industry	Non Speculative	Speculative	Number	%
Agriculture, forestry, livestock farming, fishery	1	5	6	0.69
Mining	1	3	4	0.46
<b>Manufacturing</b>	<b>35</b>	<b>238</b>	<b>273</b>	<b>31.31</b>
Utilities	1	10	11	1.26
Construction	3	13	16	1.83
Wholesale and retail trade	10	29	39	4.47
Transportation, storage, and post	7	21	28	3.21
Hotel and accommodation	0	1	1	0.11
<b>Information transmission, software and IT service</b>	<b>46</b>	<b>260</b>	<b>306</b>	<b>35.09</b>
<b>Finance</b>	<b>32</b>	<b>71</b>	<b>103</b>	<b>11.81</b>
Real estate	2	13	15	1.72
Lease and business service	4	22	26	2.98
Scientific research and technical service industry	2	9	11	1.26
Water, environment and public facility	0	4	4	0.46
Transport, Post and Telecommunication Services, and Service Industry	0	1	1	0.11
Education	0	4	4	0.46
Sanitation and social service	4	1	5	0.57
Culture, sports and entertainment	1	17	18	2.06
Comprehensive service	0	1	1	0.11
<b>Total</b>	<b>149</b>	<b>723</b>	<b>872</b>	<b>100</b>

- Government support intensity
  - Policy:
    - Subsidies
    - Tax policies
    - Other policies aimed at human capital
    - Intellectual property protection
    - Competition
    - Measure: # of blockchain promoting policies / population
    - Data from: 01Blockchain

- Government support intensity
  - Policy: # of blockchain promoting policies / population
  - Public Fund:
    - Government Guided Investment Fund (GGIFs) in China
    - GGIFs as financial tool to promote the policy goals of central government (Pan et al., 2021)
    - Measure: GGIF amount / GDP
    - Data: Zero2IPO dataset

- Government support intensity
  - Policy: # of blockchain promoting policies / population
  - Public Fund: GGIF amount / GDP
  - Government Procurement:
    - Government spurs innovation through public procurement of goods and service (Baark, 2019; Beraja et al., 2022)
    - Measure: # of blockchain related procurement / population
    - Data: Government Procurement Website ([www.ccgp.gov.cn](http://www.ccgp.gov.cn))

- Government support intensity
  - Policy: # of blockchain promoting policies / population
  - Public Fund: GGIF amount / GDP
  - Government Procurement: # of blockchain related procurement / population
  - Comprehensive measure: the first principal component

# Data and Variables



IDEAS  
Innovation in Education and Learning

Faculty of  
Business  
工商管理學院

School of  
ACCOUNTING  
& FINANCE  
會計及金融學院

Year	Policy	Fund	Procurement	Government	Non Speculative	Speculative	Total
Shanghai	0.139	0.030	0.085	0.191	9	48	57
Yunnan	0.017	0.068	0.213	-0.181	0	1	1
Inner Mongolia	0.136	0.059	0.000	0.110	0	3	3
<b>Beijing</b>	<b>0.277</b>	<b>0.596</b>	<b>0.533</b>	<b>4.950</b>	<b>37</b>	<b>140</b>	<b>177</b>
Jilin	0.046	0.013	0.128	-0.441	0	9	9
Sichuan	0.036	0.070	0.016	-0.507	4	16	20
Tianjin	0.106	0.032	0.057	-0.099	3	12	15
Ningxia	0.145	0.027	0.051	0.137	0	4	4
Anhui	0.045	0.056	-0.046	-0.550	2	9	11
Shandong	0.020	0.039	0.083	-0.610	8	37	45
Shanxi	0.022	0.090	0.000	-0.548	0	6	6
Guangdong	0.044	0.125	0.104	0.024	31	151	182
Guangxi	0.060	0.064	0.322	0.366	1	5	6
Xinjiang	0.000	0.224	0.000	-0.059	0	16	16
Jiangsu	0.051	0.042	0.012	-0.543	13	64	77
Jiangxi	0.043	0.081	0.031	-0.368	0	4	4
Hebei	0.027	0.017	0.028	-0.799	3	7	10
Henan	0.008	0.047	0.029	-0.783	1	8	9
Zhejiang	0.131	0.081	0.006	0.190	15	74	89
<b>Hainan</b>	<b>0.229</b>	<b>0.124</b>	<b>0.115</b>	<b>1.346</b>	<b>0</b>	<b>7</b>	<b>7</b>
Hubei	0.024	0.032	0.014	-0.779	2	20	22
Hunan	0.018	0.023	0.000	-0.897	1	12	13
Gansu	0.069	0.253	0.404	1.532	0	3	3
Fujian	0.064	0.041	0.119	-0.204	7	36	43
<b>Tibet</b>	<b>0.000</b>	<b>0.010</b>	<b>0.000</b>	<b>-1.086</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Guizhou</b>	<b>0.136</b>	<b>0.316</b>	<b>0.136</b>	<b>1.666</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>Liaoning</b>	<b>0.014</b>	<b>0.026</b>	<b>0.000</b>	<b>-0.913</b>	<b>7</b>	<b>11</b>	<b>18</b>
Chongqing	0.076	0.021	0.024	-0.440	0	3	3
Shaanxi	0.031	0.091	0.000	-0.483	1	7	8
Qinghai	0.099	0.110	0.000	0.094	0	1	1
Heilongjiang	0.034	0.015	0.215	-0.314	3	9	12
Total	0.069	0.091	0.088	0.000	149	723	872

