Algorithmic Price Discrimination on Online Platforms and Antitrust Enforcement in China’s Digital Economy

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Antitrust issues in the digital economy, especially those concerning big data and algorithms, have attracted the attention of both scholars and practitioners all around the world. Against the backdrop of rapid development of China’s digital economy, many online platforms now have a largely data- or algorithm-driven business model. Concurrently, the antitrust issues in relation to data and algorithms have also triggered social concerns. For example, in early 2018, the so-called Shashu phenomenon became a hot topic in Chinese society. “Shashu” refers to algorithmic price discrimination by online platforms where longer-term customers are charged less favorable prices. Some observers hold that this type of price discrimination is against the Anti-Monopoly Law of the People’s Republic of China (AML), and ought to be investigated accordingly.

Similar calls for antitrust law intervention have taken place in other aspects of China’s digital economy. For example, in 2017, a Chinese lawyer brought a complaint against Apple, alleging abuse of dominance by Apple in running its App Store. From a regulatory perspective, it appears that the Chinese administrative agencies have taken a cautious position in intervening in the digital economy so far. The Government Work Report delivered during the “Two Sessions” in 2017 made it clear that the Chinese government intends to encourage innovation and promote the healthy development of emerging industries by formulating regulatory rules that are “tolerant and prudent.” Indeed, in the past two years, the Chinese authorities have closely followed the principle of “tolerance and prudence” in regulating the digital economy.

Against the backdrop of a principle emphasizing regulatory “tolerance and prudence,” algorithmic pricing has nevertheless garnered significant public interest and has recently caught the attention of regulators. In May 2018, Mao Zhang, the head of the State Administration for Market Regulation (SAMR), published an article in which Shashu is listed as one of the regulatory challenges.

3 “Two Sessions” is the abbreviation of the “National People’s Congress of the People’s Republic of China” and the “Chinese People’s Political Consultative Conference,” which is the most important political event in China held every March since 1959. Representatives of the “Two Sessions” gather, summarize, and transmit information and requests from the Chinese people to the Communist Party of China.
There is good reason to believe algorithmic price discrimination is top-of-mind for the Chinese regulators.

This article explores the potential challenges of applying the AML to algorithmic price discrimination and offers some suggestions on how to structure the analysis, taking into consideration the unique characteristics of China’s digital economy and at the same time abiding by the “tolerant and prudent” principle. We note that although many of the discussions in this article apply to traditional off-line price discrimination as well, algorithmic price discrimination is unique in the sense that it is closely intertwined with online platforms and their ability to amass consumer information in a fashion unthinkable in traditional off-line marketplaces.

Background of Algorithmic Price Discrimination in China: Online Platforms’ Shashu Through Big Data

In early 2018, Shashu through big data garnered widespread attention in China. As noted earlier, Shashu is a type of price discrimination where longer-term customers of an online platform are charged a higher price than shorter-term customers for the same product or service. Using data on customers’ purchasing behavior, online platforms attempt to assess the willingness to pay of each customer so that they can offer personalized pricing. For example, a Chinese user might find that he was charged CNY 380 when reserving a hotel room through his own account on a Chinese travel service website, while a friend would only be charged CNY300 for the same hotel. Similarly, it was discovered that someone who usually orders premium services (high-end rides) through an online car-hailing platform was charged a higher price than another individual who orders only express services (regular rides), for the same commute.

Price discrimination is not only limited to these examples but is also common and widespread in the marketplaces for airplane tickets, movie tickets, e-commerce, and travel services. A survey of 2,008 people conducted by the China Youth Daily reveals that 63.4 percent of the respondents believe Shashu through big data is a common practice among internet platforms; 51.3 percent have personally experienced Shashu; 59.2 percent believe that consumers are disadvantaged as a result of the information asymmetry; and 59.1 percent call on Chinese legislators to regulate internet companies’ discriminatory pricing.

