The Impact of Antitrust Enforcement on China's Digital Platforms: Evidence from *SAMR v. Alibaba*

Kenneth Khoo[*]
kenneth.khoo@nus.edu.sg

Sinchit Lai[†]
martin.lai@cityu.edu.hk

Chuyue Tian[‡]
tianchuyue@gmail.com

Abstract

In this article, we explore the dynamics of antitrust enforcement in the Chinese e-commerce platform market by examining the landmark decision of *SAMR v. Alibaba* (2021) using an event study methodology. We find that the announcement of the antitrust investigation leads to a negative impact on Alibaba's abnormal returns, while its competitors experience mixed outcomes, with some showing positive abnormal returns and others showing statistically insignificant changes. However, the announcement of the financial penalty triggers a positive stock market response for Alibaba and a negative response for its competitors, consistent with narratives suggesting that investors adjust their expectations based on new information revealed by the investigation. To assess the cumulative effects of the investigation on Alibaba, we conduct a long-horizon event study, which shows a 17 to 25% decline in Alibaba's abnormal stock returns, with a relatively smaller decrease for its competitors. Additionally, using a synthetic control approach, we identify a 7 to 9% reduction in Alibaba's gross profit margins compared to similar firms. Our findings reveal that the decision has a substantial impact on Alibaba's profitability, with our estimates indicating an effect significantly larger than that observed in comparable studies in the EU and U.S.

1 Introduction

China's Anti-Monopoly Law (AML) came into force in 2008 (AML, 2008). While antitrust in China has been a relatively nascent phenomenon compared to its European and U.S. counterparts, antitrust enforcement in China has been steadily increasing over the past decade. As some scholars have argued, the Chinese antitrust authorities have acquired the necessary competence and expertise to handle more complicated cases, while issuing procedural rules in line with international standards (Liu et al., 2020).

During the evolution of China's antitrust regime, the country's economic landscape has undergone a significant transformation, particularly with the rise of digital platforms in recent years. From 2015 to 2022, the share of the digital economy in China's GDP increased from 27% to 41.5% (Lai, 2023). Over the same period, the value of China's platform economy experienced a remarkable rise from RMB 4.97 trillion (approximately USD $684 billion) to RMB 33.43 trillion, reflecting a compound annual growth rate of 32.92%. Additionally, the number of large Chinese digital platforms (i.e., valued at over $1 billion) grew from 190 to 254 (Wang, 2024a). Prominent examples include Alibaba, JingDong (JD), Pinduoduo (PDD), ByteDance, DiDi, Meituan, and Tencent. These platforms have fundamentally altered traditional markets—e-commerce platforms, for instance, often replace brick-and-mortar sales, while ride-hailing platforms displace traditional taxi companies. While proponents frequently highlight the benefits of these platforms (Chen and Sheldon, 2016), their rise also introduces new concerns about antitrust issues in the various markets in which they operate. Digital platforms often create network effects, where larger platforms attract more users, leading to a self-reinforcing cycle. This structure frequently allows platforms to establish and maintain market dominance, potentially undermining healthy competition (Baker, 2021; Hovenkamp, 2020; Filistrucchi et al., 2012; Khoo, 2021).

Despite the extensive literature on digital platforms in the antitrust context since the early 2000s,[1] particularly in the EU and U.S., most studies on antitrust regulation of digital platforms in China have thus far adopted doctrinal, theoretical, or conceptual approaches (Sun, 2021; Wu, 2023; Wang, 2024b; Wu, 2024). One reason for this methodological focus is the limited public record of antitrust enforcement on digital platforms in China. As Dai and Deng (2022) have noted, competition enforcement in China's digital market has been sparse relative to its size.[2] Indeed, many commentators consider 2021 a pivotal year for Chinese antitrust enforcement in relation to digital platforms (Wang and Gao, 2022). In 2021, for instance, the State Council issued the "Guidelines of the Anti-

---

[1]For an overview of this literature, see Rietveld and Schilling (2021).

[2]Dai and Deng (2022) describe regulation as "an [almost] entirely blank space until the end of 2020."

monopoly Commission of the State Council for Anti-monopoly in the Field of Platform Economy",
while the SAMR increased its activity in penalizing digital platforms for merger violations. Subsequently, between 2021 and 2023, the SAMR issued penalty decisions against firms such as Alibaba,
Meituan, Sherpa's, and CNKI for engaging in anti-competitive conduct, particularly in relation to
exclusive dealing (Dai and Deng, 2022; Bai and Man, 2023; Deng, 2022; Marco Colino, 2022).

In this Article, we aim to contribute to the literature by conducting an empirical study that examines the impact of a landmark decision in Chinese antitrust law—the exclusive dealing case of
SAMR v. Alibaba (2021)—using an event study methodology.[3] Our motivation for adopting this
approach is threefold. First, it is driven by the fact that SAMR v. Alibaba (2021) pertains to the e-commerce platform market, which has been rapidly expanding in China.[4] For example, from 2014
to 2023, the penetration rate of online shopping in China grew from 55.7% to 83.8% (Xin, 2024a),
and the e-commerce share of total retail sales in consumer goods nearly tripled from 10.6% to
27.6% (Xin, 2024b). Additionally, Taobao and TMall, the platforms at the center of SAMR v. Alibaba (2021), have consistently been the most dominant e-commerce platforms in China.[5] Second,
SAMR v. Alibaba (2021) recorded the largest antitrust financial penalty ever imposed in China,
amounting to a staggering sum of nearly RMB 18.23 billion (approximately USD $2.78 billion).
This unique attribute helps us mitigate concerns associated with the possibility that the infringing firm may derive only a minor fraction of its revenue from the relevant market, consequently
leading to a muted market response (McAfee and Williams, 1988). Third, our utilization of an
event-study methodology enables us to overcome the difficulties arising from the limited availability of data in Chinese antitrust enforcement (Zhang, 2021). This approach helps us navigate
challenges such as undisclosed settlements between antitrust authorities and defendant firms,
which, if not considered, may lead to underestimating the true impact of enforcement efforts.

While our study is limited to a selected number of firms within the e-commerce platform market,
it provides novel insights into the mechanisms of antitrust enforcement in China. In line with
much of the existing literature, we observe a negative stock market response for Alibaba following the announcement of the antitrust investigation (Günster and van Dijk, 2016; Bosch and
Eckard, 1991; Bos et al., 2019; De Vany and McMillan, 2004; Günster and van Dijk, 2016), while
its competitors experienced mixed outcomes, with some showing a positive market response and

---

[3]In our article, we use the terms "decision" and "overall decision" to encompass all events from the initial announcement of the antitrust regulator's investigation to its proclamation of penalties on Alibaba.

[4]The primary focus of our study is the e-commerce platform market, which, as defined in SAMR v. Alibaba
(2021), refers to China's business-to-consumer online retail service market. Key players in this market include Alibaba, JD, and PDD, among others. However, our analysis in Sections 5.1.3 and 5.2 will also consider more "distant"
competitors—those that are not e-commerce platforms but may still compete with Alibaba to a limited extent.

[5]The decision in SAMR v. Alibaba (2021) indicates that Alibaba's market share in the relevant market consistently
exceeded 50% between 2015 and 2019.

others statistically insignificant changes. However, as distinguished from these studies in other jurisdictions, we find a positive stock market response for Alibaba and a negative response for its closest (e-commerce) platform competitors following the announcement of the financial penalty. While Alibaba experienced a positive market reaction after such an announcement, the impact of this announcement on Alibaba's abnormal stock returns is attenuated compared to the initial announcement. We suggest that the regulatory uncertainty associated with the Chinese antitrust regime, encompassing both financial penalties and non-pecuniary sanctions, might account for these observations.[6] This uncertainty includes not only the existence and scale of financial penalties but also, among other factors, the potential for heightened future regulation and the withholding of state subsidies.[7]

We conduct further investigations to determine the aggregate impact of the decision on the abnormal stock returns of Alibaba and its competitors. Harnessing a long-horizon event study, we find that the overall decision is associated with a 17% to 25% fall in Alibaba's abnormal stock returns and a relatively muted fall in similar returns for Alibaba's e-commerce competitors. Additionally, we use a synthetic control approach to estimate the impact of the antitrust decision on gross-profit margins. Relative to a set of competitor-control firms, we find that the decision is associated with a 7% to 9% fall in the gross profits of Alibaba. These findings lend support to the hypothesis that the decision had a substantial impact on Alibaba's profitability, with our estimates indicating an effect significantly larger than that observed in comparable studies in the EU and U.S.[8]

Finally, we find evidence of regulatory spillovers that affect competitor firms when an investigation is initiated against a major player like Alibaba. Despite these spillovers, the targeted firm—Alibaba—experiences a more pronounced reduction in firm value compared to its competitors, highlighting the potential impact of the antitrust decision in curbing Alibaba's anticompetitive behavior.

Our article is organized as follows. In Section 2, we provide a survey of the relevant literature

---

[6]By "these observations", we are referring to the positive stock market response for Alibaba and the negative response for its closest (e-commerce) platform competitors following the announcement of the financial penalty. In subsequent analysis (Section 5.1.3), we attribute the observed differences in our short-run CAR findings between the investigation and penalty announcements to regulatory spillovers.

[7]It is important to note that in our analysis, we are largely unable to distinguish between investors' responses to uncertainty regarding potential non-pecuniary sanctions and their responses to uncertainty concerning future pecuniary penalties.

[8]We are unable to determine whether the enforcement was allocatively efficient, even assuming market capitalization reflects the net present value of future cash flows. For example, even if Alibaba's firm value declines significantly more than the financial penalty, the enforcement might still be allocatively inefficient if it stifles pro-competitive behavior (Bork, 1993).

and discuss how our paper adds to the existing body of research. In Section 3, we offer factual background related to the events of interest in the case of SAMR v. Alibaba (2021). In Section 4, we describe the data sources we utilized for our article and outline our estimation methods for the event study. In Section 5, we provide our empirical results on the impact of the decision on Alibaba's abnormal returns, its competitors' abnormal returns, and the industry's gross-profit margins. In Section 6, we provide some reflections on China's antitrust policy that follow from our central results. Finally, in Section 7, we provide additional tables and figures that support our primary analysis.

2 Literature Review

2.1 Platform Competition

Our article explores three distinct strands within the existing literature. The first strand investigates inter-platform competition and the conditions under which platforms have incentives to engage in exclusionary practices, such as exclusive dealing. Unlike one-sided firms, two-sided platforms act as intermediaries between two distinct groups of users and must consider how attracting users on one side of the market impacts the other. For instance, in e-commerce marketplaces like Alibaba, sellers are attracted by a large base of buyers, while buyers are drawn to a diverse selection of sellers (Chu and Manchanda, 2016). This interdependence often creates strong indirect network externalities, where the platform's value for one side increases as the number of users on the other side grows (Caillaud and Jullien, 2003; Rochet and Tirole, 2003; Armstrong, 2006).[9] To optimize participation on both sides, platforms often employ cross-subsidization in their pricing strategies, offering lower prices (or free access) to one side to attract a critical mass of users while charging higher prices to the other side, which is willing to pay more for access to the larger user base (Bolt and Tieman, 2008; Clements, 2004; Evans and Schmalensee, 2005; Scott-Morton, 2019). Due to these network externalities, platform markets often exhibit "tipping" effects, where a firm can secure a dominant market share and solidify its position through network effects (Parker et al., 2020). [10] Furthermore, digital platforms like Alibaba may further strengthen their market dominance due to the high fixed costs and negligible variable costs associated with

---

[9]Chu and Manchanda (2016) identify substantial indirect network externalities on Alibaba's consumer-to-consumer platform, "Taobao.com."

[10]In addition to competing with other platforms, a dominant platform may significantly diminish the market share and revenue of traditional non-platform competitors, such as the impact of Airbnb on hotels (Farronato and Fradkin, 2022). Nevertheless, most of the "rival" firms identified in our study are platforms that mediate between buyers and sellers.

information goods, enabling them to lower average costs as they scale (Farrell and Klemperer, 2007).

Given the characteristics of platform incentives, a substantial body of literature has explored the potential for platforms to engage in exclusionary practices when competing with rivals.[11] In a seminal paper, Armstrong and Wright (2007) demonstrate that platforms may find it profitable to eliminate cross-subsidization strategies through exclusive dealing. This approach involves setting high prices for sellers who do not sign up exclusively, thereby compelling them to single-home.[12] Following this, the platform can offer slightly lower prices than its competitor to attract these sellers exclusively. As a result, the platform can recoup its losses from buyers, who now prefer the platform pursuing this exclusionary strategy due to the lack of sellers on the rival platform. Similarly, Carroni et al. (2024) show that platforms may profitably secure exclusivity with "superstar" sellers, inducing these sellers to single-home, which in turn draws a large number of buyers to single-home on the platform given strong network externalities. Additionally, Amelio et al. (2020) use a Hotelling model to demonstrate that indirect network externalities amplify the incentives for incumbent platforms with significant market power to engage in exclusionary behavior.[13] Moreover, they show that if platforms are sufficiently differentiated, such foreclosure of competition can harm consumers. Indeed, issues concerning digital platforms are central to current policy discussions in antitrust, with numerous reports and hearings conducted by the Federal Trade Commission, the European Commission, the Japan Fair Trade Commission, the Australian Competition Authority, Chinese antitrust authorities,[14] as well as antitrust scholars (Baker, 2021; Hovenkamp, 2020; Filistrucchi et al., 2012; Khoo, 2021).

Our paper contributes to this strand of literature by analyzing the impact of an antitrust decision against an e-commerce platform accused of engaging in exclusionary practices through exclusive contracting. While we would refrain from drawing broad inferences from our findings, our analysis of short-run cumulative abnormal returns (CARs) in Section 5.1.1 reveals a strong negative market reaction to the announcement of the antitrust investigation against Alibaba, which presumably led to the immediate cessation of its exclusionary practices. Furthermore, in Section

---

[11]In many settings, platform competition involves a "competitive bottleneck", where platforms aggressively compete to attract buyers by offering prices below cost, while generating profits from sellers who need access to these buyers and have no alternative platform to reach them (Armstrong, 2006). These "competitive bottlenecks" involve cross-subsidization between sellers and buyers.

[12]In the context of platform economics, single-homing refers to a situation where users choose to engage exclusively with one platform rather than participating on multiple platforms simultaneously.

[13]Indirect network externalities are endemic in e-commerce platforms, where each group of users (e.g., buyers) provides a complement that increases the benefits of consumption (e.g., sellers) by other groups of users.

[14]In 2021, the Anti-monopoly Committee of the State Council issued guidelines to regulate platforms. However, Rong et al. (2024) find that these guidelines did not enhance competition. Instead, competition weakened, with a decline in venture capital investment and fewer startups entering these markets.

5.1.2, we find that the market response for Alibaba's competitors generally exhibits a negative correlation with Alibaba's market reaction.[15] These results are consistent with the narrative that the enforcement action against Alibaba played a role in ending its exclusionary conduct, thereby reducing its profits to the advantage of its competitive rivals.

2.2 Antitrust Enforcement in China

The second strand of literature examines antitrust enforcement in China. We focus on the regulatory uncertainty inherent to the Chinese antitrust regime, which we believe is a key driver of our empirical results.[16] As discussed in Section 1, the uncertainty associated with the announcement of the antitrust investigation encompasses the existence and scale of financial penalties, potential for future regulation, and the withholding of state subsidies. While the presence of this regulatory uncertainty is intuitive, it is also supported by empirical evidence. For example, Wang and Fang (2021) and Pan (2022) conducted regressions of antitrust financial penalties on various aggravating and mitigating factors considered by authorities in their penalty decisions, aiming to quantify the impact of these factors. However, their findings showed that certain factors, which economic theory would expect to be significant, were statistically insignificant,[17] or exhibited counter-intuitive relationships with the financial penalties.

Several factors contribute to the regulatory uncertainty within the Chinese antitrust regime. A key factor is the influence of China's Civil Law framework, which, unlike Common Law systems, does not operate on precedents. As a result, antitrust authorities and courts are unable to develop the Anti-Monopoly Law (AML) through case decisions that establish binding precedents (Lai, 2016). Although the AML permits authorities to confiscate unlawful profits and impose financial penalties of 1% to 10% of a company's previous year's revenue, the legal provisions are notably brief and lack detailed guidance (Wang and Zhang, 2016). Additionally, there is a notable absence of published guidelines from lawmakers or antitrust authorities regarding the application of these penalties (Liu, 2016).