- Summary stats

	(a) Blockchain=0			(b) Non Speculative				(c) Speculative			
	Obs	Mean	S.D.	Obs	Mean	S.D.	Diff(a-b)	Obs	Mean	S.D.	Diff(a-c)
Government	632	0.910	2.314	96	1.702	3.289	-0.791***	536	1.328	2.760	-0.418***
Policy	632	0.127	0.113	96	0.151	0.142	-0.024*	536	0.138	0.128	-0.011
Fund	632	0.146	0.190	96	0.198	0.241	-0.052**	536	0.189	0.221	-0.043***
Procurement	632	0.187	0.375	96	0.345	0.571	-0.158***	536	0.244	0.461	-0.057**



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Policy	632	0.127	0.113	96	0.151	0.142	-0.024*	536	0.138	0.128	-0.011
Fund	632	0.146	0.190	96	0.198	0.241	-0.052**	536	0.189	0.221	-0.043***
Procurement	632	0.187	0.375	96	0.345	0.571	-0.158***	536	0.244	0.461	-0.057**
R&D	632	24.179	19.950	96	30.675	20.490	-6.496***	536	26.604	18.720	-2.424**
Size	632	22.170	1.189	96	22.486	1.392	-0.316**	536	22.111	1.142	0.059
Leverage	632	0.403	0.203	96	0.399	0.182	0.004	536	0.385	0.184	0.018
ROA	632	0.055	0.087	96	0.056	0.073	-0.001	536	0.050	0.079	0.005
State	632	0.290	0.454	96	0.229	0.423	0.060	536	0.207	0.406	0.083***
Age	632	19.116	5.799	96	18.635	5.147	0.480	536	19.129	4.957	-0.013
Duality	632	0.326	0.469	96	0.406	0.494	-0.080	536	0.386	0.487	-0.060**
Bigfour	632	0.065	0.247	96	0.052	0.223	0.013	536	0.035	0.185	0.030**
Standard	632	0.946	0.226	96	0.927	0.261	0.019	536	0.959	0.199	-0.013
GDP	632	9.644	3.751	96	10.337	3.946	-0.694*	536	10.146	3.572	-0.502**
Population	632	0.619	0.347	96	0.633	0.379	-0.014	536	0.643	0.377	-0.025

Y=Blockchain	(1)	(2)	(3)	(4)
Government	0.122*** (0.019)			
Policy		1.575*** (0.594)		
Fund			1.356*** (0.143)	
Procurement				0.565*** (0.105)
Controls	Yes	Yes	Yes	Yes
Matching Pair FE	Yes	Yes	Yes	Yes
Observations	1,264	1,264	1,264	1,264
Pseudo R-squared	0.0656	0.0549	0.0671	0.0626

- Conditional logit regression
- A one standard deviation (2.604) higher government support index **increases** the odds that a firm makes blockchain-related announcement by **33.79%** ( $=2.604 * \exp(0.122) - 1$ )
- A firm in Beijing (government=4.905) has a **77.74% higher odds** of announcing blockchain related news than a firm from Tibet (government=-1.086)