Earlier this year, the idea that Shashu may potentially violate the AML was raised in the Chinese press. In March 2018, the People’s Daily, an authoritative newspaper in China, pointed out that Shashu through big data presents challenges to the authorities’ supervision and regulation, commenting that “the technological values are, in essence, also human values. The neutrality of technology does not mean that the application of technology is harmless. There is a risk of breaking the boundary of morality and law if there are no restrictions.” Some also hold that:

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Shashu through big data by the internet companies bears the characteristics of the first-degree price discrimination. But this is not a positive development because it reflects the monopoly power of the merchants. These merchants, taking advantage of consumers’ faith in and even reliance on them, charge consumers discriminatorily. This effectively harms the consumers. Strictly speaking, the merchants’ conduct is against the AML.\(^9\)

**Regulation of Price Discrimination Through the AML**

The legal basis for regulating price discrimination in the AML is the prohibition of abuse of dominance, not price discrimination per se. Article 17 of the AML lists a series of prohibited conduct, including “without justifiable reasons, undertakings holding dominant market positions are prohibited from applying differential prices and other transaction terms among their trading counterparts who are on an equal footing.” Article 16 of the Provisions on Anti-Pricing Monopoly promulgated by the National Development and Reform Commission (NDRC) also stipulates that “[b]usiness operators with dominant market position shall not apply differential treatment to trading counterparties with the same conditions in terms of transaction price without justifiable reasons.”

On the issue of Shashu through big data, there has been no known investigation by Chinese antitrust agencies, despite the public call for intervention. Nevertheless, in the past decade, some abuse of dominance cases investigated by the agencies did involve certain discriminatory conduct, although none directly concerned price discrimination. The investigation of the Pizhou Branch of Xuzhou Tobacco Company by the Jiangsu Branch of the State Administration for Industry and Commerce (SAIC) in 2014\(^10\) and the investigation of Inner Mongolia Chifeng Salt Company by the Inner Mongolia Branch of the SAIC in 2016\(^11\) are two representative abuse of dominance cases that involve discriminatory conduct. The investigated companies in both cases are state-owned enterprises.

In addition, in 2018, the Hubei Branch of the SAIC investigated and disciplined a private enterprise, Hubei Yinxingtuo Gangbu Ltd., whose business includes vehicle roll-on-roll-off services; cargo (excluding explosive and dangerous goods) loading, transportation and storage; port support services; and shipping and transportation insurance.\(^12\) The competition agency found that, as the only provider of Yiyu Line roll-on-roll-off shipping services in the Sichuan River upstream route, the company gave preferential treatment to Yichang H Transportation Ltd. (H-company), a company with which it had a business relationship, over other transportation companies. Specifically, Hubei Yinxingtuo Gangbu Ltd. not only prioritized the loading of H-Company’s ships over others, but also assigned “more valuable” vehicles for the H-Company to ship, violating Article 17 of the AML that prohibits abuse of dominance through discriminatory conduct.


AML’s Regulation of Algorithmic Price Discrimination: Challenges and Potential Solutions

As discussed above, price discrimination has not been investigated in China, even though there is a relevant basis for antitrust challenges based on the abuse-of-dominance clause of the AML. With the rapid development of China’s digital economy, algorithmic discrimination, such as Shashu through big data, will only become more common. What, then, are the challenges when the Chinese antitrust agency tries to deal with algorithmic discrimination by online platforms in the future? In what follows, we explore these challenges in detail and offer our suggestions on some potential solutions.

The Role of “Fairness.” Discrimination is often associated with unfairness. Indeed, some in China question algorithmic discrimination such as Shashu through big data precisely from the perspective of fairness. But how should the question of fairness be addressed in competition enforcement? The Roundtable on Price Discrimination held by the Organization for Economic Co-operation and Development (OECD) in 2016 identified three different effects of price discrimination: “(1) it can exclude rivals and thereby lead to the exploitation of consumers; (2) it can exploit consumers directly; and (3) in upstream markets, it can exploit intermediate customers and create distortionary effects that harm consumers in downstream markets.” The Roundtable emphasized that “[i]n each case, it is the effect on consumers, and not the fairness of the discrimination, that determines the acceptability of the discrimination.” In other words, competition law may not be the right tool to address the fairness standard. Therefore, what role, if any, fairness plays in competition enforcement is a question that the Chinese antitrust agency should be considering.

Article 1 of the AML makes clear that the policy goals of China’s competition law are multifaceted: “This Law is enacted for the purpose of preventing and restraining monopolistic conduct, protecting fair market competition, enhancing economic efficiency, safeguarding the interests of consumers and the interests of the society as a whole, and promoting the healthy development of socialist market economy.” Note that the AML protects “fair market competition,” but not explicitly “free market competition.” The academic community in China, however, has recognized that “the main goal of anti-monopoly law is to protect free competition.” So exactly how the Chinese antitrust agency interprets Article 1 of the AML when approaching issues such as algorithmic discrimination that can be easily associated with the fairness standard is a key question.