The absence of published guidelines has led to significant regulatory uncertainty, particularly in determining the benchmark revenue from which financial penalties (ranging from 1% to 10%) are

---

[15]However, unlike the announcement of the penalty decision, the announcement of the antitrust investigation resulted in mixed outcomes for Alibaba's competitors. Some experienced positive abnormal returns, while others showed statistically insignificant changes. We offer an explanation for these observations in Section 5.1.2.

[16]We address the potential for regulatory spillovers within the Chinese antitrust regime in Section 2.3.

[17]Antitrust violations that span longer durations are generally expected to incur heavier financial penalties. However, both Wang and Fang (2021) and Pan (2022) found no statistically significant relationship between the duration of the violation and the antitrust penalty.

calculated. For example, antitrust authorities have inconsistently applied different time periods when calculating penalties—some cases use the financial year prior to the penalty decision, while others use the financial year before the investigation (Wang, 2016; Khoo, 2017). Additionally, there is also ambiguity regarding the geographical scope of the sales revenue considered, such as whether it is limited to local earnings or includes global revenue (Wang and Zhang, 2016). This contrasts with the EU and U.S. antitrust regimes, where such parameters are clearly defined.

Separately, when imposing remedies on firms that have violated antitrust laws, the AML permits the SAMR to compel the disgorgement of illicit profits obtained from anti-competitive activities, a remedy distinct from financial penalties. However, Wang (2016) and Wang and Fang (2021) have observed that while financial penalties are routinely imposed on firms violating the AML, the disgorgement of illicit gains is applied selectively. Indeed, the relationship between these two forms of punishment remains unclear, making it difficult for investors and firms to assess whether financial penalties might be adjusted to account for any disgorged profits (Wang and Zhang, 2016).

Furthermore, the AML allows the SAMR to consider aggravating and mitigating factors—such as the nature, extent, and duration of violations—when determining the appropriate scope of an antitrust penalty. For instance, the SAMR may take into account the degree of cooperation by the investigated firm during the investigation or its efforts to rectify the violation (Wang, 2016). However, as with the issues discussed above, the SAMR does not provide clear definitions for how these factors should be defined, measured, or weighted (Wang and Fang, 2021). In fact, when determining whether aggravating or mitigating factors are present, the SAMR often only briefly indicates whether the harm is significant, without clarifying how it is defined and measured (Wang and Zhang, 2016).[18]

Finally, some scholars argue that Chinese antitrust enforcement is heavily influenced by political mechanisms, which can undermine legal certainty (Dari-Mattiacci and Deffains, 2007). According to this view, officials within antitrust authorities may be driven by extraneous personal goals that are inconsistent with the core objective of maximizing consumer welfare (Stephenson, 2007; Banks and Weingast, 1992).[19] Regulatory uncertainty is induced by the fact that firms under investigation cannot predict which officials will handle their case (Dobbie et al., 2018; Frandsen et al., 2023). Depending on which officials are involved, the discretion they exercise may lead to penalties that are either excessively harsh or overly lenient. For instance, Zhang (2021) argues that

---

[18]Furthermore, antitrust authorities do not disclose the causal connection between these aggravating/mitigating factors and the financial penalties imposed on firms.

[19]Such extraneous personal goals may include an official's personal influence, reputation, power, or the expansion of their agency's size (Mueller, 2003).

Chinese antitrust officials are often motivated by private career concerns, incentivizing them to impose higher penalties to demonstrate their competence to potential private-sector employers. Conversely, Wang and Fang (2019) suggests that officials may be promoted based on metrics such as the number of investigations or settlements completed, which can incentivize them to negotiate lenient settlements to avoid the time and expense of prolonged litigation, even if a higher penalty would be socially optimal.

Our study contributes to this strand of the literature by illustrating the impact of antitrust enforcement on investor decision-making, consistent with a general framework where regulatory uncertainty drives expected returns (Yang et al., 2019; Zhao and Qi, 2020; Alexander et al., 2005). In general, our short-run CAR results in Section 5.1.1 are consistent with a narrative where regulatory uncertainty is inherent in Chinese antitrust enforcement, which is partially resolved when financial penalties are announced. In line with this narrative, investors likely weigh the broad spectrum of potential outcomes a firm might face, including the risks of "worst-case scenarios" when regulatory actions are initiated. As these uncertainties are resolved, investors tend to adjust their expectations more optimistically.

2.3 Event Studies on Antitrust Decisions

The final strand of literature relates to the use of event studies to analyze the abnormal returns of firms, specifically in relation to the impact of antitrust enforcement on infringing firms. The implicit assumption adopted here is that the market capitalization of a firm represents the present discounted value of the firm's future profits (Boller and Morton, 2020). According to the efficient-market hypothesis, any disclosures resulting from actions by antitrust authorities are likely to affect investors' perceptions of the present discounted value of a firm's profits (Fama, 1970). This adjustment often accounts for the expected financial repercussions of the antitrust action, which may include, among other things, any monetary penalties imposed on the firm (Bosch and Eckard, 1991). Historically, such event studies have been a significant methodological approach for assessing the effects of antitrust enforcement on the valuation of firms (Burns, 1977; Garbade et al., 1982; Binder, 1988; Gilligan, 1986; Bosch and Eckard, 1991; Mullin et al., 1995; Bizjak and Coles, 1995; Bittlingmayer and Hazlett, 2000; De Vany and McMillan, 2004; Langus and Motta, 2007; Van den Broek et al., 2012; Aguzzoni et al., 2013; Bos et al., 2019).

Information is disclosed to investors in stages throughout an antitrust investigation, allowing for the assessment of the impact of different enforcement events, such as investigation announcements, infringement decisions, and appeals. Each of these events may reveal unexpected infor-

mation that alters investor expectations. For example, Günster and van Dijk (2016) analyzed a dataset of 253 companies involved in 118 EU antitrust cases from 1974 to 2004. They found that dawn raids led to a decrease of approximately 5% in the firms' abnormal returns, while adverse final decisions resulted in a 2% drop. Conversely, successful appeals typically increased abnormal returns by 3%. Similarly, Langus and Motta (2007) observed a statistically significant abnormal return of -2% around the time of the raid and -3% around the decision date in a sample of 55 cases involving 88 firms. Additionally, Bittlingmayer and Hazlett (2000) examined 29 antitrust enforcement actions against Microsoft from 1991 to 1997, finding that, on average, each action decreased Microsoft's stock by 1.2%. These findings highlight the significant uncertainty introduced by initial antitrust actions, which diminishes as the investigation progresses, and are consistent with models where investors update their expectations based on new information. Successful appeals correspond with increased expectations for future profits, whereas adverse decisions align with expectations of reduced profits (Spier, 2007).

Another facet of this strand of literature examines the impact of antitrust decisions on the abnormal returns of rival firms that were not indicted by the antitrust authority. As noted by Bosch and Eckard (1991) and Bittlingmayer and Hazlett (2000), the theoretical prediction regarding the direction of abnormal returns for these firms is inherently ambiguous. If the decision results in the cessation of supra-competitive pricing within the industry (due to the increased scrutiny on anti-competitive behavior within the industry), the "monopoly profit loss theory" suggests a negative impact on the competitors' returns.[20] Furthermore, in the context of China, antitrust enforcement may signal a heightened risk of costly sectoral regulation, potentially reducing the expected profitability of rival firms. As detailed by Zhang (2021), many firms in China operate within and exploit "regulatory grey" areas until regulatory intervention occurs. Accordingly, antitrust enforcement may lead to regulatory spillovers, where an enforcement action against one firm triggers increased scrutiny and regulation across the broader industry (Zhang, 2021; Zheng, 2023; Sokol, 2014).[21]

On the other hand, Klein and Leffler (1981) propose that an antitrust indictment might signal to the market that the indicted firm engages in dishonest practices, leading marginal customers and suppliers to shift their transactions to rival firms. When this signaling effect prevails, these "signal

---

[20]These "monopoly profit loss" theories suggest that industry profits would be higher in the absence of antitrust investigations. However, in our study, we find it unlikely that the antitrust enforcement action supports the "monopoly profit loss theory" unless Alibaba's rivals were also engaged in exclusionary practices. In such a scenario, unlike with actions against cartels, it is unlikely that the industry would experience a cessation of supra-competitive profits.

[21]As a normative matter, we adhere to the orthodox view that antitrust enforcement should target the specific conduct of the violating firm, rather than imposing broad industry-wide regulations that could unduly burden firms not involved in anti-competitive practices (Areeda and Hovenkamp, 2022).

theories" suggest a positive valuation impact on the competitors as they benefit from a reduction in the indicted firm's reputational capital.

Previous research has also examined the disparity between the financial impact of indictments on infringing firms and the actual financial penalties they incur. For instance, Bosch and Eckard (1991) discovered that the combined total of financial penalties, legal fees, and economic counseling fees accounted for merely about 13% of the overall valuation loss, as quantified by negative abnormal returns. In a similar vein, Günster and van Dijk (2016) found that financial penalties imposed by the European Commission constituted only about 16% of the total loss in value experienced by the affected firms. As alluded to earlier, these findings underscore that firms violating competition laws often face numerous indirect costs upon the disclosure of their actions, extending beyond the pecuniary penalties levied by antitrust authorities.

Our research makes several distinct contributions to the third strand of literature. First, unlike previous studies that have primarily examined the antitrust regimes of the EU and U.S. (Günster and van Dijk, 2016; Langus and Motta, 2007; Bittlingmayer and Hazlett, 2000; Bosch and Eckard, 1991), our focus is on China, where antitrust enforcement is a relatively recent development and exhibits unique characteristics compared to its transatlantic counterparts. A paper similar to ours, Cho et al. (2023), investigates the financial impact of China's AML on horizontal acquisitions. However, the firms analyzed in their study are not directly under antitrust investigation; instead, the underlying assumption is that "firms will merge with smaller targets to avoid being challenged by the Ministry of Commerce for initiating an anti-competitive deal". In contrast, our study specifically examines the *direct* financial effects of an investigation into exclusionary practices on the targeted firm, Alibaba, and its competitors in the e-commerce platform market. This focused approach enables a deeper investigation into the mechanisms of antitrust enforcement in China.

Second, our study reveals both similarities and differences compared to findings from the EU and U.S. Like its transatlantic counterparts, we note a negative stock market reaction for Alibaba following the announcement of the antitrust investigation (Günster and van Dijk, 2016; Bosch and Eckard, 1991; Bos et al., 2019; De Vany and McMillan, 2004; Bittlingmayer and Hazlett, 2000). However, our findings in Sections 5.1.1 and 5.1.2 diverge as we observe a positive stock market response for Alibaba and a negative response for its closest e-commerce competitors following the announcement of the financial penalty. This outcome is ostensibly surprising considering the significant quantum of the penalty. As detailed earlier in Section 2.2, we suggest that our findings align with narratives pointing to the regulatory uncertainties in Chinese antitrust enforcement, which are partially alleviated once financial penalties are imposed.

Third, although the USD 2.78 billion financial penalty imposed on Alibaba might appear substantial, we contextualize this figure by comparing it to the firm's loss in value, while adjusting for returns from a market index. In Section 5.1.2, we aggregate the abnormal returns from both the investigation and penalty announcements, finding that the financial penalty accounts for only 4.2% of Alibaba's valuation loss. Additionally, our long-run event study in Section 5.1.3 indicates that the penalty accounts for just 1.8% of the loss in Alibaba's valuation. These findings contrast with similar analyses in other jurisdictions, such as the 13% noted by Bosch and Eckard (1991) for U.S. firms and the 16% observed by Günster and van Dijk (2016) for EU firms, and underscore the significant impact of the SAMR's decision against Alibaba.

3   The Institutional Setting of *SAMR v. Alibaba*

Alibaba Group (Alibaba) is a diverse multinational technology conglomerate based in Hangzhou, China, with its core business in e-commerce. It operates several digital platforms, including Taobao, a consumer-to-consumer marketplace, and TMall, a business-to-consumer platform catering to larger brands. While Taobao and TMall primarily serve the Chinese market, Alibaba has also expanded globally with platforms like AliExpress and Lazada, targeting international consumers. However, its domestic platforms are not fully optimized for global use, facing limitations in language, payment methods, and shipping options (Alibaba, 2024).

Alibaba, listed on both the New York Stock Exchange (NYSE) and the Hong Kong Exchange (HKEX), launched its initial public offering (IPO) in September 2014 on the NYSE and subsequently completed a secondary listing on the HKEX in November 2019 (Baker et al., 2014). Since Alibaba is not a dual-listed entity with separate underlying assets, the market price for any of its listings reflects the investors' valuation of the same publicly traded company.

SAMR v. Alibaba (2021) was part of a broader antitrust initative in China. In November 2020, the SAMR released draft Anti-Monopoly Guidelines for the platform economy sector, highlighting its commitment to strengthening enforcement. Subsequently, key political meetings in December 2020, including those of the Political Bureau and the Central Economic Work Conference, emphasized the importance of enhancing antitrust regulations as a priority for 2021, aligning with the Chinese government's goals of "refining the socialist market economy" and "fostering high-quality development" (Hua, 2020a,b,c).

On December 24, 2020, the SAMR announced the initiation of an investigation into Alibaba Group

following complaints about its "picking-one-from-two" practice (Lu, 2020).[22] This practice involves e-commerce platforms, such as Alibaba, exploiting their dominant market position to require sellers to exclusively sell on their platform, excluding competitors like JD.com and Pinduoduo. Essentially, this practice mirrors exclusive dealing complaints similar to those seen in the EU and U.S., where such activities may contravene Article 102 of the Treaty on the Functioning of the European Union (TFEU) or Section 2 of the Sherman Act (Ibáñez Colomo, 2018). We identify this announcement as the "Investigation Announcement", marking it as the first of two key events in our event study.

Nearly four months after announcing its investigation, on April 10, 2021, the SAMR issued an administrative penalty decision against Alibaba for abusing its dominant market position in China's online retail platform market, violating Article 17 of the AML (SAMR v. Alibaba, 2021). The SAMR held that Alibaba had enforced a "picking-one-from-two" policy, where it required top merchants on its platform to avoid engaging with rival e-commerce competitors. This included written or oral agreements to prevent these merchants from operating on rival platforms or participating in their promotional activities during major shopping festivals, with Alibaba using various punitive measures to enforce compliance. The SAMR's decision detailed the punitive actions against non-compliant merchants, such as exclusion from Alibaba's sales promotions, cancellation of priority promotion displays during major festivals, lower search rankings, and downgraded ratings on its platform.[23]

Consequently, SAMR mandated that Alibaba cease these unlawful practices and levied a financial penalty of 4% of its 2019 domestic sales, totalling approximately RMB 18.23 billion.[24] This is the heaviest antitrust financial penalty, in absolute terms, ever imposed by the Chinese antitrust authorities (Marco Colino, 2022). Furthermore, Alibaba was directed to improve its internal control and compliance management, provide compliance self-inspection reports annually for the next three years, and safeguard fair competition and the rights of consumers and businesses on its platform. Given the significance of this announcement, we designate it as the "Penalty Announcement", identifying it as the second of the two pivotal events in our event study.

---

[22]The SAMR made this announcement at 8:30 AM on December 24, 2020 (Beijing Time), just before trading commenced in Hong Kong (SAMR v. Alibaba, 2021).

[23]These measures were outlined in the Anti-Monopoly Guidelines on the Platform Economy, published in February 2021, which classified such punitive practices as likely being anti-competitive (Deng and Dai, 2021).

[24]While the SAMR calculated the financial penalty based on the entire annual revenue of Alibaba Group, rather than just the revenue of the offending entities, Taobao and TMall, it is important to note that the penalties imposed were not the maximum allowed under the AML; they amounted to 4% of the relevant revenue, instead of the statutory maximum of 10%. Additionally, the penalties were calculated based on Alibaba's local revenues, rather than its global revenues. Moreover, in exercising its discretion, the SAMR chose not to include a disgorgement of Alibaba's illicit gains in its final decision (SAMR v. Alibaba, 2021; AML, 2008).

We document a comprehensive list of alternative events that occurred prior to, between, and after the distinct dates of the Investigation Announcement and the Penalty Announcement, which may have impacted the financial performance of Alibaba.[25] For instance, a few days after the Investigation Announcement, on December 27, 2020, the Zhejiang Province SAMR released more details about the investigation to the local media (Wang, 2020; Zhang, 2020).[26] Subsequent to the initial announcement on December 24, 2020, the local SAMR branch conducted an on-site investigation at Alibaba's headquarters in Hangzhou, gathering evidence and conducting interviews. This operation was reported to have proceeded smoothly and was completed within the day, with Alibaba showing active cooperation and taking the inquiries seriously, potentially influencing investor perceptions due to the perceived likelihood of mitigated penalties.