# Determinants



Y=Blockchain	(1)	(2)	(3)	(4)
Government	0.122*** (0.019)			
Policy		1.575*** (0.594)		
Fund			1.356*** (0.143)	
Procurement				0.565*** (0.105)
<b>R&amp;D</b>	<b>0.010***</b> <b>(0.003)</b>	<b>0.010***</b> <b>(0.002)</b>	<b>0.010***</b> <b>(0.003)</b>	<b>0.010***</b> <b>(0.002)</b>
Leverage	-0.374 (0.360)	-0.388 (0.353)	-0.407 (0.348)	-0.398 (0.370)
ROA	-0.882 (1.183)	-0.969 (1.188)	-0.861 (1.131)	-0.933 (1.215)
<b>State</b>	<b>-0.520***</b> <b>(0.184)</b>	<b>-0.483***</b> <b>(0.177)</b>	<b>-0.530***</b> <b>(0.187)</b>	<b>-0.490***</b> <b>(0.172)</b>
Age	0.023*** (0.008)	0.018** (0.008)	0.024*** (0.007)	0.020** (0.009)
<b>Duality</b>	<b>0.188***</b> <b>(0.068)</b>	<b>0.168***</b> <b>(0.051)</b>	<b>0.177***</b> <b>(0.067)</b>	<b>0.199***</b> <b>(0.070)</b>
<b>Bigfour</b>	<b>-0.781***</b> <b>(0.159)</b>	<b>-0.771***</b> <b>(0.139)</b>	<b>-0.783***</b> <b>(0.163)</b>	<b>-0.778***</b> <b>(0.141)</b>
Standard	0.160 (0.306)	0.175 (0.299)	0.162 (0.307)	0.134 (0.304)
GDP	0.010 (0.016)	0.025 (0.026)	0.017 (0.011)	0.033** (0.016)
Population	0.656*** (0.048)	0.615*** (0.060)	0.568*** (0.059)	0.550*** (0.029)
Matching Pair FE	Yes	Yes	Yes	Yes
Observations	1,264	1,264	1,264	1,264
Pseudo R-squared	0.0656	0.0549	0.0671	0.0626

# Determinants



Y=	(1) NonSpec	(2) Spec	(3) NonSpec	(4) Spec	(5) NonSpec	(6) Spec	(7) NonSpec	(8) Spec
Government	0.098 (0.093)	0.128*** (0.040)						
Policy			-2.911 (2.948)	2.170** (1.069)				
Fund					0.784 (1.054)	1.492*** (0.411)		
Procurement							0.969* (0.519)	0.486** (0.211)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Matching Pair FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,264	1,264	1,264	1,264	1,264	1,264	1,264	1,264
Pseudo R-squared	0.0937	0.0937	0.0861	0.0861	0.0962	0.0962	0.0910	0.0910

- Matching pair fixed effect multinomial Logit regression
- Stronger government support promotes more **speculative announcements**
- All three dimensions significantly promotes **speculative announcement**
- Public **procurement** can significantly increases non-speculative announcement