Among the types of abuses listed in Article 17 of the AML, we find that only one explicitly references the “fairness” standard. Even so, in the three abuse of dominance cases mentioned above, it appears that the Chinese antitrust agencies have, to some extent, taken fairness into account. In the case of Pizhou Branch of Xuzhou Tobacco Company, the complaint alleges that the discriminatory conduct was “against fairness.” The enforcement agency also emphasized in its ruling that “the discriminatory conduct of the undertaking concerned has impeded fair market


15 The Anti-Monopoly Law of the People’s Republic of China (AML) (promulgated by the Standing Committee of the National People’s Congress, Aug. 30, 2007, effective Aug. 1, 2008), art. 17(1): “Undertakings holding dominant market positions are prohibited from selling commodities at unfairly high prices or buying commodities at unfairly low prices . . . .”
competition” and has “disrupted the fair order of cigarette retail market competition.” In the case of Inner Mongolia Chifeng Salt Company, the enforcement agency stressed that the discrimination had “adversely affected the fair competition in the table salt market,” and “clearly infringed the right to choose and fairly trade of the residents in inland China, harming the rights and interests of consumers.” In the case of Hubei Yinxingtuo Gangbu Joint Stock Company, the competition agency similarly highlighted that the conduct had “impeded the fair participation of” other downstream companies in the market and “harmed the legitimate rights and interests of freight vehicle shippers.”

In our opinion, when analyzing discrimination cases, the Chinese antitrust agency should avoid interpreting Article 1 of the AML mechanically to regard fairness as a key standard. More specifically, we believe that the antitrust agency should combine Article 6 of the AML (general provision of abuse) and Article 17 of the AML (specific provision of abuse) to assess whether the algorithmic discrimination has eliminated or restricted competition. We would caution against arbitrarily expanding the interpretation of Article 1 of the AML to include fairness as a legislative goal: the emphasis should be on the freedom of competition.

**Challenges for Antitrust Remedies**

**The Lack of a Legal Basis for Behavioral Remedies.** Even if algorithmic discrimination by online platforms is determined to be anticompetitive, whether the AML could provide sufficient and effective remedies is still an open question for the Chinese antitrust agency. The AML provides a legal basis for structural and behavioral remedies only for antitrust review of mergers, but not for cartel agreements or abuse of dominance conduct. For abuse of dominance conduct, available remedies based on Article 47 of the AML are (1) discontinuance of the violation, (2) confiscation of unlawful gains, and (3) imposition of administrative fines.

It is worth noting that, in their review of abuse of dominance cases, competition agencies from the United States and the European Union have imposed behavioral remedies on high-tech companies, requiring these companies to abide by certain behavioral obligations for a certain period of time. For example, as recently as 2017, the European Commission imposed a series of behavioral obligations on Google. In the Microsoft operating system case, the U.S. District Court for the District of Columbia required Microsoft to disclose protocols used in server/client communications so as to promote and improve interoperability between Windows desktop PCs and non-Windows servers and other products.

Until now, the AML has only explicitly required companies found to be abusing their dominant market position to “discontinue (the) violation.” In some respects, this is a “non-action” obligation. This means that the Chinese antitrust agency might face certain obstacles when imposing proactive behavioral remedies. If we go back to one of the three remedies in the AML, “discontinuance...
of violation” only requires the companies to cease the illegal conduct under investigation, but not to proactively engage in other actions. As an example, in the Tetra Pak case that was investigated by the SAIC, Tetra Pak was required not to: (1) tie in packing materials when supplying equipment and technical services without justifiable reasons; (2) restrict the supply of kraft back papers from packing paper suppliers to third parties without justifiable reasons; or (3) design and implement loyalty discounts that would eliminate or restrict competition in the packing material market.22

We note that Article 45 of the AML stipulates that an antitrust investigation may be suspended if the firm under investigation “commits themselves to adopt specific measures to eliminate the consequences of their conduct within a certain period of time.” Therefore, in some ways, Article 45 may be interpreted as the potential legal basis for proactive remedies. Of course, it remains to be seen if Article 45 will be interpreted in this way for cartel and abuse of dominance conduct in practice.