On February 2, 2021, Alibaba issued its fiscal third quarter financial report, reiterating ongoing cooperation with the SAMR and a commitment to regulatory compliance (Ali, 2021). This was followed by a conference call where CEO Daniel Zhang described the investigation and other challenges as opportunities for introspection and improvement, though the direct impact of these comments on stock prices is indeterminate due to other simultaneous disclosures (Yang and Yang, 2021).

On February 7, 2021, the SAMR formalized its Anti-Monopoly Guidelines on the Platform Economy, escalating regulatory pressure on Alibaba and other major tech firms to adhere to specific regulatory standards (Cadell and Goh, 2021). Later, on March 11, 2021, the Wall Street Journal reported the possibility of unprecedented financial penalties and substantial operational changes being imposed on Alibaba by China's antitrust regulators, which included discontinuing the "picking-one-from-two" practice and divesting certain non-essential assets. However, the accuracy of these reports remained unverified, as Alibaba chose not to comment and the SAMR did not respond (Zhai and Wei, 2021).

4   Data and Methodology

4.1   Data Sources

We procure our dataset from three distinct sources. Given that Alibaba is listed on both the Hong Kong Stock Exchange (HKSE) and the New York Stock Exchange (NYSE), we acquired daily stock

---

[25]Following Bittlingmayer and Hazlett (2000), we document an entire list of these alternative events in Appendix A1.

[26]The "Zhejiang Province SAMR" is a local branch of the national SAMR.

return data for HKSE from LSEG (formerly Refinitiv) Workspace and for NYSE from the Center for Research in Security Prices (CRSP). For our event study analysis, which necessitates data on market index returns, we utilized the Hang Seng Index (HSI) for the HKSE analysis and the CRSP equal-weighted-index for the NYSE analysis, obtaining daily returns for these indices from LSEG Workspace and CRSP respectively.[27]

In a subsequent portion of our analysis, we identified Alibaba's key competitors using a combination of GICS industry codes from LSEG Workspace and Compustat Global, supplemented by manual data collection.[28] In addition, to offer an alternative profitability metric to abnormal stock returns, we obtained data on gross profitability margins from both LSEG Workspace and Compustat Global. Considering that some of Alibaba's competitors are listed on exchanges other than the HKSE and NYSE (e.g., NASDAQ), we also gathered daily stock returns for these entities from LSEG Workspace. Finally, we hand-collected data on specific event dates relevant to our study as outlined in Section 3.

4.2   Event Study Methodology

We employ a conventional event study methodology to calculate abnormal stock returns associated with the Investigation Announcement, Penalty Announcement, and other relevant events (Brown and Warner, 1985; MacKinlay, 1997). To derive daily abnormal returns, we utilize the market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{1}$$

where R_{it} represents the total stock return of firm i on day t, and R_{mt} denotes the total return on the domestic stock market index of firm i, as detailed in Section 4.1. Following MacKinlay (1997), we estimate the parameters α and β using 250 trading days leading up to 20 days before the event window. We then calculate abnormal returns using:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$$

where AR_{it} is the abnormal return of firm i on day t and $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the estimated coefficients

---

[27]We also utilized the NASDAQ composite for portions of our analysis. We obtained daily returns for this index from LSEG Workspace.

[28]We ensure accuracy through cross-validations and avoid duplications by matching on ticker numbers.

from specification (1). Cumulative abnormal returns (CAR) for the event window are computed as follows:

$$CAR_i = \sum_{t=t_1}^{t_2} AR_{it}$$

where t_1 marks the beginning and t_2 the end of the event window.

Given that our main findings are based on analyses of single-firm, single-event studies, we avoid using conventional statistical tests to evaluate the statistical significance of our CARs.[29] As noted by Gelbach et al. (2013), standard statistical tests are only valid when abnormal stock returns follow a normal distribution. However, it is well known that the normal distribution inadequately describes stock returns, particularly when analyzing a small number of firms.

In Table A2, we conduct a Shapiro-Wilk test for normality on the distribution of Alibaba's abnormal returns. The test results reject the null hypothesis at the 1% level, indicating deviations from normality that undermine the reliability of conventional statistical tests for our data. Similarly, in Figure A1, we compare the estimated abnormal return distributions of Alibaba and Jingdong (a major e-commerce competitor of Alibaba) to simulated normal distributions.[30] These illustrations evidence significant discrepancies between the estimated abnormal return distributions and their theoretical normal counterparts, notably with the normal distributions exhibiting much "fatter" tails.

To address these concerns, Gelbach et al. (2013) suggest using an alternative non-parametric test, known as the "SQ test", which relies on the sample quantiles of the estimated abnormal return distribution to determine the critical value for assessing the event effect. This test involves comparing the estimated abnormal returns over the event window to the quantiles of a set of pre-event returns measured over the same horizon. In our subsequent analysis, we report the p-values from the SQ test derived from the same estimation window used to estimate the market model in specification 1.

---

[29]Standard statistical tests include "t-tests", as well as tests by Patell (1976) and Boehmer et al. (1991).

[30]A normal distribution is simulated by generating 500 independent and identically distributed (i.i.d.) random draws from a standard normal distribution.

5 Empirical Results

5.1 Event Study Results

5.1.1 Short Run CARs: Alibaba

Table 1 presents the results of our event study of the Investigation Announcement on Alibaba's stock returns. We explore various configurations of the event window, ranging from a one-day window to a eleven-day window surrounding the event date, assessing the CARs for Alibaba's listings on both the HKSE and NYSE.[31] The results indicate a substantial and statistically significant decrease in market value associated with the Investigation Announcement, with CARs varying from approximately -8.62% to -18.18% on the HKSE, and -8.32% to -13.91% on the NYSE. As previously discussed in Sections 1 and 2, these results align with similar research conducted in the EU and U.S., where events such as dawn raids or investigation announcements typically result in negative CARs (Günster and van Dijk, 2016; Langus and Motta, 2007; Bosch and Eckard, 1991; Bittlingmayer and Hazlett, 2000).

Turning to the Penalty Announcement, however, we observe a positive and statistically significant increase in market value associated with the Penalty Announcement, with CARs ranging from approximately 4.26% to 7.3% on the HKSE, and 5.97% to 9.19% on the NYSE.[32] These findings diverge from the prior literature, where financial penalties are usually associated with *negative* CARs for the firm under investigation (Günster and van Dijk, 2016; Langus and Motta, 2007; Bittlingmayer and Hazlett, 2000).[33]

Figure 1 provides a graphical illustration of how the Investigation Announcement and the Penalty Announcement may have impacted Alibaba's stock prices. This figure juxtaposes the price trajectory of Alibaba's stock against that of the HSI. It highlights a significant decline in Alibaba's stock price following the Investigation Announcement compared to the HSI. In contrast, after the Penalty Announcement, Alibaba's stock price exhibits a noticeable, albeit more subdued, increase.

In Figure 2, we plot the daily abnormal returns of Alibaba surrounding the event dates of the

---

[31]Note that our event windows include the event date.

[32]Nevertheless, CARs for a 10-day window surrounding the event date are statistically insignificant for both markets. The CAR for a 6-day window surrounding the event date for NYSE is also statistically insignificant.

[33]In Table A3, we evaluate the robustness of our findings to potential information leakage by extending the pre-event period in our event window to include 25, 15, and 10 days prior to the event date. As outlined in that Table, our results consistently hold across the Investigation Announcement for Alibaba's listings on both the HKSE and NYSE. Furthermore, they remain largely robust for the Penalty Announcement on Alibaba's HKSE listing.

Investigation Announcement and the Penalty Announcement. Panel A of Figure 2 shows the abnormal returns around the time of the Investigation Announcement, where a significant drop in returns is apparent near the event date, with the variability of negative abnormal returns diminishing as the event window is extended. Similarly, Panel B details the abnormal returns around the Penalty Announcement, indicating a significant rise in abnormal returns close to the event date, with a reduction in the variability of positive abnormal returns as the event window increases. Notably, Figure 2 indicates the lack of information leakage prior to the announcements and the swift integration of new, unexpected information into market valuations, aligning with the principles of market efficiency (Fama, 1970).[34]

In Table 2, we examine the effects of several key events that took place before, after, and during the period between the Investigation Announcement and the Penalty Announcement on Alibaba's financial performance, as detailed in Section 3. Notably, most events identified between the Investigation Announcement and the Penalty Announcement did not yield statistically significant CARs. However, where significant CARs were observed, the magnitude of the abnormal returns tended to be modest.[35] For example, the release of the Anti-Monopoly Guidelines by the SAMR concerning the platform economy sector (Cadell and Goh, 2021) resulted in a statistically significant CAR of -3.98% within a three-day event window around the publication date. In contrast, a related publication of the SAMR's draft guidelines on November 10, 2020, prior to the Investigation Announcement, was linked to a more pronounced and statistically significant drop in CARs, ranging from -6.64% to -28.48%.

We attribute our observed results to the regulatory uncertainty inherent in Chinese antitrust enforcement, which is partially resolved when financial penalties are announced. Consistent with the commentary of numerous commentators, the SAMR is perceived as a regulator with significant discretion over enforcement penalties (Wang, 2016; Wang and Zhang, 2016; Zhang, 2021). As highlighted by Zhao and Qi (2020) and Alexander et al. (2005), such broad regulatory discretion may create positive incentives for firms to settle with regulators. Indeed, scholars have noted that appeals within the Chinese antitrust framework are exceedingly rare, as disputes between the antitrust bureau and businesses are often settled by the time an enforcement decision is made, thereby significantly reducing the likelihood of further administrative reviews (Sokol and Ma, 2019; Zhang, 2021).

---

[34]In Table A9, we also implement an Augmented Dickey-Fuller (ADF) test on security returns, accounting for a deterministic linear trend, across several security return series from various exchanges. The test statistic is rejected at the 1% significance level for all series examined. These results suggest that the returns are stationary, consistent with weak-form efficiency of the EMH, as discussed by Worthington and Higgs (2004).

[35]This analysis excludes events that coincide with the eleven-day event window surrounding the Investigation Announcement and Penalty Announcement to prevent spillover effects.

In line with this regulatory environment, investors likely consider the wide range of potential outcomes a firm might face in the future, including the risks of "worst-case scenarios" when regulators initiate actions that could negatively impact the firm.[36] These investors then adjust their expectations more optimistically once regulatory uncertainties are resolved (Spier, 2007), as demonstrated by our findings in Tables 1 and 2.[37]

Building on the approach of Günster and van Dijk (2016), we evaluate the combined effect of the investigation and penalty announcements on Alibaba's market capitalization. Using our results in Table 1, we aggregate the CARs for each event window related to both the Investigation and Penalty announcements. We then compute the average (aggregated) CAR across these event windows, ranging from [0] to [-5, 5], and calculate the proportion of the financial penalty relative to the total change in market capitalization reflected by these CARs. Our analysis shows that the financial penalty accounts for only 4.2% of the decline in Alibaba's market capitalization, based on our short-run CAR results from the HKSE.[38]

5.1.2 Short Run CARs: JD and other Competitors

In addition to examining Alibaba's practices, we undertake a comparative analysis of Jingdong (JD), a major competitor to Alibaba in the e-commerce sector. This focus is justified by the close resemblance of JD's main product, JD.com, to Alibaba's platforms, Taobao and TMall, and by the fact that Alibaba's exclusionary "picking-one-from-two" practice was directed against competing platforms such as JD and Pinduoduo.[39] Additionally, since JD is also listed on the HKSE, similar to Alibaba, this allows for a more directly comparable analysis of their CARs.[40]

As elucidated in Section 2, the theoretical prediction for the direction of abnormal returns for a competitor like JD remains ambiguous. As discussed in Section 2.3, if the SAMR's decision

---

[36]Conversely, investors in the EU are likely to consider the likelihood of a successful appeal (Günster and van Dijk, 2016). As such, they may react negatively when a financial penalty is imposed, interpreting it as an indication that the appeals process has failed.

[37]We note that under a standard model of risk-averse investors who balance risks and expected returns, the equilibrium price of a stock will, ceteris paribus, increase if the stock's variance is reduced (Merton, 1987). Therefore, a firm's stock price may rise even if a financial penalty is imposed, provided the reduction in variance is sufficiently large.

[38]A similar analysis using our short-run CAR results from the NYSE reveals a 4.4% decline in Alibaba's market capitalization.

[39]JD also alleged that this monopolistic tactic caused substantial damage to JD and disrupted competition in the relevant market in a private action against Alibaba. As a result of this lawsuit, Alibaba Group was ordered to pay over RMB 1 billion in compensation to JD for its economic losses. See https://www.legaloneglobal.com/deal/d-1706084164543.

[40]Note that JD is also listed on NASDAQ, but not the NYSE.

leads to the cessation of supra-competitive pricing within the industry or the heightened risk of costly sectoral regulation, this could result in diminished profits and consequently a negative CAR. On the other hand, if the SAMR's decision signals to the market that Alibaba had engaged in unethical practices, prompting customers and suppliers to redirect their transactions to JD, this could positively affect JD's profitability and result in a positive CAR.

In Table 3, we present the results of our event study of the Investigation Announcement on JD's stock returns.[41] We examine various event window lengths, ranging from one day to eleven days around the event date, and assessed the CARs for JD's listings on both the HKSE and NASDAQ. On the HKSE, the CARs associated with the Investigation Announcement show varying signs and are not statistically significant. Similarly, on NASDAQ, most of the CARs are statistically insignificant, with the exception of a seven-day window where JD experienced an increase of 6.63% in its CAR. Collectively, these findings indicate that the impact of the Investigation Announcement on JD's stock price is indeterminate, aligning with previous results in other jurisdictions such as those reported by Bosch and Eckard (1991).

Turning to the Penalty Announcement, however, we note a negative and statistically significant CAR for JD across three, seven, and eleven-day event windows for both its HKSE and NASDAQ listings. This observation contrasts with the earlier results presented in Table 1, where Alibaba exhibited a positive and statistically significant CAR over one, three, and seven-day event windows.

In Table 4, we analyze the effects of alternative events (as detailed in Section 3), distinct from the Investigation Announcement and the Penalty Announcement, on JD's financial performance.[42] Industry-wide disturbances within the platform sector, such as the release of the SAMR's draft anti-monopoly guidelines for the platform sector, led to consistently negative CARs for JD, with reductions ranging from -2.7% to -10.77%. Additionally, adverse firm-specific events affecting Alibaba also tended to negatively impact JD's CARs. For example, when Alibaba received a RMB 500,000 penalty for not reporting its acquisition of InTime, negative CARs were observed for JD, even though it was not directly implicated by the SAMR.

In Figures 3 and 4, we conduct the same analysis as described in Section 5.1.1 and previously performed in Figures 1 and 2 for JD's HKSE stock. Unlike the results seen in Figure 1, the responses of JD's stock prices to the Investigation Announcement and the Penalty Announcement

---

[41]We conduct a similar analysis for Pinduoduo's HKSE and NASDAQ listings in Table A4, where the CARs show mixed results, with some displaying positive abnormal returns and others showing statistically insignificant changes.

[42]We conduct a similar analysis for Pinduoduo's NASDAQ listing and Alibaba's GICS competitors in Tables A5 and A6.

are considerably more subdued compared to those of Alibaba's stock prices.

