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The antitrust crackdown on big tech: A cross-country analysis of regulatory efficacy as reflected in the securities market

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Introduction

8 Types of Antitrust Misconducts

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Big Tech Dominance

- big tech firms have already obtained considerable market powers in a couple of major platform services.

PLATFORM	COMPANY	MARKET SHARE
APP MARKET	Apple Store	62.4%
	Google Play	33.3%
SEARCH ENGINE	Google	86.2%
ONLINE AD	Google (search)	86%
	Meta (social media)	90%
	Youtube (video)	59%
E-COMMERCE	Taobao (Alibaba)	15%
	Tmall (Alibaba)	14%
	Amazon	13%
STREAM VIDEO	Netflix	20%
	Prime Video (Amazon)	14%
	Tencent Video	12%
STREAM MUSIC	Spotify	32%
	Apple Music	16%
	Amazon Music	13%

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Big Tech Firms' Share Prices (% changes, ytd), 2021

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Waves of Antitrust Crackdown

- Big tech firms' maneuvers of dominance demonstrate a high level of resemblance amid market dynamics and political-institutional variance.
- Their anticompetitive behaviors are hardly deterred by traditional antitrust rules because of their network characteristics
- We compared three political entities actively reigning in big tech—the United States (US), the European Union, and China—and assessed their enforcement efficacy.

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Big Tech Dominance

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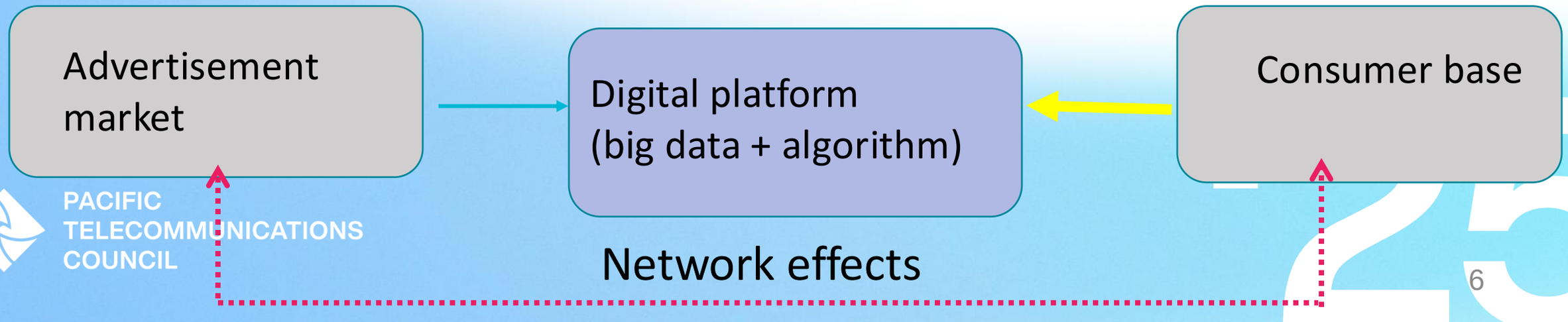
1. 3 economic features: 1. network effects; 2. multi-sidedness; 3. multi-homing.
2. big techs have incentive to engage in strategic practices in safeguarding their dominance amid the volatility and blurred boundaries of digital business and multi-homing.



Eight Anticompetitive Conducts

- 1. Self-preferencing (demoting);
- 2. Tying of services (Bundling);
- 3. Exclusivity contract;
- 4. Non-interoperability;
- 5. Unfair collection and use of data;
- 6. Algorithmic discrimination;
- 7. Anticompetitive price-related conducts;
- 8. merger & acquisition (M&A).

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International Experience

Correction Measures & Antitrust Regimes

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US Antitrust Cases, 2020~2021

Firm	Plaintiff/date	Allegation	Status
Google	DoJ+12 states (Oct. 20, 2020)	engaging in anticompetitive behavior by paying Apple between US$8 and 12 billion to have Chrome set as the default search engine on iPhones.	Non-jury trial began on Sep 12, 2023.
Meta	FTC (Dec. 9, 2020)	illegal monopolization of the social networking market by acquiring Instagram and WhatsApp. FTC requested the divesture of Instagram and WhatsApp from Meta.	Dismissed on Jun. 28, 2021, revived on Jan. 11, 2022. Still pending.
Google	Texas-led 10 states (Dec. 16, 2020)	illegal digital advertising monopoly and negotiated with Meta for preferential treatment.	Pending.
Google	40 states (Dec. 17, 2020)	manipulating its search results to ensure its own products and services were ranked higher than those of their rivals.	Google denied destruction of evidence. Status conference to be held on Aug. 24, 2022.
Google	DC, Texas, Washington & Indiana (Jan. 24, 2022)	making misleading promises about its users' ability to turn off location tracking during movement from 2014-2020.	Google agreed to US$391.5 million settlement with 40 states. (Nov. 16, 2022)

