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From Blockade to Interoperability: A Game-Theoretic Analysis of China's Platform Governance in the WeChat-Taobao Case

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Abstract. The dominant digital platforms in China usually adopt a closed garden-style strategy, Which causes the loss of social welfare. Taking WeChat and Taobao as examples, this article will analyze the reasons why both of them choose to block each other during the game process: Without external intervention, both sides choosing to block each other is the only Nash equilibrium. Therefore, even if interconnection and communication can bring higher benefits, both sides still choose blocking to ensure that the losses brought by their choices are controllable. This indicates the important role of regulatory policy intervention: changing the payment matrix, promoting the interconnection and communication of both sides, effectively releasing the growth potential of both sides and also improving user welfare. At the same time, this article gives suggestions for the existing technical problems, governance gaps and policy improvements, including formulating unified technical protocols, formulating benefit-sharing rules, and developing a dynamic and differentiated regulatory regime.

Keywords: Platform Interconnection, Prisoner's Dilemma, Game Theory, Regulatory Intervention, Governance gaps

1. Introduction

1.1. Research background

The strategic interaction between dominant digital platforms, particularly when they operate in adjacent but distinct markets, often results in a 'walled garden' strategy that prioritizes control over interoperability. This non-cooperative behavior, while individually rational, can lead to collective welfare losses—a classic manifestation of the Prisoner's Dilemma in industrial organization. In the early 21st century, WeChat achieved continuous growth in its user base thanks to its convenience. By August 2024, its monthly active users (MAUs) reached 1.061 billion, gradually becoming one of the dominant social platforms in China. Concurrently, the continued rise of online shopping has established Taobao as one of the leading e-commerce platforms, with monthly active users totaling 926 million in August 2024 [1]. Driven by multiple factors, the two platforms imposed mutual restrictions from 2013 to 2024, forming a typical non-cooperative game structure that incurred

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substantial economic losses. A pivotal shift occurred under sustained regulatory pressure. Following the full integration of WeChat Pay on Taobao on September 12, 2024, the formal interconnection led to measurable gains: by 2025, WeChat's MAUs reached 1.47 billion, while Taobao's exceeded 950 million, with both platforms experiencing remarkable improvements in economic performance and user experience relative to the pre-interconnection era [1].

1.2. Theoretical foundations and research gaps

Existing literature applying game theory to platform competition predominantly revolves around two streams: one focusing on the inefficiency of non-cooperative equilibria (e.g., the Prisoner's Dilemma), and the other examining market failures and regulatory rationales in two-sided markets with network effects. Frydman & Vakulenko analyzed that in markets with network externalities, firms may have incentives to choose incompatibility even when compatibility would be socially preferred, creating a role for public policy intervention [2].

Veiga & Weyl found that Two-sided platforms must get both sides on board, and their business models often involve subsidizing one side to attract the other, creating market failures that require regulatory attention [3].

Hargreaves found that rational individuals will choose their dominant strategy (mutual defection) in non-cooperative settings rather than the Pareto-optimal equilibrium (mutual cooperation) that maximizes collective welfare [4].

Barr and Saraf found that the Nash equilibrium is not necessarily Pareto optimal. When individual rationality conflicts with collective rationality (as in the Prisoner's Dilemma), non-cooperative games yield an inefficient equilibrium that fails to achieve social optimality [5].

Most researchers focus on the Prisoner's Dilemma in traditional industries or on platform competition in Western markets, such as the competition between Google and Amazon, and mostly apply non-cooperative game theory to homogeneous platform competition scenarios. In contrast, few of them address the heterogeneous ecological conflict between Chinese social and e-commerce platforms, represented by WeChat (social traffic ecosystem) and Taobao (e-commerce transaction ecosystem). There is a lack of in-depth analysis of the mechanism underlying the long-term mutual blockage pattern between the two platforms within the non-cooperative game framework, which fails to capture the particularities of China's digital platform economy. Besides, their suggestions lack localized policy exploration in combination with China's regulatory practice and fail to put forward targeted, operational policy recommendations for resolving the Prisoner's Dilemma of platform non-cooperation through regulatory intervention in China's digital economy.