While further investigation is necessary to fully interpret these findings, the results in Tables 3 and 4 seem consistent with the notion that antitrust enforcement in China is linked to an increased risk of costly sectoral regulation. As detailed in Section 2.3, many firms in China operate within and exploit regulatory "grey" areas until there is regulatory intervention. Consequently, unlike in transatlantic markets in the EU and U.S., sector-wide profitability in China is likely to decline in the face of potential decisive government action (Zhang, 2021; Zheng, 2023; Sokol, 2014).[43] These negative regulatory-spillover effects on JD are likely to overshadow any positive substitution effects that might otherwise enhance JD's profitability in the absence of such political dynamics.[44] Conversely, when regulatory uncertainty is resolved, for example at the end of an investigation, substitution effects typically dominate. In such cases, a significant financial penalty imposed on a competitor such as Alibaba is likely to enhance the profitability of a rival like JD. Similarly, a minimal penalty on a competitor like Alibaba could potentially reduce the profitability of a rival like JD.[45]

To determine if these regulatory-spillover effects are substantial enough to detract from the impact of the overall decision on Alibaba, we aggregate the CARs related to the Investigation Announcement with those from the Penalty Announcement for Alibaba, JD, and a group of sector competitors in Table 5.[46] These competitors are identified by their shared Global Industry Classification System (GICS) group with Alibaba (255030).[47] Additionally, we expand the event windows, effectively doubling their duration. Our findings in Table 5 indicate that the antitrust action against Alibaba had a substantial impact on industry profitability, as reflected by the negative and statistically significant CARs for both Alibaba and JD across the five, thirteen, and twenty-one-day windows. However, the CARs for Alibaba are more negative, ranging from -7.24% to -12.7%, compared to JD, whose CARs vary from -5.88% to -10.36%. Meanwhile, the CARs for competitors in Alibaba's GICS group appear positive but do not reach statistical significance at the 10% level. As detailed later in Sections 5.1.3 and 5.2, our results suggest that although there may be some regulatory spillover effects on rival firms, the impact of antitrust enforcement is predominantly concentrated on the target firm.

---

[43]We document the existence and magnitude of these regulatory spillover effects in Section 5.1.3.

[44]As discussed in Sections 2.1 and 2.3, substitution effects may occur if marginal consumers and suppliers of Alibaba shift their transactions to JD following the investigation.

[45]This explanation aligns with our findings as presented in Tables reported in Tables 1 and 3.

[46]We conduct a similar analysis for Pinduoduo's NASDAQ listing in Table A7.

[47]We adopt the GICS industry classification in accordance with Boller and Morton (2020), influenced by Bhojraj et al. (2003)'s research which demonstrates that GICS industries exhibit greater intra-industry comovement in stock returns, as well as more consistent cross-sectional comovement in various multiples, growth rates, and financial ratios.

5.1.3 Long Run CARs: Alibaba, JD and other Competitors

While the short run CARs in Sections 5.1.1 and 5.1.2 effectively isolate the impact of the Investigation Announcement and the Penalty Announcement on stock price movements, minimizing the influence of unrelated factors that might affect prices over an extended period, they may not fully capture the comprehensive impact of the decision throughout the entire investigation period.[48] To address these limitations, we conduct a long-run CAR analysis by estimating buy-and-hold-abnormal-returns (BHAR) for the entire period from the Investigation Announcement to the Penalty Announcement:

$$\text{BHAR}_{ih} = \prod_{t=1}^{h}(1 + R_{it}) - \prod_{t=1}^{h}(1 + R_{mt})$$

where BHAR_{ih} represents firm i's abnormal returns over the investigation period h, R_{it} represents the total stock return of firm i on day t, and R_{mt} denotes the total return on the domestic stock market index of firm i, as detailed in Section 4.1.

In Table 6, we present the results of our long-run event study analyzing the overall impact of the decision on Alibaba's stock returns. We examine several configurations of the event window, extending from a six-day period to a forty-day period surrounding the event horizon h,[49] and evaluate the BHARs for Alibaba, JD, and Alibaba's competitors on the HKSE.[50] The analysis shows a significant negative impact on Alibaba's BHARs, with values ranging from -16.6% to -24.79%, all of which are statistically significant. In comparison, JD also exhibited a negative and statistically significant impact from the decision, albeit less pronounced, with BHARs ranging from -17.21% to -20.04%.[51] For Alibaba's competitors within the same GICS category, the effect on BHARs was even more attenuated, with ranges from -8.12% to 12.2%. Additionally, when evaluating the combined BHARs for JD and Alibaba's GICS competitors, the BHARs ranged from -8.96% to -12.56%.[52]

---

[48]Note that in this context, we are specifically addressing the impact of the decision on capital market prices.

[49]The event horizon h spans the entire duration between the Investigation Announcement and the Penalty Announcement.

[50]We conduct a similar analysis for Pinduoduo's NASDAQ listing in Table A8.

[51]The average BHAR for Alibaba was -20.40%, while the average for JD was -18.37%.

[52]We conduct a similar analysis to that in Section 5.1.1 by averaging the long-run CARs for Alibaba across all event windows, from [0] to [-20, 20]. Next, we calculate the proportion of the financial penalty relative to the total change in market capitalization indicated by these CARs. Our findings reveal that the financial penalty accounts for only 1.8% of the decline in Alibaba's market capitalization.

Our results in Table 6 reinforce our narrative that the SAMR's action against Alibaba significantly impacted Alibaba's profitability while also generating regulatory spillover effects that affected its industry rivals. These spillover effects seem to be more pronounced for competitors that are perceived as "closer competitors" to the targeted firm.[53] Importantly, Alibaba's GICS code—255030—is classified under "Broadline Retail", which encompasses a variety of businesses, including brick-and-mortar stores. These stores may function as physical platforms that intermediate buyers and sellers, but which do not operate in the "e-commerce" space.[54] Additionally, this category includes one-sided businesses that do not compete with Alibaba on both sides of the market.[55] Accordingly, we posit that many of these firms may not be direct competitors to Alibaba's core businesses. In the following section, we strengthen these findings by turning to an alternative measure of profitability, assessing the impact of SAMR v. Alibaba (2021) on gross profit margins.

5.2 Synthetic Control and DID Results

While the analysis in Section 4.2 serves as a reasonable proxy for profitability under specific assumptions, CARs are affected by external market sentiment and macroeconomic conditions which may not be related to a firm's actual profitability. In particular, the identified events in Section 3 might correspond to changes in factors that may impact stock prices without influencing the firm's underlying profitability.[56] Furthermore, while CARs reflect investors' interpretations of news or events, these investors are typically uninformed about the firm's internal operations compared to management, even though such operations may significantly influence profitability.

To assess the impact of SAMR v. Alibaba (2021) on Alibaba's profitability, we harness a canonical potential outcomes framework. In this setup, Alibaba is identified as the treated firm and its competitors as the control group. The date of the Investigation Announcement is designated as the point of treatment (Reed et al., 2022). However, due to significant differences in the pre-treatment

---

[53]The concept of "closeness of competition" can be understood in terms of smaller distances between competitors in a Hotelling model of spatial competition (Hotelling, 1929). Although our study focuses on platform competition, the two-sided nature of platforms does not detract from the fact that platforms may compete with each other on one or both ends of the platform (see Section 2.1). Indeed, in Amelio et al. (2020), a Hotelling model is harnessed to demonstrate that indirect network externalities amplify the incentives for incumbent platforms to engage in exclusionary conduct. Note that we are not asserting that the Hotelling model leads to the outcomes observed in the actual competitive landscape.

[54]These platforms, such as the "Parkson Retail Group", are likely to intermediate different types of buyers and sellers when compared to Alibaba.

[55]Nevertheless, a significant majority (82%) of firms classified as "Broadline Retail" under GICS code 255030 operate as platforms which intermediate buyers and sellers.

[56]For example, a change in trading costs or fees will influence stock prices without affecting the profitability of the firms whose equities are traded.

gross profit margins between Alibaba and its competitors, employing a traditional Difference-in-Differences (DID) model is not feasible.[57] To circumvent this issue, we utilize a synthetic control method in our baseline specification, which allows us to construct a comparable synthetic control group that closely mimics Alibaba's gross profit margin in the absence of the antitrust intervention.

We begin by defining the expression $Y_{i,t}(0)$, which represents the gross profit margin of Alibaba in the absence of the antitrust investigation. i indexes the firm being the treated unit (Alibaba), and t indexes the time period.[58] As empirical observations of $Y_{i,t}(0)$ are available only up to the period T_0—the point at which the investigation commenced—we estimate the values of $Y_{it}(0)$ for all subsequent periods $t \geq T_0$ by assigning weights ω_j such that:

$$\text{argmin}_{\omega_1,\omega_2,...,\omega_J} = \sqrt{\sum_{t=1}^{T_0 - 1}(Y_{i,t} - \sum_{j=1}^{J}\omega_j Y_{j,t})^2},$$

$$\text{s.t. } \sum_{j=1}^{J}\omega_j = 1 \text{ and } \omega_j \geq 0 \text{ for } j = 1, 2., ..., J$$

where j indexes competing firms. Essentially, the weights ω_j are determined to minimize the differences between the treated unit (Alibaba) and the synthetic control $\sum_{j=1}^{J}\omega_j Y_{j,t}$ prior to the commencement of the investigation. Utilizing the weights ω_j derived from this formulation, we subsequently construct the synthetic control:

$$\hat{Y}_{i,t}(0) = \sum_{j=1}^{J}\omega_j Y_{j,t} \text{ , for } t > 0$$

Given our constructed synthetic control $\hat{Y}_{i,t}(0)$, the parameter τ_{it} may be used to represent the average treatment on the treated (ATT) effect of the antitrust investigation:

---

[57] In this scenario, the pre-treatment differences would violate the "parallel trends" assumption required for a DID model (Rambachan and Roth, 2023). Where a DID model is applicable, it is typically estimated via a two-way-fixed effects model: $Y_{it} = \alpha + \gamma \text{Alibaba}_i + \lambda \text{Investigation}_t + \delta(\text{Alibaba}_i{}^*\text{Investigation}_t) + \epsilon_{it}$, where Y_{it} relates to Alibaba's gross profit margin, Alibaba_i a binary indicator that indicates whether the firm relates to Alibaba, and Investigation_t is a binary indicator that indicates whether the Investigation Announcement has taken place. δ relates to the treatment effect of interest. In Table 7, we employ difference-in-differences (DID) models, alongside synthetic control and synthetic difference-in-differences models, to conduct our analysis.

[58] The parentheses in the notation indicate the treatment status of an observation, with 1 corresponding to treatment and 0 to the control group.

$$\tau_{it} = Y_{i,t}(1) - \hat{Y}_{i,t}(0) , t \geq T_0$$

where $Y_{i,t}(1)$ is the treated unit's observed gross profit margin post investigation.

In Table 7, we present our findings using various estimation methods, with results from the baseline Synthetic Control method detailed in column (2), and results from Synthetic-Difference-in-Differences (SDID) and traditional Difference-in-Differences (DID) also provided in columns (1) and (3) respectively.[59] In row (1), we designate Alibaba as the treated firm, with JD and Alibaba's GICS competitors serving as the control group. We observe a negative Average Treatment on the Treated (ATT) effect of -8.93%, suggesting that Alibaba's profitability decreased by 8.93% relative to the control group. Similar outcomes are reported for the SDID and DID estimates. In row (2), we adjust the specification by using only Alibaba's GICS competitors as the control group. The estimated parameter, τ_{it}, shows an increased magnitude of -9.10%, indicating a larger discrepancy in profitability between Alibaba and its more "distant" competitors. In row (3), JD is considered the treated firm, with Alibaba's GICS competitors (excluding Alibaba) forming the control group. Here, the parameter of interest, τ_{it}, is negative but not statistically significant, suggesting that JD's profitability did not decline to the same extent as Alibaba's as noted in row (2). Finally, in row (4), a simple DID model is estimated where Alibaba is the treated firm and JD serves as the sole control. The results indicate that Alibaba experienced a 7.12% decrease in gross profitability margins compared to JD, highlighting the potential impact of the antitrust action in curbing Alibaba's anti-competitive behavior.[60]

In Panels A to D of Figure 5, we display the gross profit margins of the treated firms juxtaposed against a synthetic control group of firms as outlined in the previous discussion, with a dotted line indicating the quarter of the Investigation Announcement. Notably in Panels A, B, and D, there is a discernible decrease in Alibaba's gross profit margins following the Investigation Announcement. This decline is observed even after accounting for the absence of parallel trends between the treated and control firms.

---

[59] The synthetic difference-in-differences (SDID) is a statistical methodology that combines elements of the synthetic control method with traditional difference-in-differences analysis (Arkhangelsky et al., 2021).

[60] Collectively, our results in Table 7 also underscore the significant impact of the antitrust decision against Alibaba.

6 Conclusion

In this article, we explore the dynamics of antitrust enforcement in the Chinese e-commerce platform market by examining the landmark decision of SAMR v. Alibaba (2021) through an event study methodology. Our findings indicate that the Investigation Announcement led to a negative abnormal stock market response for Alibaba, while the Penalty Announcement corresponded with positive abnormal returns for the company. In contrast, the Investigation Announcement induced either statistically insignificant or positive abnormal returns for Alibaba's competitors, whereas the Penalty Announcement was linked to a negative response in their abnormal returns. Examining the aggregate effects of the investigation on Alibaba, our long-run event study reveals that the overall investigation is associated with a 17% to 25% decline in Alibaba's abnormal stock returns, with a more muted decline observed among its competitors. By applying a synthetic control approach, we also discover that the investigation prompted a 7 to 9% reduction in Alibaba's gross profits compared to a group of similar competitor-control firms.

Three principal themes emerge from our analysis. First, as detailed above, our findings suggest that the decision was associated with a significant loss in Alibaba's profitability, particularly in relation to capital market measures. To illustrate this in a comparative context, our empirical findings reveal that while the financial penalty was objectively large in quantum, it accounts for only 4.2% of Alibaba's valuation loss when aggregating short-run CARs from both the investigation and penalty announcements. Furthermore, our longer-run event study indicates that the penalty accounts for just 1.8% of the total loss in Alibaba's valuation. These results stand in stark contrast to similar analyses in other jurisdictions, such as the 13% reported by Bosch and Eckard (1991) for U.S. firms and the 16% observed by Günster and van Dijk (2016) for EU firms.

Second, we note that our short-run CAR results are consistent with narratives suggesting the presence of regulatory uncertainties inherent in Chinese antitrust enforcement, which is partially resolved when financial penalties are announced. Within this regulatory environment, investors likely account for the wide range of potential outcomes a firm might face, including the risks of "worst-case scenarios" when regulators initiate actions that could adversely affect the firm. As these uncertainties are resolved, investors adjust their expectations more optimistically, as evidenced by our findings that Alibaba experienced a 4.3% to 7.3% increase in firm value after the penalty announcement.[61] Again, this contrasts with other regimes, such as the EU, where studies indicate that firms typically experience a 2% to 3% drop in value following an adverse decision by

---

[61]We present a conservative estimate using our HKSE CAR results; these values are amplified to 6.0% to 9.2% when using our NYSE CAR results.

antitrust regulators (Günster and van Dijk, 2016; Langus and Motta, 2007).

Finally, our long-run CAR results suggest the presence of regulatory spillovers that affect competitor firms when an investigation is initiated against a major player like Alibaba. We argue that these spillovers may contribute to the observed differences in our short-run CAR findings between the investigation and penalty announcements. However, our synthetic control analysis also reveals that, despite these spillovers, the targeted firm—Alibaba—experiences a more pronounced reduction in firm value compared to its competitors, highlighting the potential impact of the antitrust action in restraining Alibaba's anti-competitive behavior.

Nevertheless, the results from our research are limited to the e-commerce platform market, and may not be generalizable to broader product markets across China. These difficulties are compounded by the lack of publicly available data in other markets. For instance, upon reviewing all penalty decisions released by the antitrust authorities, we identified only 59 cases of anti-competitive agreements and 38 cases of abuse of monopoly power adjudicated between August 2010 and April 2021. Of these cases, only 12 and 7, respectively, involved firms that are listed on stock markets.[62] Furthermore, these 19 firms are not listed on the same stock exchange, which means their CARs are not directly commensurable. Future research should aim to bridge these data gaps, potentially by exploring measures of profitability that are not readily observable in stock market data.

Separately, our study has not identified the precise mechanisms by which Chinese antitrust authorities determine financial penalties. Anecdotally, Alibaba has publicly reiterated its readiness to cooperate with the SAMR's investigations and has had multiple interactions with SAMR officials. Indeed, in its final penalty decision, the SAMR explicitly noted Alibaba's cooperative stance as a factor in determining the penalties (SAMR v. Alibaba, 2021). This suggests that the pecuniary penalties might have been more severe had Alibaba not cooperated. Further research could explore how resistance to cooperation–possibly by foreign firms adhering to standard antitrust response policies–could lead to harsher financial penalties and, consequently, a more substantial impact on profitability.

---

[62]By comparison, Günster and van Dijk (2016) constructed a sample of 253 companies involved in 118 antitrust cases in the EU between 1974 and 2004, where stock market data was readily available.

References

Anti-Monopoly Law of the People's Republic of China. 2008. URL http://www.lawinfochina.com/display.aspx?id=6351&lib=law&EncodingName=big5.