# Determinants



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Fund					0.784 (1.054)	1.492*** (0.411)		
Procurement							0.969* (0.519)	0.486** (0.211)
R&D	0.046*** (0.015)	0.005 (0.004)	0.051*** (0.016)	0.006 (0.004)	0.047*** (0.015)	0.005 (0.004)	0.046*** (0.015)	0.005 (0.004)
Leverage	-1.205 (1.351)	-0.232 (0.413)	-1.267 (1.318)	-0.228 (0.412)	-1.170 (1.326)	-0.262 (0.412)	-1.407 (1.444)	-0.265 (0.412)
ROA	0.283 (2.756)	-1.101 (0.854)	0.900 (2.733)	-1.211 (0.852)	0.527 (2.750)	-1.112 (0.854)	-0.329 (2.818)	-1.162 (0.857)
State	-0.722 (0.500)	-0.525*** (0.182)	-0.747 (0.539)	-0.498*** (0.180)	-0.745 (0.522)	-0.539*** (0.183)	-0.694 (0.506)	-0.486*** (0.181)
Age	-0.020 (0.035)	0.031** (0.013)	-0.020 (0.034)	0.027** (0.013)	-0.019 (0.035)	0.033** (0.013)	-0.021 (0.036)	0.028** (0.013)
Duality	0.108 (0.433)	0.209 (0.141)	0.080 (0.446)	0.187 (0.139)	0.080 (0.438)	0.203 (0.141)	0.177 (0.432)	0.213 (0.140)
Bigfour	-2.152*** (0.766)	-0.614* (0.320)	-2.207*** (0.668)	-0.603* (0.316)	-2.198*** (0.744)	-0.606* (0.318)	-2.064** (0.844)	-0.613* (0.319)
Standard	-1.568 (1.195)	0.405 (0.308)	-1.459 (1.156)	0.413 (0.309)	-1.595 (1.219)	0.418 (0.306)	-1.514 (1.105)	0.358 (0.309)
GDP	0.017 (0.068)	0.011 (0.025)	0.130 (0.082)	0.014 (0.029)	0.035 (0.060)	0.016 (0.024)	0.011 (0.059)	0.038* (0.022)
Population	2.189*** (0.668)	0.556** (0.217)	1.824*** (0.648)	0.570** (0.245)	2.106*** (0.666)	0.471** (0.207)	2.225*** (0.678)	0.418** (0.207)
Matching Pair FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,264	1,264	1,264	1,264	1,264	1,264	1,264	1,264
Pseudo R-squared	0.0937	0.0937	0.0861	0.0861	0.0962	0.0962	0.0910	0.0910

- Endogeneities
  - Reverse causality
  - Omitted variables?
    - Regional features that affect both corporate announcement and government support
    - Rescaled government support measures by population or GDP
    - Controlled per capita GDP

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  - Reverse causality
  - Omitted variables?
    - Regional features that affect both corporate announcement and government support
    - Rescaled government support measures by population or GDP
    - Controlled per capita GDP
- IV Identification: whether the provincial leader holds a PhD degree
  - Related to government support  $\checkmark$
  - Do not directly affect corporate announcement  $\checkmark$
  - Independent from the possibly omitted regional features (Li and Zhou, 2005)  $\checkmark$

	(1)	(3)	(5)	(7)
Y=	Government	Government	Government	Government
PhD	2.000*** (0.133)	1.999*** (0.133)	2.057*** (0.097)	2.201*** (0.180)
$\widehat{\text{Government}}$				
Firm Characteristics	Yes	Yes	Yes	Yes
Governance	No	Yes	Yes	Yes
Regional Controls	No	No	Yes	Yes
Matching Pair FE	No	No	No	Yes
Observations	1,264	1,264	1,264	1,264
Wald F				
10% maximal IV size				

- Provincial leader's PhD degree **positively** predicts local government support of blockchain as expected



	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Y=	Government	Blockchain	Government	Blockchain	Government	Blockchain	Government	Blockchain
PhD	2.000*** (0.133)		1.999*** (0.133)		2.057*** (0.097)		2.201*** (0.180)	
$\widehat{Government}$		0.045*** (0.014)		0.045*** (0.014)		0.032** (0.015)		0.058** (0.028)
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Governance	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Regional Controls	No	No	No	No	Yes	Yes	Yes	Yes
Matching Pair FE	No	No	No	No	No	No	Yes	Yes
Observations	1,264	1,264	1,264	1,264	1,264	1,264	1,264	1,264
Wald F		224.529		225.048		420.333		291.009
10% maximal IV size		16.38		16.38		16.38		16.38

- Wald F **larger** than the Stock-Yogo threshold → Relevance between IV and government support
- Instrumented government support measure **positively** predicts corporate blockchain announcement

- Standard event study model (Dodd and Warner, 1983)

Event window	CAR	T-test	Wilcoxon signed-rank test
[0,1]	-0.298%	-1.509	-1.118
[0,2]	-0.402%	-1.657*	-1.244
[0,3]	-0.683%	-2.507**	-2.615***
[0,4]	-0.729%	-2.429**	-2.384**
[0,5]	-0.731%	-2.241**	-2.441**
[-1,1]	-0.414%	-1.824*	-1.362
[-1,2]	-0.517%	-1.953*	-1.482
[-1,3]	-0.798%	-2.731***	-2.618***
[-1,4]	-0.844%	-2.677***	-2.903***
[-1,5]	-0.847%	-2.486**	-2.751***