Again, to the extent algorithmic price discrimination by online platforms was deemed an element of abuse of dominance, whether and how aggressively the Chinese antitrust agency would impose proactive behavioral remedies exactly under the AML still remains unclear. This is largely due to the lack of precedents as well as the associated challenges, some of which are discussed in this article.

The Potential “Chilling Effect” of Algorithmic Transparency

On various issues resulting from the use of algorithms, including algorithmic discrimination, the global community has begun to consider promoting algorithmic transparency as a safeguard. In 2017, the Association for Computing Machinery US Public Policy Council issued a statement on algorithmic transparency and accountability, listing several principles to support the benefits of algorithmic decision making while addressing concerns with the potential for harmful bias and discrimination.23 Margrethe Vestager, the European Commissioner for Competition, also advocated that companies are obligated to design algorithms in accordance with data protection and antitrust laws and regulations.24 German Chancellor Angela Merkel has expressed similar opinions, calling on internet giants, such as Facebook and Google, to disclose their algorithms, saying that “The algorithms must be made public . . . . These algorithms, when they are not transparent, can lead to a distortion of our perception. They narrow our breadth of information.”25

Of course, promoting algorithmic transparency is not without its own limitations and challenges. As noted by the OECD, “[E]nforcing algorithmic transparency and accountability might turn out to be a challenging task in practice, especially when facing black box algorithms . . . . Merely publishing (or disclosing to a regulator) the source code of the algorithm may not be a sufficient transparency measure. Complete transparency would require that someone could explain

why any particular outcome was produced, but that might be an impossible task when machine learning systems have made autonomous decisions that have not been instructed by anyone."26

In China, with respect to algorithmic discrimination such as Shashu through big data, some hold that such conduct has infringed consumers’ right to information about firms’ pricing practices.27 Therefore, in the context of using antitrust enforcement to address algorithmic discrimination, the public may also demand increased algorithmic transparency in the future. However, whether it is appropriate to use the AML to require or dictate algorithmic transparency remains unsettled. In addition, even if one ignores the legal obstacles to imposing behavioral remedies mentioned above, how to implement and supervise behavioral obligations to increase algorithmic transparency, while at the same time avoiding the potentially chilling effect on market innovation, will be a challenge.

**Avoid Imposing FRAND Obligations.** To the extent that algorithmic price discrimination by online platforms falls under the scope of the AML, one logical way to interpret the remedy of “discontinuance of violation” is to discontinue price discrimination. As a result, the antitrust agency may impose non-discrimination obligations or even broader fair, reasonable, and non-discriminatory (FRAND) obligations on the online platforms. Although non-discrimination or FRAND obligations have not been imposed in cartel and abuse of dominance cases, the Ministry of Commerce (MOFCOM) has imposed non-discrimination obligations, including FRAND obligations, in a number of conditionally cleared merger cases during the last ten years. For example, in the case of Bayer’s acquisition of Monsanto, which was conditionally cleared in March 2018, MOFCOM found that the resultant concentration could potentially eliminate or restrict competition in the global digital agricultural market and imposed a behavioral remedy on the merged entity to allow all Chinese digital agricultural software applications to connect to its digital agricultural platforms “in accordance with fair, reasonable and non-discriminatory provisions,” and to allow all Chinese users to access its digital agricultural products or applications for a specified number of years.28

In early 2018, the three Chinese antitrust agencies were combined into one under the governance of the SAMR. Consequently, merger review and investigation of cartels and abuse of dominance are consolidated within a single agency, as are the staff from the three agencies. With the consolidation, it is possible that MOFCOM’s experience in the past decade with non-discrimination or FRAND remedies may influence the design and implementation of remedies in abuse of dominance cases, including those that involve algorithmic discrimination.