Alibaba recorded revenue of $33.9 billion in quarterly results, up 37% y-o-y. *Global Times*, Feb 2021. URL https://www.globaltimes.cn/page/202102/1214770.shtml.

Abadie, Alberto, Athey, Susan, Imbens, Guido W, and Wooldridge, Jeffrey M. When should you adjust standard errors for clustering? *The Quarterly Journal of Economics*, 138(1):1–35, 2023.

Aguzzoni, Luca, Langus, Gregor, and Motta, Massimo. The effect of eu antitrust investigations and fines on a firm's valuation. *The Journal of Industrial Economics*, 61(2):290–338, 2013.

Alexander, Kern, Dhumale, Rahul, and Eatwell, John. 174Incentives versus Rules: Alternative Approaches to International Financial Regulation. In *Global Governance of Financial Systems: The International Regulation of Systemic Risk*. Oxford University Press, 09 2005. ISBN 9780195166989. doi: 10.1093/acprof:oso/9780195166989.003.0008. URL https://doi.org/10.1093/acprof:oso/9780195166989.003.0008.

Alibaba. About us, 2024. URL https://www.alibabagroup.com/en-US/about-alibaba.

Amelio, Andrea, Giardino-Karlinger, Liliane, and Valletti, Tommaso. Exclusionary pricing in two-sided markets. *International Journal of Industrial Organization*, 73:102592, 2020.

Areeda, Phillip and Hovenkamp, Herbert. *Antitrust Law: An Analysis of Antitrust Principles and Their Application*, volume 4. Wolters Kluwer, 2022. ISBN 9781454885305.

Arkhangelsky, Dmitry, Athey, Susan, Hirshberg, David A, Imbens, Guido W, and Wager, Stefan. Synthetic difference-in-differences. *American Economic Review*, 111(12):4088–4118, 2021.

Armstrong, Mark. Competition in two-sided markets. *The RAND Journal of Economics*, 37(3):668–691, 2006.

Armstrong, Mark and Wright, Julian. Two-sided markets, competitive bottlenecks and exclusive contracts. *Economic Theory*, 32:353–380, 2007.

Bai, Yong and Man, Dayu. Antitrust investigations in china: Overview, 2023. URL https://www.cliffordchance.com/content/dam/cliffordchance/briefings/2023/06/antitrust_investigations_in_china_overview_June2023.pdf.

Baker, Jonathan B. Protecting and fostering online platform competition: the role of antitrust law. *Journal of Competition Law & Economics*, 17(2):493–501, 2021.

Baker, Liana, Toonkel, Jessica, and Seetharaman, Deepa. Alibaba ipo prices at top of range, raising $21.8 billion. *Reuters*, September 2014. URL https://www.reuters.com/article/us-alibaba-ipo-idUSKBN0HD2CO20140918.

Banks, Jeffrey S and Weingast, Barry R. The political control of bureaucracies under asymmetric information. *American Journal of Political Science*, pages 509–524, 1992.

Bhojraj, Sanjeev, Lee, Charles MC, and Oler, Derek K. What's my line? a comparison of industry classification schemes for capital market research. *Journal of accounting research*, 41(5):745–774, 2003.

Binder, John J. The sherman antitrust act and the railroad cartels. *The Journal of Law and Economics*, 31(2):443–468, 1988.

Bittlingmayer, George and Hazlett, Thomas W. Dos kapital: Has antitrust action against microsoft created value in the computer industry? *Journal of Financial Economics*, 55(3):329–359, 2000.

Bizjak, John M and Coles, Jeffrey L. The effect of private antitrust litigation on the stock-market valuation of the firm. *The American Economic Review*, pages 436–461, 1995.

Boehmer, Ekkehart, Masumeci, Jim, and Poulsen, Annette B. Event-study methodology under conditions of event-induced variance. *Journal of financial economics*, 30(2):253–272, 1991.

Boller, Lysle and Morton, Fiona Scott. Testing the theory of common stock ownership. 2020.

Bolt, Wilko and Tieman, Alexander F. Heavily skewed pricing in two-sided markets. *International Journal of Industrial Organization*, 26(5):1250–1255, 2008.

Bork, Robert H. *The antitrust paradox*. Free Press, New York, NY, January 1993.

Bos, Iwan, Letterie, Wilko, and Scherl, Nina. Industry impact of cartels: Evidence from the stock market. *Journal of Competition Law & Economics*, 15(2-3):358–379, 2019.

Bosch, J.C. and Eckard, E.W. The profitability of price fixing: evidence from stock market reaction to federal indictments. *The review of Economics and Statistics*, 73:309–317, 1991.

Brown, Stephen J and Warner, Jerold B. Using daily stock returns: The case of event studies. *Journal of financial economics*, 14(1):3–31, 1985.

Burns, Malcolm R. The competitive effects of trust-busting: a portfolio analysis. *Journal of Political Economy*, 85(4):717–739, 1977.

Cadell, C. and Goh, B. China issues new anti-monopoly rules targeting its tech giants. *Reuters*, Feb 2021. URL https://www.reuters.com/world/china/china-issues-new-anti-monopoly-rules-targeting-its-tech-giants-2021-02-07/.

Caillaud, Bernard and Jullien, Bruno. Chicken & egg: Competition among intermediation service providers. *RAND journal of Economics*, pages 309–328, 2003.

Carroni, Elias, Madio, Leonardo, and Shekhar, Shiva. Superstar exclusivity in two-sided markets. *Management Science*, 70(2):991–1011, 2024.

Chen, M Keith and Sheldon, Michael. Dynamic pricing in a labor market: Surge pricing and flexible work on the uber platform. *Ec*, 16:455, 2016.

Cho, Sang Jun, Chung, Chune Young, and Kim, Daniel Sungyeon. Do antitrust laws erode shareholder returns? evidence from the chinese market. *European Journal of Law and Economics*, pages 1–28, 2023.

Chu, Junhong and Manchanda, Puneet. Quantifying cross and direct network effects in online consumer-to-consumer platforms. *Marketing Science*, 35(6):870–893, 2016.

Clements, Matthew T. Direct and indirect network effects: are they equivalent? *International Journal of Industrial Organization*, 22(5):633–645, 2004.

Dai, Ken and Deng, Jet. Competition enforcement in digital markets in china. *Antitrust Bulletin*, 67:580–599, 2022.

Dari-Mattiacci, Giuseppe and Deffains, Bruno. Uncertainty of law and the legal process. *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft*, pages 627–656, 2007.

De Vany, Arthur and McMillan, Henry. Was the antitrust action that broke up the movie studios good for the movies? evidence from the stock market. *American Law and Economics Review*, 6(1):135–153, 2004.

Deng, Iris. China's antitrust body fines academic database platform owner cnki us$12.6 million for monopolistic practices. *South China Morning Post*, Dec 2022.

Deng, Jet and Dai, Ken. Alibaba hit with record $2.8 billion fine for antitrust violations in china. *Dentons*, April 2021. URL https://www.dentons.com/en/insights/articles/2021/april/14/alibaba-hit-with-record-2-8-billion-fine-for-antitrust-violations-in-china.

Dobbie, Will, Goldin, Jacob, and Yang, Crystal S. The effects of pre-trial detention on conviction, future crime, and employment: Evidence from randomly assigned judges. *American Economic Review*, 108(2):201–240, 2018.

Evans, David and Schmalensee, Richard. The industrial organization of markets with two-sided platforms, 2005.

Fama, Eugene F. Efficient capital markets. *Journal of finance*, 25(2):383–417, 1970.

Farrell, Joseph and Klemperer, Paul. Coordination and lock-in: Competition with switching costs and network effects. *Handbook of industrial organization*, 3:1967–2072, 2007.

Farronato, Chiara and Fradkin, Andrey. The welfare effects of peer entry: the case of airbnb and the accommodation industry. *American Economic Review*, 112(6):1782–1817, 2022.

Filistrucchi, Lapo, Klein, Tobias J, and Michielsen, Thomas O. Assessing unilateral merger effects in a two-sided market: an application to the dutch daily newspaper market. *Journal of Competition Law and Economics*, 8(2):297–329, 2012.

Frandsen, Brigham, Lefgren, Lars, and Leslie, Emily. Judging judge fixed effects. *American Economic Review*, 113(1):253–277, 2023.

Fuller, Wayne A. *Introduction to Statistical Time Series*. John Wiley & Sons, 2009.

Garbade, Kenneth D, Silber, William L, and White, Lawrence J. Market reaction to the filing of antitrust suits: An aggregate and cross-sectional analysis. *The Review of Economics and Statistics*, 64:686–691, 1982.

Gelbach, Jonah B, Helland, Eric, and Klick, Jonathan. Valid inference in single-firm, single-event studies. *American Law and Economics Review*, 15(2):495–541, 2013.

Gilligan, Thomas W. The competitive effects of resale price maintenance. *The RAND Journal of Economics*, 17:544–556, 1986.

Günster, Andrea and van Dijk, Mathijs. The impact of european antitrust policy: Evidence from the stock market. *International Review of Law and Economics*, 46:20–33, 2016.

Hotelling, Habold. Stability in competition. *The economic journal*, 39(153):41–57, 1929.

Hovenkamp, Herbert. Antitrust and platform monopoly. *Yale LJ*, 130:1952, 2020.

Hua, X. Xi chairs leadership meeting on economic work for 2021. *Xinhua Net*, Dec 2020a. URL http://www.xinhuanet.com/english/2020-12/11/c_139582746.htm.

Hua, X. China to toughen supervision over monopoly, unfair competition. *Xinhua Net*, Dec 2020b. URL http://www.xinhuanet.com/english/2020-12/18/c_139601189.htm.

Hua, X. Rising above virus test, china sets economic priorities for 2021. *Xinhua Net*, Dec 2020c. URL http://www.xinhuanet.com/english/2020-12/19/c_139601510.htm.

Ibáñez Colomo, Pablo. The future of article 102 tfeu after intel. *Journal of European Competition Law & Practice*, 9(5):293–303, 2018.

Khoo, Kenneth. Regulating the inferential process in alleged article 101 tfeu infringements. *Journal of Competition Law & Economics*, 13(1):45–88, 2017.

Khoo, Kenneth. Anti-competitive mergers in two-sided digital platform markets: The case of uber-grab. *Singapore Academy of Law Journal*, 33:202–240, 2021.

Klein, Benjamin and Leffler, Keith B. The role of market forces in assuring contractual performance. *Journal of political Economy*, 89(4):615–641, 1981.

Lai, Lin. Share of the digital economy in the gdp of china from 2015 to 2022, 2023. URL https://www.statista.com/statistics/1250092/china-digital-economy-gdp-share/.

Lai, Sinchit. Bid rigging, a faintly discernible enumeration under article 13 of the anti-monopoly law in china. *University of Pennsylvania Asian law Review*, 12:244–266, 2016.

Langus, G. and Motta, M. On the effect of eu antitrust investigations and fines on infringing firms' market value. In EHLERMANN, Claus-Dieter and ATANASIU, Isabela, editors, *European Competition Law Annual 2006. Enforcement of Prohibition of Cartels*, pages 363–376. Hart Publishing, 2007.

Liu, C., Li, A., Bi, Y., Liu, S., Hong, L., and Liu, Jeff. China's anti-monopoly law enters its second decade. *King & Wood Mallesons*, Feb 2020. URL https://www.chinalawinsight.com/2020/02/articles/antitrust/chinas-anti-monopoly-law-enters-its-second-decade/.

Liu, Z. The choice of enforcement of anti-monopoly law under the view of the uncertainty of law. *Competition Policy Research*, 2:42–55, 2016.

Lu, Agnes. Samr investigates alibaba for alleged monopolistic behavior. *Pandaily*, Dec 2020. URL https://pandaily.com/samr-investigates-alibaba-for-alleged-monopolistic-behavior/.

MacKinlay, A Craig. Event studies in economics and finance. *Journal of economic literature*, 35 (1):13–39, 1997.

Marco Colino, Sandra. The case against alibaba in china and its wider policy repercussions, 2022.

McAfee, R Preston and Williams, Michael A. Can event studies detect anticompetitive mergers? *economics Letters*, 28(2):199–203, 1988.

Merton, Robert C. A simple model of capital market equilibrium with incomplete information. *Journal of Finance*, 42(3):483–510, 1987.

Mueller, Dennis C. *Public choice III*. Cambridge University Press, 2003.

Mullin, George L, Mullin, Joseph C, and Mullin, Wallace P. The competitive effects of mergers: stock market evidence from the us steel dissolution suit. *The Rand journal of economics*, 26: 314–330, 1995.

Pan, N. An empirical study of the discretion of anti-monopoly penalty. *Journal of Shandong University(Philosophy and Social Sciences)*, 55:47–57, 2022.

Parker, Geoffrey, Petropoulos, Georgios, and Van Alstyne, Marshall W. Digital platforms and antitrust. 2020.

Patell, James M. Corporate forecasts of earnings per share and stock price behavior: Empirical test. *Journal of accounting research*, pages 246–276, 1976.

Rambachan, Ashesh and Roth, Jonathan. A more credible approach to parallel trends. *Review of Economic Studies*, 90(5):2555–2591, 2023.

Reed, Tristan, Pereira López, Mariana, Urrutia Arrieta, Ana, and Iacovone, Leonardo. Cartels, antitrust enforcement, and industry performance. 2022.

Rietveld, Joost and Schilling, Melissa A. Platform competition: A systematic and interdisciplinary review of the literature. *Journal of Management*, 47(6):1528–1563, 2021.

Rochet, Jean-Charles and Tirole, Jean. Platform competition in two-sided markets. *Journal of the european economic association*, 1(4):990–1029, 2003.

Rong, Ke, Sokol, D Daniel, Zhou, Di, and Zhu, Feng. Antitrust platform regulation and entrepreneurship: Evidence from china. *Harvard Business School Technology & Operations Mgt. Unit Working Paper*, (24-039), 2024.

SAMR v. Alibaba. *State Administration for Market Regulation Administrative Penalty Decision No. 21.* 2021. URL https://www.samr.gov.cn/xw/zj/202104/t20210410_327702.html.

Scott-Morton, Fiona. Draft report of the committee for the study of digital platforms, market structure and antitrust subcommittee, September 2019. Draft report.

Sokol, D Daniel. Tensions between antitrust and industrial policy. *Geo. Mason L. Rev.*, 22:1247, 2014.

Sokol, Daniel and Ma, Jingyuan. Procedural fairness in chinese antitrust. In Sokol, Daniel and Guzman, Andrew T., editors, *Antitrust Procedural Fairness.* Oxford University Press, 2019.

Spier, Kathryn E. Litigation. *Handbook of law and economics*, 1:259–342, 2007.

Stephenson, Matthew C. Bureaucratic decision costs and endogenous agency expertise. *The Journal of Law, Economics, & Organization*, 23(2):469–498, 2007.

Sun, Jin. Digital economy and the adaptive amendment of the anti-monopoly law. *Science of Law*, 39:63–76, 2021.

Van den Broek, Stijn, Kemp, Ron GM, Verschoor, Willem FC, and De Vries, Anne-Claire. Reputational penalties to firms in antitrust investigations. *Journal of Competition Law and Economics*, 8(2):231–258, 2012.

Wang, J. Exploring the certainty of antitrust fines - an analysis based on typical antitrust fine cases in china. *Law Science*, 39:66–82, 2016.

Wang, J. and Fang, X. Deterrence idea and the effective coordination of the chinese antimonopoly sanctions. *Business and Economic Law Review*, 2:113–131, 2019.

Wang, J. and Fang, X. An empirical research on the uncertainty of china's anti-monopoly fine discretion and its countermeasures. *Social Science Front*, 44:202–214, 2021.

Wang, J. and Zhang, J. The deterrence theory and the perfection of chinese anti-monopoly fine system - the research path of law and economics. *Science of Law*, 34:124–136, 2016.

Wang, Keju. Country to help digital economy to thrive. *China Daily*, July 2024a. URL https://www.chinadaily.com.cn/a/202407/06/WS6688842aa31095c51c50cb47.html.

Wang, Shiqi. The person in charge of the zhejiang province samr: The investigation team entered alibaba for an on-site investigation and the investigation is completed. *Zhejiang Daily*, December 2020. URL https://ishare.ifeng.com/c/s/v002fsOJCqIYIldt9AsYsGIRNeKr3j66CviQiYvEr1QYwzA__.

Wang, Xiaoye. Criticism against eu model antitrust regulation of platform economy. *Law Review*, 42:11–24, 2024b.