- Significantly **negative** announcement return at conventional confidence level

- Standard event study model (Dodd and Warner, 1983)

Event window	Non Speculative		
	CAR	T-test	Wilcoxon signed-rank test
[0,1]	0.186%	0.359	0.755
[0,2]	0.648%	0.963	1.177
[0,3]	0.522%	0.683	0.659
[0,4]	0.293%	0.344	0.637
[0,5]	0.314%	0.327	0.416
[-1,1]	0.192%	0.317	0.372
[-1,2]	0.655%	0.890	1.319
[-1,3]	0.529%	0.646	0.562
[-1,4]	0.300%	0.335	0.227
[-1,5]	0.320%	0.324	0.574

- **Positive** but insignificant announcement for non-speculative firms

- Standard event study model (Dodd and Warner, 1983)

Event window	Non Speculative			Speculative			Difference
	CAR	T-test	Wilcoxon signed-rank test	CAR	T-test	Wilcoxon signed-rank test	Non Spec - Speculative
[0,1]	0.186%	0.359	0.755	-0.395%	-1.854*	-1.553	0.581%
[0,2]	0.648%	0.963	1.177	-0.613%	-2.381**	-1.946*	1.261%*
[0,3]	0.522%	0.683	0.659	-0.925%	-3.211***	-3.170***	1.447%**
[0,4]	0.293%	0.344	0.637	-0.934%	-2.947***	-2.877***	1.227%
[0,5]	0.314%	0.327	0.416	-0.941%	-2.759***	-2.873***	1.255%
[-1,1]	0.192%	0.317	0.372	-0.536%	-2.199**	-1.654*	0.728%
[-1,2]	0.655%	0.890	1.319	-0.753%	-2.679***	-2.190**	1.408%**
[-1,3]	0.529%	0.646	0.562	-1.065%	-3.443***	-3.123***	1.594%**
[-1,4]	0.300%	0.335	0.227	-1.074%	-3.226***	-3.254***	1.374%
[-1,5]	0.320%	0.324	0.574	-1.081%	-3.027***	-3.215***	1.402%

- Positive but insignificant announcement for non-speculative firms
- Significantly **negative** announcement for speculative firms

➔ Market participants interpret the firms' blockchain announcement conditional on their opportunistic actions.

# Cross sectional differences



Y=100*CAR[0,3]	OLS				Heckman
	(1)	(2)	(3)	(4)	(5)
Government	-0.328*** (0.090)				-0.625** (0.232)
Policy		-5.770** (2.657)			
Fund			-2.726*** (0.897)		
Procurement				-1.761*** (0.507)	
R&D	0.050*** (0.004)	0.049*** (0.005)	0.051*** (0.004)	0.049*** (0.004)	0.021 (0.016)
IMR					-10.568 (6.429)
Other controls	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Constant	2.431 (3.534)	2.611 (3.648)	3.297 (3.465)	2.985 (3.730)	9.255 (10.600)
Observations	681	681	681	681	611
R-squared	0.054	0.050	0.051	0.055	0.066

- **Government support** negative predicts announcement return
- Higher **R&D** intensity has significantly positive impacts on announcement return

- Staggered DiD setting
  - For each matching pair, we use observations from one year prior to and following blockchain announcement
  - Treated: firms making blockchain-related announcement
  - Control: matching firms without announcement
  - Pre-treatment: one-year prior to the announcement
  - Post-treatment: one-year following the announcement
  - Staggered nature: the announcement year differs across matching pairs

- Staggered DiD setting
- Baseline model
  - $CorpPolicies_{i,t} = \beta_0 + \beta_1 PostBC_{i,t} + \beta_2 Controls_{i,t-1} + \lambda_i + \tau_t$
  - *CorpPolicies* includes Subudisy, R&D intensity, related party transaction (RPT), and ROA
  - PostBC is the staggered DiD term
  - Twoway FEs