1.3. Research framework

First, this study identifies the gaps in existing research, lays a theoretical foundation for subsequent investigations, determines the research direction and entry point of this paper, and fills the research gap arising from the insufficient integration of traditional game theory with the practice of heterogeneous platforms in China. Second, this study conducts an in-depth case analysis of WeChat and Taobao and examines the economic losses arising from non-cooperative games from three perspectives: platforms, users, and society. This part addresses the inadequacy of existing research in analyzing the mechanism underlying the long-term mutual blocking pattern between WeChat and Taobao and provides practical support for subsequent model construction. Subsequently, on the premise of defining the game players, strategy space and payoff function, this study first constructs a game model without external intervention, deduces the Nash equilibrium, and verifies that in the

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absence of external constraints, the dominant strategy of both WeChat and Taobao is "mutual blocking", which traps them in the Prisoner's Dilemma and prevents them from spontaneously reaching the Pareto-optimal equilibrium of interconnection. It then introduces policy intervention variables (e.g., regulatory penalties), reconstructs the payoff matrix, derives the new Nash equilibrium, and analyzes the mechanism by which policy intervention breaks the Prisoner's Dilemma. Finally, this study identifies the relevant problems that may arise in the interconnection process between the two platforms and proposes feasible solutions.

2. Case narrative: The WeChat-Taobao interconnection saga

2.1. Rise of two ecosystems and the seeds of conflict

In the early 21st century, WeChat experienced continuous growth in its user base due to its operational convenience. By August 2024, its monthly active users (MAUs) reached 1.061 billion, gradually establishing it as one of the leading social networking applications in China. Concurrently, the rapid rise of online shopping has made Taobao one of the leading e-commerce platforms, with monthly active users totaling 926 million in August 2024 [1]. Theoretically, interconnection and interoperability between the two platforms would generate higher payoffs than mutual blocking, thus achieving Pareto optimality. However, the strategic dilemma lies in the asymmetry of payoffs. If one platform unilaterally opens up (interoperability) while the other remains closed (blockade), the former risks traffic leakage without reciprocal gain, reducing its payoff. The latter can, by maintaining its blockade, monopolize its own user traffic. While mutual blockade yields lower collective payoffs than full interconnection, the loss for each is predictable and contained, unlike the severe disadvantage of being the 'sucker' in a unilateral opening scenario. Trapped in such a Prisoner's Dilemma, both platforms chose to block each other.

2.2. The descent into a non-cooperative trap (2013-2020)

In July 2013, Alibaba announced the suspension of third-party application services for WeChat, citing the need to control transaction risks on Taobao. For its part, Tencent adopted countermeasures by blocking all Taobao links in WeChat to prevent malicious marketing. Since then, a typical non-cooperative game structure has emerged, resulting in substantial economic losses.

2.3. Regulatory intervention as a game-changer (2021-2024)

It was not until 2021, when China's anti-monopoly campaign in the internet sector unfolded, that the relationship between Taobao and WeChat began to shift subtly. The Ministry of Industry and Information Technology required all platforms to lift blocking measures within a prescribed time limit and realize "interconnection and interoperability". The State Administration for Market Regulation repeatedly imposed heavy anti-monopoly penalties, and several major internet giants, including Alibaba, Tencent, Suning, and Meituan-affiliated companies, were given the maximum penalties. Driven by regulatory pressure, enterprises realized that mutual blocking was ultimately not an optimal solution. Taobao and WeChat were also forced to re-examine their competitive strategies and explore potential cooperation.

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2.4. New equilibrium: interconnection and immediate outcomes

Under the impact of regulatory policies, Taobao fully integrated WeChat Pay on September 12, 2024, indicating the official achievement of interconnection and interoperability between the two platforms. Accordingly, both platforms experienced further growth in their monthly active users: by 2025, WeChat's MAUs reached 1.47 billion, while Taobao's MAUs exceeded 950 million [1]. Meanwhile, the diversification of payment methods has greatly improved the user experience on both WeChat and Taobao.