Wang, Xiaoye and Gao, Yajie. China's antimonopoly law enforcement in the digital economy. *Antitrust Bulletin*, 67:562–578, 2022.

Worthington, Andrew and Higgs, Helen. Random walks and market efficiency in european equity markets. *The Global Journal of Finance and Economics*, 1(1):59–78, 2004.

Wu, Peicheng. Paradigm review and rule adaptation in the anti-monopoly of digital platform: Mirroring the ordoliberalism of the eu digital markets act. *Journal of Soochow University(Philosophy & Social Science Edition)*, 51:85–97, 2024.

Wu, Zixi. Antitrust law promotes economic analysis of innovation on digital platforms. *Contemporary Law Review*, 37:44–56, 2023.

Xin, O. Penetration rate of online shopping in china from 2013 to 2023, 2024a. URL https://www.statista.com/statistics/1129915/china-ecommerce-share-of-retail-sales/#statisticContainer.

Xin, O. E-commerce share of total retail sales in consumer goods in china from 2014 to 2023, 2024b. URL https://www.statista.com/statistics/1129915/china-ecommerce-share-of-retail-sales/.

Yang, Stephanie and Yang, Jing. Alibaba, amid antitrust pressure, is conducting internal review. *The Wall Street Journal*, Feb 2021. URL https://www.wsj.com/articles/alibabas-quarterly-sales-lifted-by-extended-shopping-event-11612272234.

Yang, Zhenyi, Yu, Yiwei, Zhang, Yubing, and Zhou, Sili. Policy uncertainty exposure and market value: Evidence from china. *Pacific-Basin Finance Journal*, 57:101178, 2019.

Zhai, K. and Wei, L. China lays plans to tame tech giant alibaba. *The Wall Street Journal*, Mar 2021. URL https://www.wsj.com/articles/china-regulators-plan-to-tame-tech-giant-alibaba-jack-ma-11615475344.

Zhang, Angela. *Chinese antitrust exceptionalism: How the rise of China challenges global regulation.* Oxford University Press, 2021.

Zhang, J. Alibaba antitrust probe: Ceo affirms commitments to regulated development after on-site investigation. *South China Morning Post*, Dec 2020. URL https://www.scmp.com/tech/policy/article/3115399/alibaba-antitrust-probe-ceo-affirms-commitment-regulated-development.

Zhao, Xiaofan and Qi, Ye. Why do firms obey?: The state of regulatory compliance research in china. *Journal of Chinese Political Science*, 25(2):339–352, 2020.

Zheng, Wentong. The chinese antitrust paradox. *The University of Chicago Business Law Review*, 2(2):3, 2023.

Table 1: Alibaba Short Window CARs for Main Events (HKSE/NYSE)

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]	Stock Exchange
24 Dec 2020	Investigation Announcement	-.0862**	-.1818***	-.1149***	-.1539***	HKSE
24 Dec 2020	Investigation Announcement	-.1356***	-.1391***	-.0832**	-.1372***	NYSE
12 Apr 2021	Penalty Announcement	.0730***	.0653**	.0426**	.0270	HKSE
12 Apr 2021	Penalty Announcement	.0919***	.0597**	.0348	.0398	NYSE

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Figure 1: Price Series for Alibaba (HKSE)
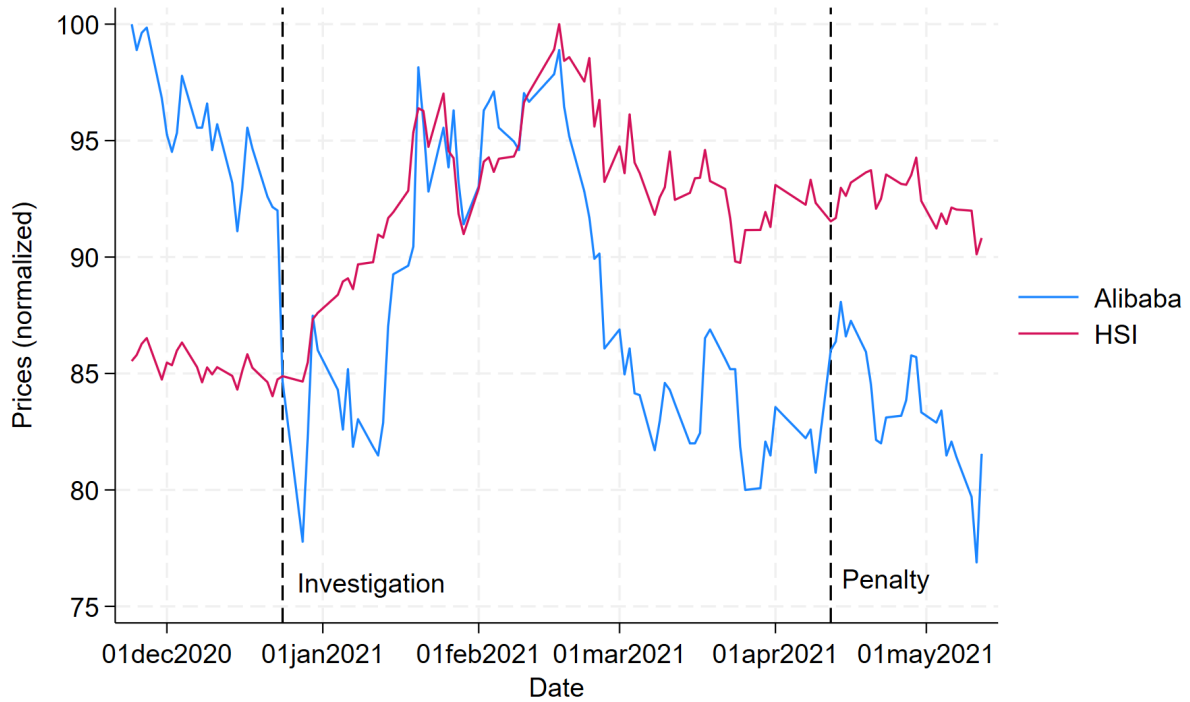
Note: This figure displays a price series of Alibaba's stock prices on the HKSE alongside the Hang Seng Index's prices on the HKSE. The two dashed lines mark the dates of the Investigation Announcement (24 Dec 2020) and the Penalty Announcement (10 April 2021). To standardize the data for comparative analysis, we normalize all prices by dividing the daily stock prices of each entity by its maximum price observed throughout the series.

Figure 2: Alibaba's Abnormal Returns (HKSE) on Main Event Dates
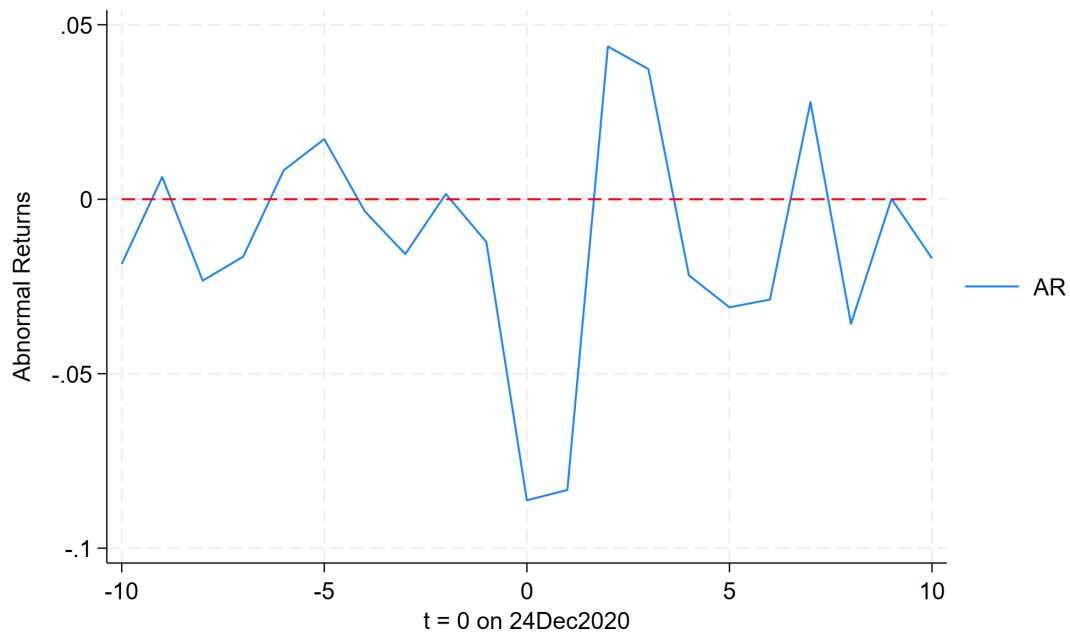
Panel A: Alibaba Abnormal Returns (Investigation Announcement)
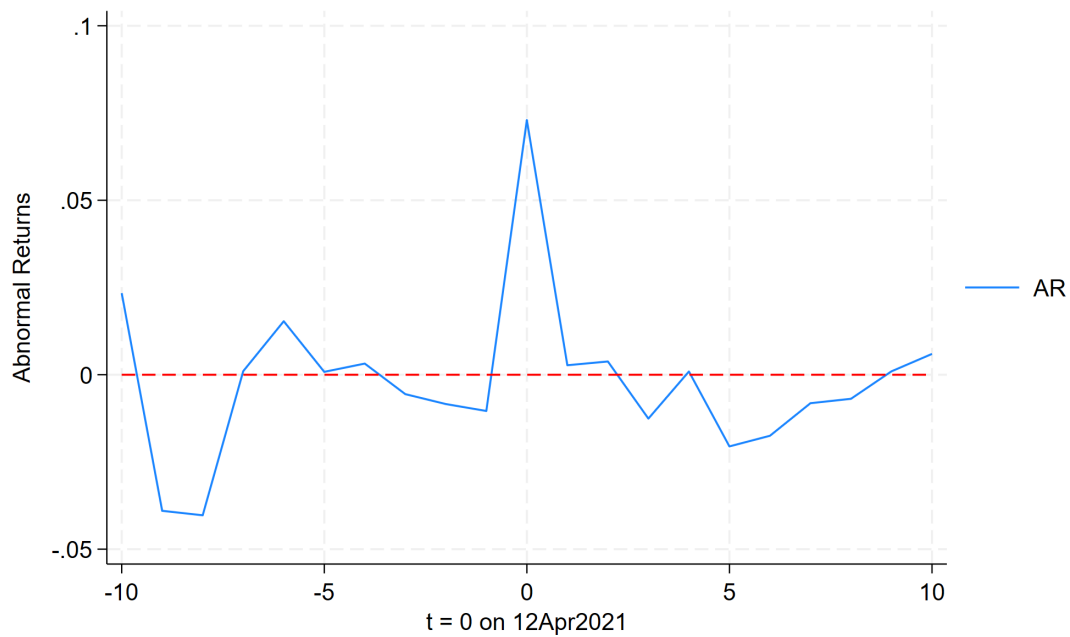
Panel B: Alibaba Abnormal Returns (Penalty Announcement)

Note: This figure presents a time series of abnormal returns for Alibaba's listing on the HKSE. Panel A illustrates the time series surrounding the Investigation Announcement on 24 December 2020, and Panel B shows the series around the Penalty Announcement on 10 April 2021. The x-axis represents the number of days surrounding the event date, with day 0 marking the event date itself.

Table 2: Alibaba Short Window CARs for Sub Events (HKSE)

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]
24 Oct 2020	Jack Ma ran into trouble after criticizing China's financial industry and its regulatory system.	.0099	.0206	-.0175	-.0300**
02 Nov 2020	Four major regulators collectively interviewed Ant Group's executives.	-.0021	-.0315**	-.0728***	-.1105***
03 Nov 2020	Shanghai Stock Exchange suspended Ant Group's listing.	-.0164	-.0973***	-.1460***	-.1637***
10 Nov 2020	SAMR released the "Anti-monopoly Guidelines on Platform Economy (Draft for Comment)".	-.0664***	-.1553***	-.1460***	-.2848***
30 Nov 2020	The Political Bureau of the CCP Central Committee mentioned "doing a good job in intellectual property protection, anti-monopoly and fair competition review".	-.0111	-.0421*	-.0707**	-.0098
11 Dec 2020	The Political Bureau of CCP called for strengthening anti-monopoly measures and preventing disorderly capital expansion.	.0066	-.0351*	-.0345*	-.0117
14 Dec 2020	Alibaba was fined 500,000 yuan by the (SAMR) for not reporting on its acquisition of InTime's equity.	-.0231	-.0326*	-.0228	-.0455*
18 Dec 2020	The Central Economic Work Conference listed "strengthening anti-monopoly" as one of the key tasks in 2021.	-.0032	-.0011	-.0187	-.2040***
27 Dec 2020	The SAMR in Zhejiang Province stated that it has completed the field/site investigation of Alibaba.	-.0833**	-.1256***	-.1206***	-.1992***
02 Feb 2021	Alibaba released its financial report for the third quarter of fiscal 2021, saying that it is fully cooperating with the SAMR's ongoing investigation.	.0206	.0157	-.0089	.0130
07 Feb 2021	The Anti-monopoly Commission of the State Council released the Anti-monopoly Guidelines of the Anti-monopoly Commission of the State Council on Platform Economy.	-.0073	-.0398*	-.0301	-.0252

Table 2 continued

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]
11 Mar 2021	The Wall Street Journal reported that China's antitrust regulators are considering to impose a record-breaking fine on Alibaba.	-.0223	.0089	-.0253	.0183
12 Mar 2021	The SAMR imposed a total of 6 million RMB ($923,000) administrative fines on 12 Chinese Internet companies involved in monopoly acquisitions, including Tencent and Baidu.	.0175	-.0295	-.0131	.0370
15 Mar 2021	The Wall Street Journal quoted people familiar with the matter that the Chinese authorities have asked Alibaba Group to dispose of its media assets.	-.0246	-.0150	.0149	.0223
18 Mar 2021	The Chinese government interviewed 11 technology companies, including Tencent, Alibaba, ByteDance, Xiaomi and other well-known companies.	.0338	.0585**	.0250	.0035
09 Apr 2021	The Beijing Municipal Commission of Housing and Urban-Rural Development a second-hand trading platform owned by Alibaba to rectify its illegal behavior of publishing illegal rental information.	-.0107	.0538**	.0581**	.0624**
13 Apr 2021	Three Chinese ministries and commissions jointly interviewed 34 Internet platform companies, requiring all platforms to conduct a comprehensive self-inspection within a month.	.0028	.0798***	.0498**	.0098
19 Apr 2021	Wukuang Fazhan, a listed company, announced that it has recently received an investigation letter issued by the SAMR because it and Alibaba has established a joint venture on iron and steel e-commerce.	-.0204	-.0367	-.0603*	.0227

Note: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table 3: JD Short Window CARs for Main Events (HKSE/NASDAQ)

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]	Stock Exchange
24 Dec 2020	Investigation Announcement	-.0276	-.0062	.0070	.0263	HKSE
24 Dec 2020	Investigation Announcement	-.0165	-.0289	.0663***	.0212	NASDAQ
12 Apr 2021	Penalty Announcement	-.0118	-.0526*	-.1107***	-.0902**	HKSE
12 Apr 2021	Penalty Announcement	-.0182	-.0571*	-.1071***	-.1338***	NASDAQ

Note: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table 4: JD Short Window CARs for Sub Events (HKSE)

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]
24 Oct 2020	Jack Ma ran into trouble after criticizing China's financial industry and its regulatory system.	.0034	-.0142	-.0128	-.0457*
02 Nov 2020	Four major regulators collectively interviewed Ant Group's executives.	-.0041	-.0158	.0627*	.0151
03 Nov 2020	Shanghai Stock Exchange suspended Ant Group's listing.	-.0205	-.0010	.0385	-.0576***
10 Nov 2020	SAMR released the "Anti-monopoly Guidelines on Platform Economy (Draft for Comment)".	-.1076***	-.2104***	-.0270*	-.0616***
30 Nov 2020	The Political Bureau of the CCP Central Committee mentioned "doing a good job in intellectual property protection, anti-monopoly and fair competition review".	.0072	-.0299	-.0795**	-.0529**
11 Dec 2020	The Political Bureau of CCP called for strengthening anti-monopoly measures and preventing disorderly capital expansion.	-.0035	-.0238	-.0835**	-.0598*
14 Dec 2020	Alibaba was fined 500,000 yuan by the (SAMR) for not reporting on its acquisition of InTime's equity.	-.0144	-.0425*	-.0501*	-.0972**
18 Dec 2020	The Central Economic Work Conference listed "strengthening anti-monopoly" as one of the key tasks in 2021.	-.0030	.0046	.0387	-.0264
27 Dec 2020	The SAMR in Zhejiang Province stated that it has completed the field/site investigation of Alibaba.	-.0212	-.0507*	.0314	-.0202
02 Feb 2021	Alibaba released its financial report for the third quarter of fiscal 2021, saying that it is fully cooperating with the SAMR's ongoing investigation.	.0372	.0405	-.0199	-.0454**
07 Feb 2021	The Anti-monopoly Commission of the State Council released the Anti-monopoly Guidelines of the Anti-monopoly Commission of the State Council on Platform Economy.	-.0091	-.0230	-.0132	.0537*