EU Antitrust Cases, 2020~2021

FIRM	DATE	ALLEGATION
APPLE	2020.6.16	Forcing app developers to use Apple Pay, which constitutes unfair competition.
AMAZON	2020.11.10	Using nonpublic data gathered from eight million third-party sellers to unfairly compete against them.
APPLE	2021.4.30	Abusing control over the distribution of music-steaming apps, including Spotify.
META	2021.6.5	Unfair competition against digital advertisers.
GOOGLE	2021.6.22	Anticompetitive business practices, including ad brokerage and sharing of user data with advertisers.

China's Antitrust Cases, 2020~2021

Firm	Date	Allegation
Alibaba	2021.4.12	¥18.28 billion fine for "choose one from two" contracting with online sellers
Alibaba, Tencent, Meituan, DiDi	2021.7.7	Illegal M&As from big platforms
Tencent	2021.7.10	M&As with e-sports platforms Huya and Doyu rejected
Tencent	2021.7.13	M&A with search engine Sohu approved
Tencent	2021.7.24	Exclusive copyright licensed to Tencent Music (music platform) rescinded
Meituan	2021.10.8	¥3.42 billion fine for "choose one from two" contracting with online sellers

Statistics of Enforcement, 2020~2021

	CASE	SELREF	TYING	EX	INTER	DATA	ALGO	PRICE	M&A	FINE**
GOOGLE	16	2	9	8	2	4	1	1	0	6
AMAZON	5	0	1	2	0	2	1	1	0	3
FACEBOOK	6	0	1	1	0	3	0	0	2	1
APPLE	13	0	10	1	0	0	1	2	0	3
SUBTOTAL	40	2	21	12	2	9	3	4	2	13
AVERAGE	10	0.5	5.25	3	0.5	2.25	0.75	1	0.5	3.25
ALIBABA	12	1	3	5	4	3	4	2	2	4
TENCENT	21	1	1	4	6	7	3	2	5	4
MEITUAN	5	1	3	3	1	2	2	1	1	2
DIDI	4	1	1	1	1	2	2	1	5	2
BAIDU	3	0	0	1	1	0	1	0	1	1
SUBTOTAL	45	4	8	14	13	14	12	6	11	13
AVERAGE	9	0.8	1.6	2.8	2.6	2.8	2.4	1.2	2.2	2.6
TOTAL	**85**	**6**	**29**	**26**	**15**	**23**	**15**	**10**	**13**	**26**

**: Incidences of fines or settlements

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legal certainty, speed of intervention, and flexibility increase policy effectiveness”

~ The EC’s impact assessment report for the DMA ~

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2 Layers

- **2 layers of influence:** antitrust remedy & antitrust regime
- For an antitrust regime: 1) Enforcement credibility decreases the costs of implementation and enforcement.
- 2) Enforcement agility refers to agencies' capability of making a policy shift in political contingencies.
- There may be a **trade-off** between credibility and agility.

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Antitrust Regimes

	The United States	EU	China
Digital Acts	Numerous drafts	DMA & DSA	Administrative guidelines
Antitrust approach	*Ex post* enforcement	*Ex ante* compliance	*Ex ante* compliance
Regulatory Credibility	**High** credibility due to separation of power limiting administrative discretion	**Moderate** credibility due to imperfect separation of power	**Low** credibility due to lack of separation of power, adequate governance and high political risks
Regulatory Agility	**Low** agility compromised by inflexible enforcement	**Moderate** agility due to strong administration responding to contingency	**High** agility due to strong administration swiftly adapting to contingency

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Empirical Investigation

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Event Study

- Three assumptions: (1) the market is efficient; (2) the event is unanticipated, and (3) no confounding effects occur during the event window.
- The antitrust event is defined as the “announcements of various legal and regulatory action or proposed action,’ including passed legislation, policy initiatives, reform plans, enforcement actions, litigation, negotiations, settlements, or court decisions.”
- Quantitative evaluation on firms’ securities performances could build a basis of comparable and consistent assessments for big tech firms amid different regimes.