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26 OECD, *Algorithms and Collusion: Competition Policy in the Digital Age* (2017), http://www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm. It is worth noting that these comments also reflect the fact that antitrust authorities typically lack the requisite technical expertise. In the academic community, Ezrachi and Stucke, and Harrington, have proposed ways to better understand the impact of algorithms on competitive outcomes. See *Ariel Ezrachi & Maurice E. Stucke, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy* (2016); Joseph E. Harrington, Jr., *Developing Competition Law for Collusion by Autonomous Artificial Agents* (2017), https://ssrn.com/abstract=3037818; Ai Deng, one of the authors of this article, gives reasons why algorithmic transparency is not always necessary to detect anticompetitive algorithms. See Ai Deng, *4 Reasons Why We May Not See Colluding Robots Anytime Soon, Law360* (Oct. 3, 2017); Ai Deng, *What Do We Know About Algorithmic Tacit Collusion?*, *Antitrust, Fall 2018* (forthcoming) (manuscript available at https://ssrn.com/abstract=3171315) [hereinafter Deng, *Algorithmic Tacit Collusion*]. In a later section, we argue that having a robust expert support system will substantially enhance the capabilities of Chinese antitrust agencies in the digital economy.


Although the non-discrimination or FRAND remedies may seem like an obvious choice for regulating algorithmic discrimination, if it is determined to be anticompetitive, we would caution the antitrust agency against using such remedies too liberally. What exactly can be deemed as non-discrimination in algorithmic design may not be so straightforward. For example, borrowing the concept from the standard essential patent (SEP) context, FRAND obligations refer to non-discrimination among “similarly situated” licensees, not all licensees. Whether a condition such as “similarly situated” should apply if FRAND obligations were imposed on algorithmic discrimination, and what types of users would be deemed as “similarly situated,” remain to be answered. In addition, the mechanism for implementing and monitoring such remedies needs to be carefully designed.

Having recognized both legislative and practical difficulties faced by the Chinese antitrust agency when trying to address algorithmic price discrimination through the AML, in the next section, we discuss several specific proactive actions that the SAMR could take.

How to Approach Algorithmic Price Discrimination: Our Recommendations to the SAMR

Understand the Development and Evolution of the Theory of Harm in the Digital Economy.

China’s digital economy is developing rapidly. The rate of adoption of mobile payment, bike sharing, and online shopping is among the fastest in the world. With the increasing adoption of digital services also comes public skepticism about the new modes of competition. In fact, there have been controversies around the use of big data and algorithms in China in recent years. New modes of competition enabled by the digital economy have also challenged the effectiveness of the traditional anti-monopoly legal system. Are the traditional theories and tools of analyzing potential harm to competition still applicable in the digital economy? Are the issues related to data and algorithms really “new” competition issues? We note that the vagueness of the purpose of the AML—there are additional rights and interests protected by the AML beyond consumer welfare, as reflected in Article 1—as well as the vagueness of other provisions leave room for new theories of harm to be developed. For example, should privacy protection be considered as one type of right protected by the AML? This is a topic being heatedly debated all over the world right now.

In reality, the legal environment in China is more complicated. With the promulgation of a series of new laws like the Internet Security Law of the People’s Republic of China in recent years, it is no easy task for the Chinese anti-monopoly agency to balance the promotion of openness to data to enhance competition with the protection of personal information.

In summary, as the digital economy continues to develop, the Chinese authority should proactively think about how the AML could be applied to technical innovations in the future. We should ask, among other questions, how to analyze new issues and problems under the traditional antitrust framework. We believe that the antitrust agency should approach innovations from the

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29 For a discussion of this question, see CEPS, Competition Policy in the Digital Economy: Towards a New Theory of Harm? Seminar organized by the CEPS Digital Forum (June 1, 2016), https://www.ceps.eu/sites/default/files/EventSummary%20Competition%20in%20the%20Digital%20Economy_0.pdf.

30 Wei Han & Yajie Gao, Promote Openness or Strengthen Protection? Application of Law to Data Competition in China, CPI ANTITRUST CHRON. (May 15, 2018). In addition, mergers and acquisitions in the digital arena are rather common in China. In early 2018, the acquisition of Eleme by Alibaba and the acquisition of Mobike by Meituan attracted much attention in Chinese society. Issues raised by these transactions, such as pre-emptive acquisition of disruptive innovators, input foreclosure, and even the applicability of the theory of conglomerate leverage, are also well worth the Chinese anti-monopoly agency’s attention.
perspective of antitrust based on harm to competition. Ultimately, the agency should try to understand innovative business models and market competition from comprehensive technical, business, economic, and legal perspectives.