Table 4 continued

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]
11 Mar 2021	The Wall Street Journal reported that China's antitrust regulators are considering to impose a record-breaking fine on Alibaba.	.0336	.0463	-.0833**	-.1275***
12 Mar 2021	The SAMR imposed a total of 6 million RMB ($923,000) administrative fines on 12 Chinese Internet companies involved in monopoly acquisitions, including Tencent and Baidu.	-.0230	-.0591**	-.0535**	-.1113***
15 Mar 2021	The Wall Street Journal quoted people familiar with the matter that the Chinese authorities have asked Alibaba Group to dispose of its media assets.	-.0693**	-.0752**	-.0254	-.0928**
18 Mar 2021	The Chinese government interviewed 11 technology companies, including Tencent, Alibaba, ByteDance, Xiaomi and other well-known companies.	-.0117	-.0176	-.0628**	-.0781**
09 Apr 2021	The Beijing Municipal Commission of Housing and Urban-Rural Development a second-hand trading platform owned by Alibaba to rectify its illegal behavior of publishing illegal rental information.	-.0022	-.0403*	-.0792**	-.0696**
13 Apr 2021	Three Chinese ministries and commissions jointly interviewed 34 Internet platform companies, requiring all platforms to conduct a comprehensive self-inspection within a month.	-.0386*	-.0445*	-.0891**	-.1235***
19 Apr 2021	Wukuang Fazhan, a listed company, announced that it has recently received an investigation letter issued by the SAMR because it and Alibaba has established a joint venture on iron and steel e-commerce.	-.0121	-.0274	-.0400*	-.0731**

Note: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Figure 3: Price Series for JD (HKSE)

Note: This figure displays a price series of JD's stock prices on the HKSE alongside the Hang Seng Index's prices on the HKSE. The two dashed lines mark the dates of the Investigation Announcement (24 Dec 2020) and the Penalty Announcement (10 April 2021). To standardize the data for comparative analysis, we normalize all prices by dividing the daily stock prices of each entity by its maximum price observed throughout the series.

Figure 4: JD's Abnormal Returns (HKSE) on Main Event Dates
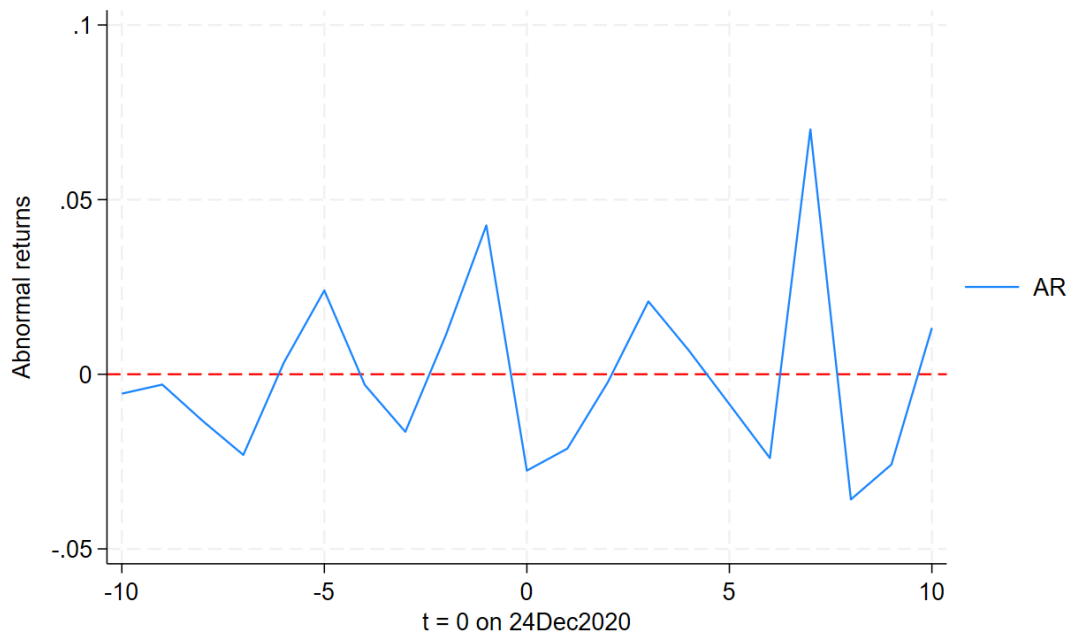
Panel A: JD Abnormal Returns (Investigation Announcement)
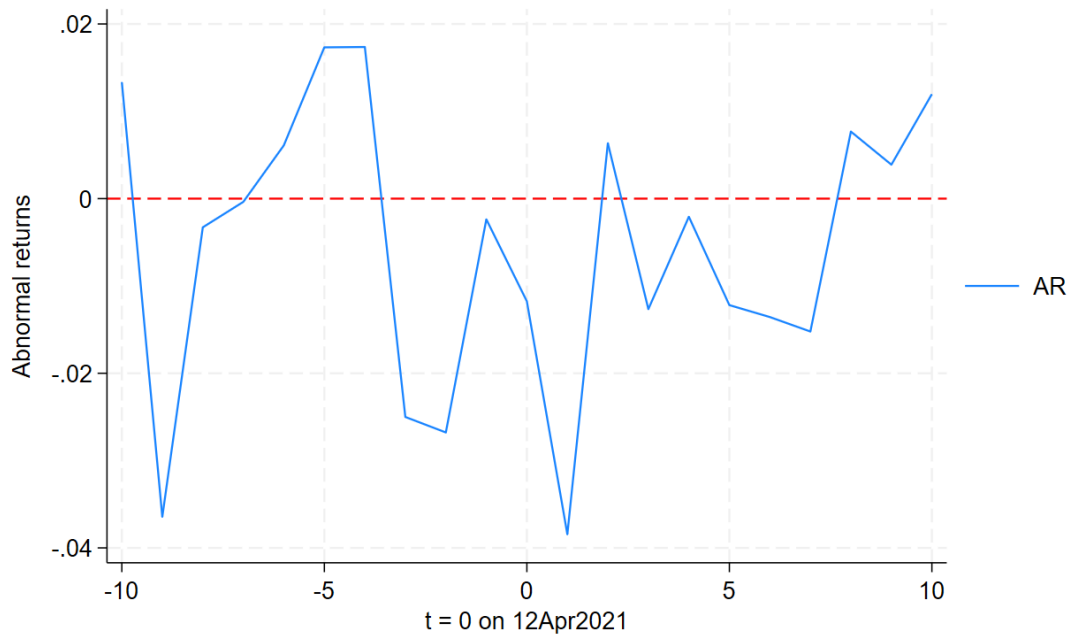
Panel B: JD Abnormal Returns (Penalty Announcement)

Note: This figure presents a time series of abnormal returns for JD's listing on the HKSE. Panel A illustrates the time series surrounding the Investigation Announcement on 24 December 2020, and Panel B shows the series around the Penalty Announcement on 10 April 2021. The x-axis represents the number of days surrounding the event date, with day 0 marking the event date itself.

Table 5: CARs for Combined Effect of Investigation and Financial Penalties on Alibaba, JD, and GICS255030 Competitors (HKSE)

Firm	Event Window [0]	Event Window [-2;2]	Event Window [-6;6]	Event Window [-10;10]	Stock Exchange
Alibaba	-.0133	-.1165***	-.0724**	-.1270***	HKSE
JD	-.0393	-.0588*	-.1036**	-.0639*	HKSE
GICS255030 Competitors	.0062	.0397	.0118	.0101	HKSE

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). "GICS255030 Competitors" refer to competitors who share the same 6-digit Global Industry Classification Standard (GICS) codes as Alibaba, and do not include JD unless otherwise specified. An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table 6: Long Window CARs for Alibaba, JD, and GICS255030 (HKSE)

| Dates Long Horizon	Firms	Event Window [0]	Event Window [-3;3]	Event Window [-5;5]	Event Window [-10;10]	Event Window [-20;20]	Stock Exchange
24 Dec 2020 - 12 Apr 2021	Alibaba	-.1660***	-.1922***	-.1920***	-.2479***	-.2220***	HKSE
24 Dec 2020 - 12 Apr 2021	JD	-.1739***	-.1721***	-.1727***	-.2004***	-.1994***	HKSE
24 Dec 2020 - 12 Apr 2021	GICS 255030 Competitors with JD	-.1232***	-.1256***	-.1112***	-.1234***	-.0896**	HKSE
24 Dec 2020 - 12 Apr 2021	GICS 255030 Competitors without JD	-.1193***	-.1220**	-.1065**	-.1174***	-.0812**	HKSE

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. Long window CARs are computed using Buy-and-Hold Abnormal Returns (BHAR). P-values are constructed using the SQ test proposed by Gelbach et al. (2013). "GICS255030 Competitors" refer to competitors who share the same 6-digit Global Industry Classification Standard (GICS) codes as Alibaba, and do not include JD unless otherwise specified. An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table 7: SC/SDID/DID Results for the Impact of Antitrust Enforcement on Gross Profit Margins

	(1) Gross Margins (SDID)	(2) Gross Margins (SC))	(3) Gross Margins (DID)	Treatment and Control
ATT	-.0530**	-.0893***	-.0893***	Alibaba vs GICS 255030 (with JD)
Standard Error	.0270	.02602	.0072	
ATT	-.0778***	-.0910***	-.0910***	Alibaba vs GICS 255030 (without JD)
Standard Error	.0262	.0271	.0077	
ATT	-.0186	-.0198	-.0198**	JD vs GICS 255030 (without Alibaba)
Standard Error	.0262	.0272	.0077	
ATT			-.0712***	Alibaba vs JD
Wild Bootstrap p-value			.000	

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. We cluster standard errors at the firm level, in line with Abadie et al. (2023). "GICS255030 Competitors" refer to competitors who share the same 6-digit Global Industry Classification Standard (GICS) codes as Alibaba, and do not include JD unless otherwise specified.

Figure 5: Synthetic Control Illustrations of Alibaba/JD vs. GICS 255030 Firms
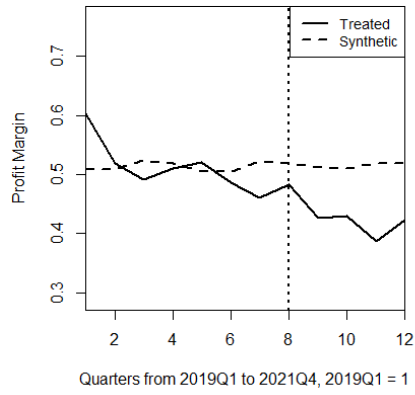
Panel A: Synthetic Control of
Alibaba vs. GICS255030
Competitors (including JD)
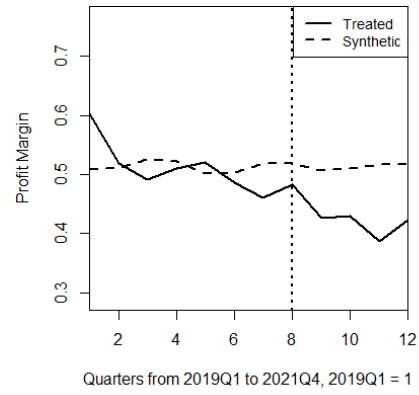
Panel B: Synthetic Control of
Alibaba vs. GICS255030
Competitors (not including JD)
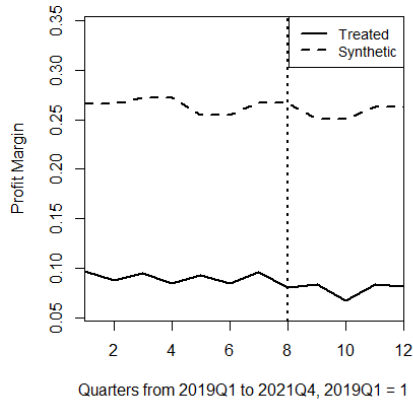
Panel C: Synthetic Control of JD
vs. GICS255030 Competitors (not
including Alibaba)
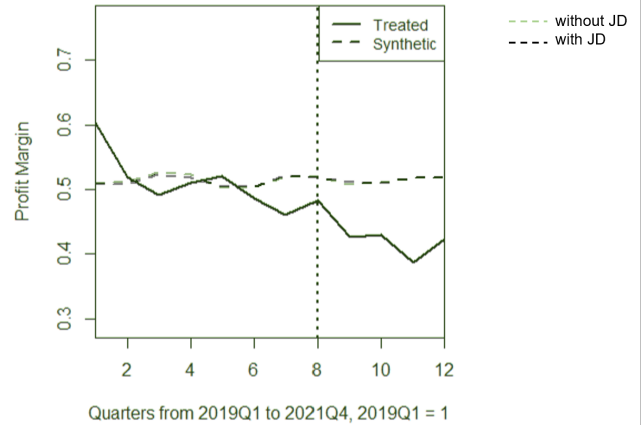
Panel D: Comparing SC formed
with/without JD)

Note: This figure displays a time series of gross profit margins from Q1 2019 to Q4 2021, comparing treated firms (bold line) to synthetic control firms (dashed line). A vertical dotted line marks the quarter of the investigation announcement. In Panels A, B, and D, Alibaba is identified as the treated firm, whereas in Panel C, JD is designated as the treated firm.

7 Appendix

Table A1: List of Events

PANEL A: MAIN EVENTS

24 Dec 20 The SAMR announced that Alibaba was under investigation for monopolistic conduct.

10 Apr 2021 The SAMR imposed administrative fine on Alibaba for its "two choose one" conduct in China's Online Retail industry.

12 Apr 2021 Alibaba held a conference call for the penalty decision imposed on 10 Apr 2021.

PANEL B: SUBSIDIARY EVENTS

24 Oct 2020 Jack Ma ran into trouble after criticizing China's financial industry and its regulatory system at a forum.

2 Nov 2020 Four major regulators collectively interviewed Ant Group's executives including Jack Ma.

3 Nov 2020 Shanghai Stock Exchange announces decision to suspend Ant Group's listing.

10 Nov 2020 State Administration for Market Regulation of the Communist Party of China announced the "Anti-monopoly Guidelines on Platform Economy (Draft for Comment).

30 Nov 2020 In the 25th collective study on strengthening intellectual property protection in China, the Political Bureau of the CPC Central Committee mentioned "doing a good job in intellectual property protection, anti-monopoly and fair competition review".

11 Dec 2020 In a meeting held by the Political Bureau of the CPC Central Committee, the Bureau, for the first time, called for strengthening anti-monopoly measures and preventing disorderly expansion of capital.

14 Dec 2020 Alibaba was fined 500,000 yuan by the SAMR for not reporting on its acquisition of InTime's equity.

18 Dec 2020 The Central Economic Work Conference listed "strengthening anti-monopoly" as one of the key tasks in 2021.

27 Dec 2020 The SAMR in Zhejiang Provincial stated that it has completed the field/site investigation of Alibaba.

2 Feb 2021 Alibaba released its financial report for the third quarter of fiscal 2021 (fourth quarter of 2020), saying that the investigation is ongoing and the company is fully cooperating with the SAMR.

7 Feb 2021 The Anti-monopoly Commission of the State Council released the Anti-monopoly Guidelines of the Anti-monopoly Commission of the State Council on Platform Economy.

11 Mar 2021 The Wall Street Journal reported on Thursday (March 11), citing people familiar with the matter, that China's antitrust regulators are considering to impose a record-breaking fine on Alibaba.

12 Mar 2021 The SAMR officially imposed a total of 6 million RMB ($923,000) administrative fines on 12 Chinese Internet companies involved in monopoly acquisitions, including Tencent and Baidu.

15 Mar 2021 The Wall Street Journal quoted people familiar with the matter that the Chinese authorities have asked Alibaba Group to dispose of its media assets.

18 Mar 2021 The Chinese government interviewed 11 technology companies, including Tencent, Alibaba, ByteDance, Xiaomi and other well-known companies.