- Staggered DiD setting
- Baseline model
  - $CorpPolicies_{i,t} = \beta_0 + \beta_1 PostBC_{i,t} + \beta_2 Controls_{i,t-1} + \lambda_i + \tau_t$
  - *CorpPolicies* includes Subudisy, R&D intensity, related party transaction (RPT), and ROA
  - PostBC is the staggered DiD term
  - Twoway FEs
- Extended model
  - Examine speculative and non-speculative announcement separately
  - Replace *PostBC* with *PostSpec* and *PostNonSpec*



# Long run performance



Y=	(1) Subsidy	(2) R&D	(3) RPT	(4) ROA
PostBC	0.001 (0.014)	0.256 (0.344)	0.003** (0.001)	-0.016*** (0.005)
Firm Characteristics	Yes	Yes	Yes	Yes
Governance	Yes	Yes	Yes	Yes
Regional Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Constant	0.183 (0.340)	39.761* (19.187)	-0.008 (0.155)	-0.187 (0.425)
Observations	2,044	2,084	2,001	2,044
R-squared	0.511	0.945	0.753	0.594

- Insignificant changes in subsidy and R&D around announcement
- Intensified **related party transactions** following announcement
- Deteriorated **accounting performance** following announcement
  - Non trivial decrease
  - Average ROA in the matched sample is 4.19%
  - 38.19% decrease in ROA

# Long run performance



Y=	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Subsidy							
PostNonSpec	0.028*							
	(0.013)							
PostSpec		-0.008						
		(0.013)						
Firm Characteristics	Yes	Yes						
Governance	Yes	Yes						
Regional Controls	Yes	Yes						
Firm FE	Yes	Yes						
Year FE	Yes	Yes						
Constant	0.188	0.176						
	(0.325)	(0.337)						
Observations	2,044	2,044						
R-squared	0.512	0.511						

- Only **non-speculative** firms receive significantly more **subsidies** → government screening

# Long run performance



Y=	(1)	(2)	(3)	(4)
	Subsidy		R&D	
PostNonSpec	0.028*		1.256	
	(0.013)		(1.393)	
PostSpec		-0.008		-0.120
		(0.013)		(0.382)
Firm Characteristics	Yes	Yes	Yes	Yes
Governance	Yes	Yes	Yes	Yes
Regional Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Constant	0.188	0.176	39.526*	39.711*
	(0.325)	(0.337)	(19.182)	(19.272)
Observations	2,044	2,044	2,084	2,084
R-squared	0.512	0.511	0.945	0.945

- Only non-speculative firms receive significantly more subsidies → government screening
- Positive but **insignificant** increase in R&D for non-speculative firms → limited impacts

# Long run performance



Y=	(1)	(2)	(3)	(4)	(5)	(6)
	Subsidy		R&D		RPT	
PostNonSpec	0.028*		1.256		0.004	
	(0.013)		(1.393)		(0.005)	
PostSpec		-0.008		-0.120		0.004***
		(0.013)		(0.382)		(0.001)
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Governance	Yes	Yes	Yes	Yes	Yes	Yes
Regional Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.188	0.176	39.526*	39.711*	0.015	0.017
	(0.325)	(0.337)	(19.182)	(19.272)	(0.142)	(0.144)
Observations	2,044	2,044	2,084	2,084	2,036	2,036
R-squared	0.512	0.511	0.945	0.945	0.750	0.751

- Only non-speculative firms receive significantly more subsidies → government screening
- Positive but insignificant increase in R&D for non-speculative firms → limited impacts
- Only **speculative** firms significantly **increase RPT** → **abuse** government support

# Long run performance



Y=	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Subsidy		R&D		RPT		ROA	
PostNonSpec	0.028*		1.256		0.004		-0.005	
	(0.013)		(1.393)		(0.005)		(0.013)	
PostSpec		-0.008		-0.120		0.004***		-0.014**
		(0.013)		(0.382)		(0.001)		(0.006)
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Governance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.188	0.176	39.526*	39.711*	0.015	0.017	-0.173	-0.183
	(0.325)	(0.337)	(19.182)	(19.272)	(0.142)	(0.144)	(0.414)	(0.414)
Observations	2,044	2,044	2,084	2,084	2,036	2,036	2,044	2,044
R-squared	0.512	0.511	0.945	0.945	0.750	0.751	0.592	0.593