Securities Performances, 2020-2021

- Among firms' quantitative indicators, the security performance is **daily generated**, thus capturing the real-time effects borne by regulations.
- Because all 9 big tech firms are listed in the Nasdaq market, we collected their daily trading data from **2020 to 2021** on Nasdaq, when both the U.S. and Chinese big tech firms simultaneously encountered hefty regulatory oversight.

Data

- We collected 9 firms' security performance data, containing daily high price, low price, open price, close price, turnover, volume, turnover ratio, and the release date of financial reports.
- Our database contains 4,679 observations on 496 trading days. We identified 24 competition rulemakings and 85 firm-specific enforcement cases, totaling 109 "first big" antitrust events.
- Because the rulemaking activities are industry-wide and affect all firms, the total antitrust incidences are 194 (= 85 + 11 (US/EU rulemaking) × 4 (US firms) + 13 (CN rulemaking activities) × 5(CN firms)).

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Variable Description

Variable	Value/unit	Definition
ANTITRUST EVENT		
event_flag	Discrete {1, 0}	1 = antitrust event, 0 = none
Eight antitrust remedies (reference, tying, exclusivity, interoperability, data, discrimination, abusive price, M&A)	Discrete {1, 0}	1 = antitrust event, 0 = none
fine	U.S.$ **≥ 0**	The recorded fine/settlement charge for a given antitrust event
ANTITURST REGIME		
WGI	{100, 0}	WGI percentile for each political institution imposing antitrust enforcement or rulemakings
US	{1, 0}	1 = U.S. antitrust event, 0 = other or none
EU	{1, 0}	1 = E.U. or European state antitrust event, 0 = other or none
CN	{1, 0}	1= Chinese antitrust event, 0 = other or none

Variable Description

Variable	Value/unit	Definition
SECURITY PEFORMANCE INDICATOR		
HL price	US$	Daily trading range = a firm's daily high share price – daily low share price
volume	≥ 0	Daily trading volume = the total number of a firm's daily buy shares + daily sell shares
ROE	±%	Percentage change in a firm's daily share prices (= daily return on equity)

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Model

- Under the market efficiency hypothesis and rational expectation hypothesis, investors could expect securities to experience increased volatility (i.e., **high price trading range**) and **low trading activity** with **reduced returns on equity** if they assess the policy risks and uncertainties entailed by an antitrust crackdown.
- The difference in share price often exhibits a random walk

- The event-time regression tests are used to estimate the coefficients on the securities returns, controlling for fixed and confounding effects.

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Event Time Regression

$$y_{it} = \sum_{j=1}^{t} \gamma_j D_{ij} + (\alpha_i + \delta_t) + \rho WGI_i + \sigma T_t + \theta EPU_{it} + \beta X_{it} + \varepsilon_{it}$$

Y_{it}: The percentage change in stock price; *Dij* is the event indicator at trading day t; WGI_i denotes each country's level of enforcement credibility and agility; X_{it} is a set of control variables; *EPUit* denotes global shock from Covid-19; Tt is a time-series variable, controlling for the autocorrelation problem inherent in longitudinal studies; α is the unit (firm)-specific effect; δ is the time-specific effect.

Empirical Results

Monetary penalties render investors the clearest and strongest signals regarding regulatory effects

Estimation on the Coefficients

VARIABLE	(A) DAILY TRADING RANGE	(B) DAILY TRADING RANGE	(C) DAILY TRADING VOLUME	(D) DAILY TRADING VOLUME	(E) % CHANGE IN DAILY ROE	(F) % CHANGE IN DAILY ROE
ANTITRUST EVENTS	15,157** [4,801]	14,367** [4,805]	-7.48e+06 [8.25e+06]	-6.92e+06 [8.26e+06]	-1.466*** [0.392]	omitted
FINES		1.59e-05** [5.51e-06]		0.011 [0.009]		-0.646** [0.189]
SAMPLE SIZE	4,680	4,680	4,680	4,680	4,276	20
R-SQUARE VALUE	0.144***	0.146***	0.049***	0.049***	0.318***	0.920***

- The daily trading range widens by US$14,000 to 15,000 once trustbusters announce an antitrust enforcement action.
- The daily trading range rises by US$16 because the fine or settlement payment amount increases by US$1 million.
- A security's daily return decreases by 0.77% when trustbusters begin an investigation or file antitrust litigation against it.
- a 1% increase in the fine amount causes its daily stock return to drop by 0.65%.