3. Game-theoretic analysis: efficacy of intervention and unresolved dilemmas

3.1. The intervention mechanism: policy altered the game equilibrium

3.1.1. Modeling the pre-intervention prisoner's dilemma

To rigorously analyze the strategic impasse, this study constructs a static, one-shot game model. The players are WeChat (W) and Taobao (T). Each has two pure strategies: Interconnection (I) or Blocking (B). The ordinal payoffs are assigned based on the case narrative and the logic of the Prisoner's Dilemma, where mutual cooperation (I, I) is collectively best but individually risky. Prior to policy intervention, WeChat and Taobao were trapped in the Prisoner's Dilemma. Fearing that the other platform would choose to block when they opted for interconnection, neither platform dared to pursue mutual interconnection. The corresponding payoff matrix can be written in Table 1 as follows:

Table 1. Payoff matrix of the WeChat-Taobao game (pre-intervention, prisoner's dilemma)

WeChat Taobao	Interconnection	Blocking
Interconnection	(8,8)	(5,10)
Blocking	(10,5)	(6,6)

Policy intervention is reflected in the imposition of penalties on the blocking party when one platform chooses interconnection while the other opts for blocking. Specifically, regulatory authorities, in accordance with the Guidelines on Anti-Monopoly in the Platform Economy Sector, conduct administrative guidance and interviews with platforms that refuse to achieve interconnection. If the platforms fail to rectify the situation within the prescribed time limit, more severe penalties will be imposed: financially, fines will be levied on platforms that abuse their market dominance; operationally, the relevant businesses of the violating platforms will be suspended or delisted; and in terms of credit, the credit ratings of the violating platforms will be downgraded, and the platforms will be publicly exposed to intensify public opinion pressure [6]. Under policy intervention, the payoff matrix will change and can be written in Table 2 as follows:

Table 2. Payoff matrix after introducing regulatory penalties (δ=3)

WeChat Taobao	Interconnection	Blocking
Interconnection	(8,8)	(5,7)
Blocking	(7,5)	(6,6)

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Compared with the previous payoff matrix, in the current game, if one platform chooses blocking while the other chooses interconnection, the blocking party's payoff will be compromised to some extent. This change breaks the Prisoner's Dilemma and incentivizes both platforms to select interconnection as their strategy.

3.1.2. Introducing regulatory penalties and solving for the new equilibrium

Policy-driven interconnection has effectively released the growth potential of both WeChat and Taobao by breaking the long-standing traffic isolation and ecological closure. Before the policy intervention, the mutual blocking between WeChat and Taobao prevented users of both platforms from directly communicating with each other, which led to a slower growth rate of user numbers and lower profits for both platforms. Through the enforcement of mandatory policies, these two platforms opened the relevant links of each other's platforms, achieving interconnection. After achieving interconnection, the monthly active user numbers and overall operating income of both platforms have significantly increased [7]. The benefits brought by the growth in user numbers for both platforms include further increasing the platform's attractiveness to users, reducing marginal operating costs, and improving the stability and profitability of long-term operations. These positive effects brought by interconnection prove that policy intervention can correct the low market efficiency caused by mutual blocking and promote Pareto improvement of platform interests.

3.1.3. Observed outcomes: validation of the model

Policy intervention has directly removed the behavioral obstacles and transaction frictions caused by platform closure, thereby significantly improving user experience and social welfare at the consumer level. Before interconnection, users had to bear high switching costs, such as manually copying links, switching payment tools repeatedly, and experiencing restricted access to external content. After policy-driven interconnection, users can access Taobao links smoothly in WeChat and complete transactions directly through WeChat Pay, greatly simplifying the process and saving time and economic costs. In addition, the diversification of payment methods and the openness of scenario services have strengthened users' right to choose and improved the convenience and security of online consumption. By eliminating man-made barriers and improving the efficiency of information and capital flows, policy intervention has transformed the closed competition pattern into an open, shared ecology, meeting users' actual needs and improving overall consumer welfare.