- Only non-speculative firms receive significantly more subsidies → government screening
- Positive but insignificant increase in R&D for non-speculative firms → limited impacts
- Only speculative firms significantly increase RPT → abuse government support
- Only **speculative** firms face significantly **lowered ROA** → **deteriorated** performance

# Robustness: BitCoin



$Y=100*CAR[0,3]$	(1)	(2)	(3)	(4)
Government	-0.330*** (0.092)	-0.326*** (0.091)	-0.335*** (0.093)	-0.329*** (0.090)
CoinPriorWeek	-1.418 (3.990)			
CoinNextWeek		1.538 (2.083)		
CoinPriorMonth			-1.852 (1.749)	
CoinNextMonth				0.177 (0.859)
Firm Characteristics	Yes	Yes	Yes	Yes
Governance	Yes	Yes	Yes	Yes
Regional Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Constant	-0.560 (5.077)	-0.510 (4.827)	-0.464 (4.974)	-0.423 (4.740)
Observations	681	681	681	681
R-squared	0.054	0.054	0.056	0.054

- Negative relationship between **government support** and announcement return
- Insignificant impacts of BitCoin performance on announcement return

# Robustness: Alternative settings



Y=	(1)	(2)	(3)	(4)	(5)	(6)
	Blockchain	Government_yr	Government	NonSpec	Spec	100*CAR[0,3]
Government_yr	0.156*** (0.037)			0.103 (0.148)	0.172*** (0.055)	-0.431*** (0.094)
PhD		1.078*** (0.143)				
$\widehat{Government\_yr}$			0.119** (0.058)			
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Governance	Yes	Yes	Yes	Yes	Yes	Yes
Regional Controls	Yes	Yes	Yes	Yes	Yes	Yes
Matching Pair FE	Yes	Yes	Yes	Yes	Yes	n.a.
Industry FE	n.a.	n.a.	n.a.	n.a.	n.a.	Yes
Observations	1,264	1,304	1,260	1,264	1,264	681
(Pseudo) R-squared	0.064			0.093	0.093	0.054
Wald F			97.851			
10% maximal IV size			16.38			

- Government support **facilitates more announcement**, especially speculative ones
- Government support **negatively predict announcement return**

# Robustness: Alternative settings



	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Y=100*	CAR[0,1]	CAR[0,2]	CAR[0,4]	CAR[0,5]	CAR[-1,1]	CAR[-1,2]	CAR[-1,3]	CAR[-1,4]	CAR[-1,5]
Government	-0.253*** (0.079)	-0.257** (0.093)	-0.379*** (0.094)	-0.534*** (0.104)	-0.203** (0.075)	-0.207* (0.099)	-0.278** (0.107)	-0.329** (0.115)	-0.484*** (0.120)
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Governance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.821 (2.894)	4.759 (2.990)	-3.454 (6.413)	-3.323 (4.540)	6.342 (4.188)	6.280** (2.594)	1.097 (3.267)	-1.933 (4.697)	-1.802 (3.300)
Observations	681	681	681	681	681	681	681	681	681
R-squared	0.051	0.052	0.053	0.052	0.065	0.062	0.062	0.061	0.058

- Government support **negatively predict announcement return**



- Complicated role of government support in promoting leading-edge innovation
  - Government support significantly **promote corporate blockchain-related innovations**
  - **Invites more speculative** innovation that non-speculative ones
  - **Negative** market reaction to stronger government support
  - Government attempts to **screen out speculative firms** in providing subsidy
  - Government support **fails to significantly promoted corporate R&D** intensity, and it is **abused** by some of the speculative firms.
- ➔ Government support can promote leading-edge innovations, but the efficiency may not be fully desirable.

- Government-led innovation
  - Complicated role
  - Costs and benefits of the government-led innovation strategy
- Valuation creation of blockchain technology
  - From riding on crypto mania to riding on government support
- Government intervention on firm's operation
  - Speculative firms' disclosure behaviors to take advantage of government supports
- Policy implication
  - The wisdom of the market participants.
  - Exploit market sophistication in interpreting corporate statements
  - Market-based government support



# Thank you

[xiaoyangben.li@polyu.edu.hk](mailto:xiaoyangben.li@polyu.edu.hk)