**Protect the Right of Defense.** According to Article 17 of the AML, discriminatory conduct by online platforms with dominant market positions may be illegal only if they do not have “justifiable reasons” for doing so. This offers companies a way to defend themselves by identifying justifiable reasons. Article 8 of the Provisions on Prohibiting Abuses of Dominant Market Positions promulgated by the SAIC offers some guidance on what may qualify as such justifiable reasons. Specifically, the following elements will be taken into account: (1) whether the relevant act is adopted by a business operator for its normal business activities or normal benefit; and (2) impact of the relevant act on the efficiency of economic operations, public interest, and economic development.

China’s advocacy for “tolerant and prudent” regulation for emerging industries is mainly aimed at avoiding excessive intervention that inhibits incentives for innovation. From the perspective of antitrust enforcement, full protection of the rights of enterprises to defend themselves, an open attitude towards a dynamic efficiency defense, as well as procedural justice are important safeguards for “tolerant and prudent” regulation.

**Promote Research Efforts and Establish an Expert Support System.** Research into antitrust issues with respect to algorithms is still at an early stage. Globally, actual cases that involve algorithms are still rare. The limited experience also calls for a prudent antitrust enforcement approach to algorithmic discrimination by online platforms. Excessive law enforcement can easily lead to chilling effects on innovation, which could in turn undermine consumer welfare.

The antitrust community still lacks sufficient understanding of how algorithms work and the full extent of the influence artificial intelligence may have on business models and market competition. Considering the limited knowledge we possess at this early stage, an important step is to conduct market research and industry surveys. For the new problems like algorithmic discrimination, China’s antitrust law enforcement agency should conduct market research as soon as possible to understand the applications of big data and algorithms in China’s digital market and identify major potential issues to lay a good foundation for potential antitrust law enforcement in the future.

To start with, it would be helpful for the antitrust agency to have some basic knowledge of the relevant technologies used in algorithmic discrimination in order to fully understand the conduct. In addition to inviting technical experts to assist in actual investigations, a long-term solution for the newly established SAMR also is to consider setting up an independent technical support department. In fact, the “technical investigator” instituted within the Chinese court system is a good example of such a mechanism, and a similar model could be adopted by the antitrust agency. Since 2015, these “technical investigators” have helped with complicated technical issues in the

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31 In the three abuse of dominance cases discussed above, the companies under investigation all tried to defend their conduct, although none of the defenses was accepted in the end.


33 In a well-publicized case, David Topkins, a former e-commerce executive, was charged with price fixing in the DOJ’s first online market prosecution. Topkins pled guilty to conspiring to fix the prices of merchandise sold online. https://www.justice.gov/opa/pr/former-e-commerce-executive-charged-price-fixing-antitrust-divisions-first-online-marketplace. In early June 2018, Reuters reported on an algorithmic pricing case in France. The case is currently still developing. See https://www.reuters.com/article/us-autos-software-pricing-insight/software-and-stealth-how-carmakers-hike-spare-parts-prices-idUSKCN11Z07L.
intellectual property courts in Beijing, Shanghai, Guangzhou, and other cities. In early 2018, as part of the government restructuring, the State Intellectual Property Office (SIPO), which has a large number of experienced technical experts, was consolidated into the SAMR. Accordingly, the SAMR could consider taking advantage of in-house technical expertise to better deal with issues such as algorithmic discrimination in today’s digital economy.

**Conclusion**

By focusing on “Shashu” through big data, one of the hottest topics in China’s digital economy, this article explores the challenges the Chinese competition authority faces in dealing with competition issues raised by algorithms and big data. Indeed, given that no administrative antitrust decision has been issued against price discrimination so far, there remains a great deal of uncertainty as to how the SAMR would approach algorithmic price discrimination going forward. It is important to recognize that under certain conditions, price discrimination can be procompetitive and can increase consumer welfare. We believe a cautious approach to antitrust enforcement regarding online platforms’ algorithmic discrimination is warranted.

To better address the potential regulatory challenges, we have recommended in this article several preemptive measures that the SAMR could take. While it is reasonable for the antitrust authority to follow the “tolerant and prudent” principle to avoid hindering the growth and innovations in China’s digital economy, it is still necessary to study and understand the conduct and evaluate the potential competitive harm such conduct might cause.

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