Results

VARIABLE ANTITRUST EVENTS	(G) DAILY TRADING RANGE	(H) DAILY TRADING VOLUME	(I) % CHANGE IN DAILY ROE
SELF-REFERENCING	-1,148 [5,729]	-1.87e+07 [9.83e+06]	0.815 [0.461]
TYING	-2,513 [5,866]	-2.66e+07** [1.01e+07]	0.705 [0.465]
EXCLUSIVITY CONTRACT	5,816 [7,042]	-2.47e+07** [1.21e+07]	-0.649 [0.566]
NON-INTEROPERABILITY	-3,544 [4,662]	1.61e+06 [8.0e+06]	0.177 [0.390]
USE OF NONPUBLIC DATA	6,702* [3,038]	5.45e+06 [5.21e+06]	-1.119*** [0.251]
DISCRIMINATION	-7,063 [6,051]	5.88e+06 [1.04e+07]	-0.330 [0.494]
ANTICOMPETITIVE PRICE	8,148 [7,384]	1.15e+07 [1.27e+07]	0.232 [0.595]
MERGER	5,425 [5,101]	2.71e+06 [8.75e+07]	-0.361 [0.411]

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Data Governance Matters!

- 1) data misuse: Big tech's daily trading range widens by US$6,700 when alleged for data misuse. The enforcement of data mismanagement also decreases the stock return by 0.67%

- *Q1: Why does refraining big tech from unfair data use cause strong impact on the firms' securities performance?*
- ➔ Because data misuse involves both unfair competition and the breach of personal privacy, it is more noticeable to the public and likely to be disciplined than other misconducts.

Tying & Exclusivity Contract Co-functioning

2) tying & exclusivity contract. Because both require a contractual relationship with trading partners, they are often indicted concurrently. The enforcement resulting from these two types of wrongdoing reduces the trading volume by about 51.3 (=26.6+24.7) million shares.

- The evidence suggests that the enforcement against its use of nonpublic data, service tying, and exclusivity contracts effectively causes volatility in its trading price, low trading activity, and a selloff in its stock return.

Antitrust Crackdowns in the United States, the European Union and China

VARIABLE	(J) DAILY TRADING RANGE	(K) DAILY TRADING RANGE	(L) DAILY TRADING VOLUME	(M) DAILY TRADING VOLUME	(N) % CHANGE IN DAILY ROE	(O) % CHANGE IN DAILY ROE
US ANTITRUST EVENTS	-2,931 [9,854]	-1,805 [9,859]	8.29e+06 [1.69e+07]	9.16e+06 [1.70e+07]	0.111 [0.781]	Omitted
EU ANTITRUST EVENTS	9,947 [9,800]	8,481 [9,813]	1.14e+07 [1.69e+07]	1.02e+07 [1.69e+07]	-0.265 [0.777]	0.724 [1.509]
CN ANTITRUST EVENTS	6,036 [5,044]	5,756 [5,043]	2.39e+05 [8.67e+06]	4.57e+05 [8.68e+06]	-0.775* [0.402]	2.172 [3.651]
FINES#		1.40e-05* [5.61e-06]		0.011 [0.010]		-0.679** [0.198]

Monetary Penalty Inciting Strong Effects

- Only Chinese antitrust regime generates a significant and negative coefficient estimate. A targeted platformer experiences a selloff in its daily stock return by 0.54% when Chinese trustbusters adjudicated against it.
- The above effect is absorbed by that of the monetary penalty when estimated jointly.
- A US$1 million increase in the fine amount or settlement payment enlarges the daily trading range by US$14.
- A 1% increase in the fine amount alternatively causes a selloff in a penalized firm's stock return by 0.68%.

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Conclusion

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	effective	With fine imposed
antitrust remedy	1) Ban on unfair data use 2) Penalizing tying of service and exclusivity contract7	
Antitrust Regime	China	Insignificant
fine	√ effectively reining in big tech firms across different regimes.	

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- Monetary penalties send investors a quantified and clear signal regarding the severity of the illegal practices and their potential effect on the corresponding big tech firm.
- Conversely, correction measures entail high monitoring costs in enforcement, making their actual effect on big tech's securities performance somewhat difficult to predict.

- For countries aiming to regulate big tech, monetary penalties should be the regulatory priority due to their efficacy across different regimes.

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Q&A

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