9 Apr 2021 The Beijing Municipal Commission of Housing and Urban-Rural Development announced that it interviewed a second-hand trading platform owned by Alibaba, to rectify the illegal behavior of publishing illegal rental information.

13 Apr 2021 Three Chinese ministries and commissions jointly interviewed 34 Internet platform companies, requiring all platforms to conduct a comprehensive self-inspection and complete rectification within one month.

19 Apr 2021 Wukuang Fazhan, a listed company, announced that it has recently received an investigation letter issued by the SAMR because it and Alibaba has established a joint venture.

Table A2: Shapiro-Wilk Test for Normality Distribution on Alibaba's Abnormal Returns

Variable	Observations	Shapiro-Wilk Test Statistic W	Transformed W Statistic z	Prob > z	Number of Firm(s)
Alibaba Abnormal Returns (HKSE)	518	.9401	7.306	.000	1

Note: This table presents the results of the Shapiro-Wilk Test applied to the distribution of Alibaba's abnormal returns on the HKSE. The column labeled "Prob ¿ z" shows the probability of observing the given results under the assumption that the null hypothesis (the data comes from a normal distribution) is true. A p-value less than a predetermined significance level (such as 0.05) indicates that the data likely does not originate from a normal distribution.

Figure A1: Abnormal Return Distribution of Alibaba and JD (HKSE)
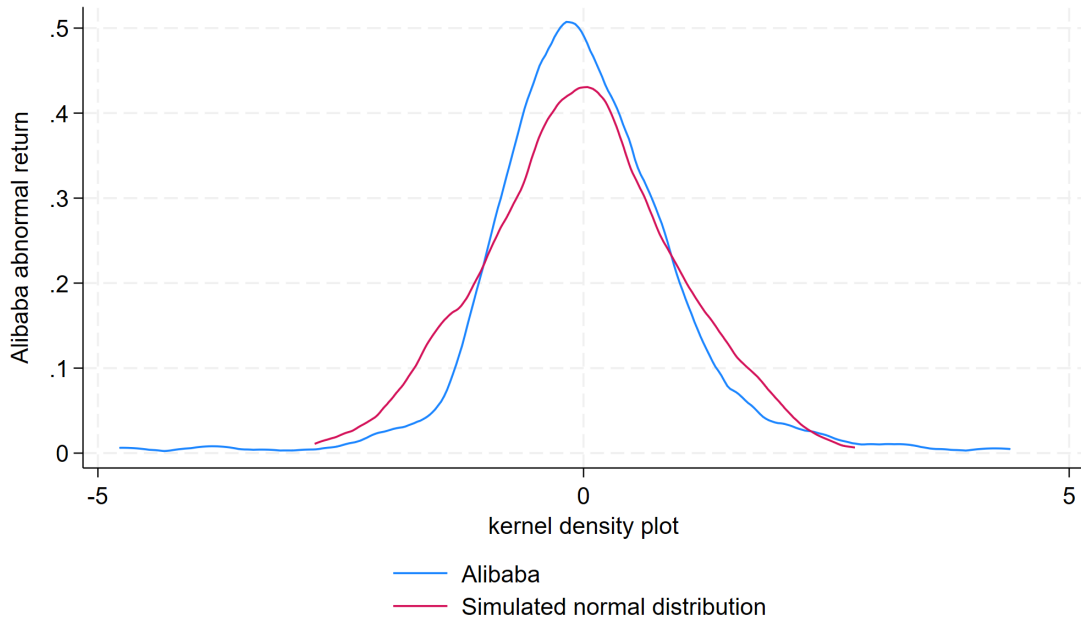
Panel A: Alibaba Abnormal Returns Distribution
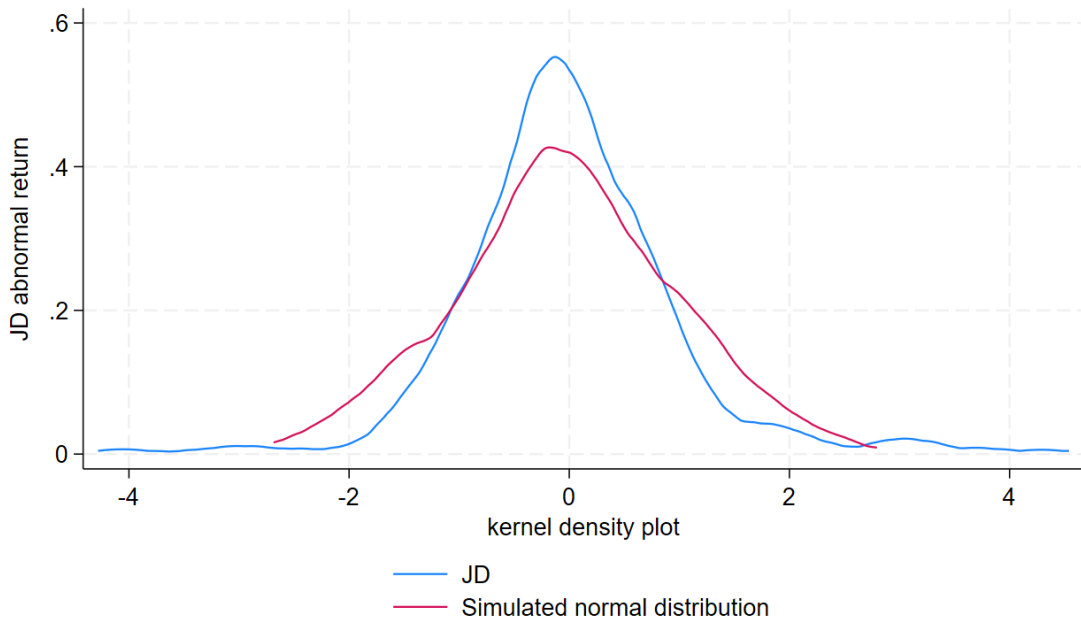
Panel B: JD Abnormal Returns Distribution

Note: These figures display the distributions of abnormal returns for Alibaba and JD on the HKSE, superimposed with simulated normal distributions. The normal distributions are created by generating 500 independent and identically distributed (i.i.d.) random draws from a standard normal distribution.

Table A3: Information Leakage Robustness Test for Alibaba (HKSE)

Date	Event Description	Event Window [-25,+3]	Event Window [-15;3]	Event Window [-10;3]	Stock Exchange
24 Dec 2020	Investigation Announcement	-.1711***	-.1289***	-.1447***	HKSE
24 Dec 2020	Investigation Announcement	-.2358***	-.1089***	-.1063***	NYSE
12 Apr 2021	Penalty Announcement	.0615**	.0668**	.0070	HKSE
12 Apr 2021	Penalty Announcement	.0144	-.0019	.0564**	NYSE

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-25;3] encompasses the period starting 25 days before the event, includes the event day itself, and extends to 3 days after the event.

Table A4: Short Window CARs for PDD (Main Events) (HKSE/NASDAQ)

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]	Stock Exchange
24 Dec 2020	Investigation Announcement	.0029	.0394	.0296	.0230	HKSE
24 Dec 2020	Investigation Announcement	.0791*	.0156	.1439**	.0845*	NASDAQ
12 Apr 2021	Penalty Announcement	.0033	.0003	-.0178	-.0129	HKSE
12 Apr 2021	Penalty Announcement	-.0275	-.0610	-.1652***	-.1553***	NASDAQ

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table A5: PDD Short Window CARs for Sub Events (NASDAQ)

Date	Event description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]
24 Oct 2020	Jack Ma ran into trouble after criticizing China's financial industry and its regulatory system.	.0082	.0272	.0604*	.1050**
02 Nov 2020	Four major regulators collectively interviewed Ant Group's executives.	.0140	.0343	.1908***	.1747***
03 Nov 2020	Shanghai Stock Exchange suspended Ant Group's listing.	.0521	.1631***	.1847***	.1438***
10 Nov 2020	SAMR released the "Anti-monopoly Guidelines on Platform Economy (Draft for Comment)".	-.0230	-.0282	.2886***	.2938***
30 Nov 2020	The Political Bureau of the CCP Central Committee mentioned "doing a good job in intellectual property protection, anti-monopoly and fair competition review".	-.0400	-.0180	-.0189	-.0024
11 Dec 2020	The Political Bureau of CCP called for strengthening anti-monopoly measures and preventing disorderly capital expansion.	-.0477	-.0573	-.0499	-.0438
14 Dec 2020	Alibaba was fined 500,000 yuan by the (SAMR) for not reporting on its acquisition of InTime's equity.	-.0465	-.1081**	-.0939**	-.0667*
18 Dec 2020	The Central Economic Work Conference listed "strengthening anti-monopoly" as one of the key tasks in 2021.	-.0083	-.0092	-.0641	-.1491**
27 Dec 2020	The SAMR in Zhejiang Province stated that it has completed the field/site investigation of Alibaba.	-.0700*	.1511**	.1489**	.1654**
02 Feb 2021	Alibaba released its financial report for the third quarter of fiscal 2021, saying that it is fully cooperating with the SAMR's ongoing investigation.	.0295	.1010**	.0973**	-.0301

Table A5 continued

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]
07 Feb 2021	The Anti-monopoly Commission of the State Council released the Anti-monopoly Guidelines of the Anti-monopoly Commission of the State Council on Platform Economy.	-.0535	-.0683*	.0301	.0865*
11 Mar 2021	The Wall Street Journal reported that China's antitrust regulators are considering to impose a record-breaking fine on Alibaba.	.0693*	.0135	-.0437	-.2447***
12 Mar 2021	The SAMR imposed a total of 6 million RMB ($923,000) administrative fines on 12 Chinese Internet companies involved in monopoly acquisitions, including Tencent and Baidu.	-.0100	.0329	-.0084	-.2028***
15 Mar 2021	The Wall Street Journal quoted people familiar with the matter that the Chinese authorities have asked Alibaba Group to dispose of its media assets.	-.0256	-.0298	-.1241**	-.2208***
18 Mar 2021	The Chinese government interviewed 11 technology companies, including Tencent, Alibaba, ByteDance, Xiaomi and other well-known companies.	-.0342	-.1277**	-.2011***	-.2037***
09 Apr 2021	The Beijing Municipal Commission of Housing and Urban-Rural Development a second-hand trading platform owned by Alibaba to rectify its illegal behavior of publishing illegal rental information.	-.0280	-.0544	-.1117**	-.1116**
13 Apr 2021	Three Chinese ministries and commissions jointly interviewed 34 Internet platform companies, requiring all platforms to conduct a comprehensive self-inspection within a month.	-.0055	-.0434	-.0880**	-.1724***
19 Apr 2021	Wukuang Fazhan, a listed company, announced that it has recently received an investigation letter issued by the SAMR because it and Alibaba has established a joint venture on iron and steel e-commerce.	.0062	-.0365	-.0130	-.0172

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table A6: GICS255030 Short Window CARs for Sub Events (HKSE)

Date	Event description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]
24 Oct 2020	Jack Ma ran into trouble after criticizing China's financial industry and its regulatory system.	-.0030	-.0148	-.0226	-.0430
02 Nov 2020	Four major regulators collectively interviewed Ant Group's executives.	-.0028	-.0187	-.0413	-.0421
03 Nov 2020	Shanghai Stock Exchange suspended Ant Group's listing.	-.0089	-.0156	-.0272	-.0581*
10 Nov 2020	SAMR released the "Anti-monopoly Guidelines on Platform Economy (Draft for Comment)".	-.0099	-.0215	-.0140	-.0306
30 Nov 2020	The Political Bureau of the CCP Central Committee mentioned "doing a good job in intellectual property protection, anti-monopoly and fair competition review".	-.0109	-.0052	.0049	.0079
11 Dec 2020	The Political Bureau of CCP called for strengthening anti-monopoly measures and preventing disorderly capital expansion.	.0030	.0003	-.0042	-.0059
14 Dec 2020	Alibaba was fined 500,000 yuan by the (SAMR) for not reporting on its acquisition of InTime's equity.	-.0044	.0064	-.0100	-.0055
18 Dec 2020	The Central Economic Work Conference listed "strengthening anti-monopoly" as one of the key tasks in 2021.	.0035	-.0020	.0210	.0294
27 Dec 2020	The SAMR in Zhejiang Province stated that it has completed the field/site investigation of Alibaba.	.0069	.0029	.0340	.0181
02 Feb 2021	Alibaba released its financial report for the third quarter of fiscal 2021, saying that it is fully cooperating with the SAMR's ongoing investigation.	.0074	-.0082	-.0255	.0192

Table A6 continued

Date	Event Description	Event Window [0]	Event Window [-1;1]	Event Window [-3;3]	Event Window [-5;5]
07 Feb 2021	The Anti-monopoly Commission of the State Council released the Anti-monopoly Guidelines of the Anti-monopoly Commission of the State Council on Platform Economy.	.0040	.0079	.0012	.0962**
11 Mar 2021	The Wall Street Journal reported that China's antitrust regulators are considering to impose a record-breaking fine on Alibaba.	.0079	.0217	-.0178	-.0262
12 Mar 2021	The SAMR imposed a total of 6 million RMB ($923,000) administrative fines on 12 Chinese Internet companies involved in monopoly acquisitions, including Tencent and Baidu.	.0070	.0070	.0128	-.0173
15 Mar 2021	The Wall Street Journal quoted people familiar with the matter that the Chinese authorities have asked Alibaba Group to dispose of its media assets.	-.0080	-.0004	.0166	.0031
18 Mar 2021	The Chinese government interviewed 11 technology companies, including Tencent, Alibaba, ByteDance, Xiaomi and other well-known companies.	-.0078	.0097	.0182	.0237
09 Apr 2021	The Beijing Municipal Commission of Housing and Urban-Rural Development a second-hand trading platform owned by Alibaba to rectify its illegal behavior of publishing illegal rental information.	-.0010	-.0078	-.0115	-.0006
13 Apr 2021	Three Chinese ministries and commissions jointly interviewed 34 Internet platform companies, requiring all platforms to conduct a comprehensive self-inspection within a month.	-.0018	.0023	.0057	-.0099
19 Apr 2021	Wukuang Fazhan, a listed company, announced that it has recently received an investigation letter issued by the SAMR because it and Alibaba has established a joint venture on iron and steel e-commerce.	-.0084	.0105	.0141	.0258

Note: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). "GICS255030 Competitors" refer to competitors who share the same 6-digit Global Industry Classification Standard (GICS) codes as Alibaba, and do not include JD unless otherwise specified. An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table A7: CARs for Combined Effect of Investigation and Financial Penalties on PDD (NASDAQ)

firm	Event Window [0]	Event Window [-2;2]	Event Window [-6;6]	Event Window [-10;10]	Stock Exchange
PDD	.0516	-.0455	-.0212	-.0708*	NASDAQ

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table A8: Long Window CARs for PDD (NASDAQ)

Dates Long Horizon	Firms	Event Window [0]	Event Window [-3;3]	Event Window [-5;5]	Event Window [-10;10]	Event Window [-20;20]	Stock Exchange
24 Dec 2020 - 12 Apr 2021	PDD	-.2056***	-.2846***	-.2800***	-.2880***	-.2885***	NASDAQ

Note: *** p≤0.01, ** p≤0.05, * p≤0.10. Long window CARs are computed using Buy-and-Hold Abnormal Returns (BHAR). P-values are constructed using the SQ test proposed by Gelbach et al. (2013). An event window of [-1;1] represents a 3-day event window centered around the event date, encompassing the day before the event, the event day itself, and the day after the event.

Table A9: Augmented Dickey-Fuller Test for Stationary of Security Returns

Security Return	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Han Seng Index, w/o Trend	−28.18***	−3.43	−2.86	−2.57
Han Seng Index, with Trend	−28.20***	−3.96	−3.41	−3.12
Alibaba, w/o Trend	−23.33***	−3.43	−2.86	−2.57
Alibaba, with Trend	−23.46***	−3.96	−3.41	−3.12
JD, w/o Trend	−17.86***	−3.44	−2.87	−2.57
JD, with Trend	−17.88***	−3.98	−3.42	−3.13

Note: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$. This table presents the results of the Augmented Dickey-Fuller test (Fuller, 2009), which tests the null hypothesis that the given security return has a unit root. Rejection of the null hypothesis indicates that the security return series is stationary. The test accounts for a deterministic linear trend. The data includes security returns for the Hang Seng Index (Jan 2019 to Dec 2021), 9988.HK Alibaba (Nov 2019 to Dec 2021), and 9618.HK JD (Jun 2020 to Dec 2021).