3.2. Post-interconnection challenges: towards a sustainable cooperative equilibrium

3.2.1. Technical hurdles: system heterogeneity and integration risks

The first-order challenge post-interconnection is technical. The deep integration of payment systems requires bridging the inherent heterogeneity between Taobao's and WeChat's architectures in payment protocols, interface specifications, data transmission, and risk control logic, creating natural technical barriers to in-depth integration. As a core scenario for interconnection implementation, the payment process is highly vulnerable to disruptions such as payment freezes, transaction failures, link delays, and data abnormalities if technical adaptations are insufficient and system integration is inadequate. Such problems will not only directly undermine user transaction experience but also weaken the platforms' operational efficiency and transaction credibility [8]. Therefore, ensuring the stable, unimpeded operation of the cross-platform payment process has

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become the primary technical challenge to be addressed for the interconnection between the two platforms.

3.2.2. Governance gaps: the need for cross-platform collaboration frameworks

Interconnection involves not only technical integration but also relies on a long-term cross-platform collaborative negotiation mechanism and a reasonable benefit distribution scheme. On one hand, the two platforms need to clarify the division of responsibilities for core issues, including technical interface standards, risk prevention and control, accident accountability, and service guarantee, and to establish stable cross-platform collaboration rules. On the other hand, the path dependence of existing user habits, the value transformation between social traffic and e-commerce transactions, and the distribution of commercial benefits between platforms are all key factors affecting the sustainability of interconnection [9]. The transition from forced interconnection to sustained cooperation resembles a coordination game with multiple potential equilibria (e.g., deep vs. shallow integration). Without clear rules, platforms may engage in implicit non-cooperation through technical obfuscation or unfair terms, a problem akin to incomplete contracting in transaction cost economics. The lack of a predefined benefit-distribution scheme creates a new bargaining game that could itself become a source of conflict and instability. The lack of coordination mechanisms, ambiguous responsibility boundaries, or unbalanced benefit distribution may lead to implicit games between platforms and limit the depth and impact of interconnection.

3.2.3. Regulatory incompleteness: from principle to enforceable rules

Although China has initially established a policy framework for platform interconnection, significant problems remain, including vague regulatory details, inadequate implementation mechanisms, and insufficient supporting rules. Most existing policies only set out principled requirements, and the operational norms and regulatory standards for specific scenarios, such as cross-platform payments, data sharing, implicit barriers, and responsibility identification, are not yet clear. Meanwhile, the punishment mechanism, dispute resolution mechanism, and dynamic supervision mechanism in policy implementation have not been fully formed, which makes it difficult to restrict passive integration and implicit blockades by platforms effectively. In addition, the current policy design fails to fully account for differences across heterogeneous platforms, such as social and e-commerce platforms, leaving significant room for improvement in the accuracy, adaptability, and systematicity of regulation.

4. Towards a sustainable cooperative equilibrium: a tripartite governance framework

4.1. Fostering interoperability: establishing unified technical protocols

In order to realize sustainable interconnection, the platforms' first condition is to need erase technical barriers to create good user experience. To solve the technical problems and payment risks mentioned in 3.2.1, platforms should formulate uniform access specifications for payment interconnection together, including interface protocols, data transmission formats, risk control models, and exception-handling mechanisms. Standardized access rules can eliminate the incompatibility issues that arise between independent technical systems and fundamentally reduce the wrong situations including payment freezes and transaction failures. WeChat and Taobao should also build specialized technical united teams to test and improve the interconnection system. Once there is something wrong with the system, the platform teams can quickly identify malfunction and

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repair in time. Besides, both of them should share risk control data properly in legal zones, and identify malicious transactions and security risks, thus improve the safety and stability of payment services. Moreover, continuous and fluent trading experience is provided for users.

4.2. Aligning incentives: instituting collaborative governance and benefit-sharing rules

The problem mentioned in 3.2.2 is the unclear responsibility partitions and difficult income coordination. Building a long-term platform collaborative governance framework is one of the solutions of the problem. Setting up a standardized coordinate institution is the first thing platforms need to do, which can clarify the responsibility of technical operation, risk management, accident responsibility partitions and protection of users' rights and interests, to avoid shirking responsibility when problems come up. Second, the income that platforms get can be distributed according to work, which means that a reasonable mechanism for distributing benefits should be established according to each platform's traffic, resource and users' contribution. This measure balances the business returns between social interaction and E-commerce ecosystem and eliminates covert operations driven by unfair interests. This aligns individual rationality with collective cooperation, stabilizes the interconnection equilibrium, and fundamentally eradicates implicit non-cooperation and covert operations driven by interest conflicts [4]. Third, platforms should gradually promote the mutual connection in functionality in order to think of the users' usage habit sufficiently, and transform the short-term policy-driven connections into long-term and stable cooperation. In short, through establishing clear rules and fair distribution of benefits, these two platforms can shift from passive connection to active collaboration and strengthen the cooperative balance.

4.3. Enabling sustainable oversight: developing a dynamic and differentiated regulatory regime

Which problem Section 3.2.3 described is that the regulatory framework still exists deficiency. To improve this framework, regulatory institutions should shift from general guidelines to a more detailed and differentiated regulatory approach. In other words, regulatory institutions should make detailed rules of interconnection in order to distinguish recognition standards for barriers, and make targeted regulatory requirements for heterogeneous platforms such as social and e-commerce [10]. For example, regulatory institutions can introduce targeted differentiated rules for social and e-commerce platforms, when facing a social platform like WeChat, external e-commerce links should be fully opened and payment interface should be docked correctly, while e-commerce platforms such as Taobao should unconditionally support cross-platform payment tools and should not set hidden technical barriers or exclusive transaction restrictions. The essence of these differentiated rules is ensuring that all platforms with different characteristics can be provided with a fair competitive environment, and they will not be restricted from opening up due to other factors and being discriminated against. This targeted supervision fully thinks of the functional differences across different platforms and ensures fair interconnection. Besides, regulatory institution can use dynamic monitoring tools to trace the effectiveness of interconnection. It can also improve the accuracy and consistency of the regulation according to platform's actual performance, thus ensuring the long-term stability and balance of the interconnection.

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5. Conclusion

5.1. Key findings

This study researches different platforms' interaction and uses game theory to analyze the evolution of platform competition and the effect of regulatory intervention. The core finding is that the two platforms fell into a typical Prisoner's Dilemma under the non-cooperative game before regulation, and mutual blocking became the dominant strategy, which caused low-efficiency equilibrium and damaged to platform benefits and user welfare. In this case, regulatory institutions have used the way of mandatory intervention to change the payoff matrix of the game, thus suppressing the motivation of one-side blocking and pushing the two platforms to achieve interconnection, which significantly improved user scale, operational efficiency, and consumer welfare. However, the sustainable operation of interconnection still faces three major dilemmas: technical difference between payment systems, lack of cross-platform collaborative governance, benefit balance mechanism and incomplete regulatory policies. The solutions of these dilemmas include unifying technical standards to stabilize payment services, establishing collaborative governance and benefit distribution mechanisms, and improving systematic and differentiated regulatory rules.

5.2. Theoretical extensions and policy implications

This research has important practical and social value. For the industry, it shows the game logic of platform competition in China's digital economy, provides a clear analytical framework for solving the walled garden dilemma, and provides effective paths for platforms to achieve long-term cooperation. Moreover, it helps to break traffic isolation, enhance the overall operational efficiency of the platform ecosystem, and enhance network effects. For society, it not only promotes the improvement of consumer welfare and the healthy development of the platform economy, but also provides a useful reference for the governance of China's digital platform.

5.3. Limitations and avenues for future research

This study has certain limitations. It used a static game model and mainly relied on secondary data and case analysis, which did not reflect the dynamic adjustment process of the platform strategies and did not use primary data. In the future, researchers can apply dynamic game theory to expand the model. For example, they can conduct empirical tests on the welfare effects of interconnection through sending questionnaires and interviews , and further enrich the research conclusions.

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