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# The social order of illegal markets in cyberspace: extralegal governance and online gambling in China

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How do illegal markets operate in cyberspace? Drawing on interview data, this article examines the organizational structure of China's illegal online gambling businesses and their use of extralegal governance institutions to marketize services, ensure fair play, enforce compliance, and reduce the risk of prosecution. The article also discusses the impact of China's intensified efforts to repress illegal markets. It suggests that operators in the illegal online market now prefer to settle gambling debts using ex ante means, such as deposits, rather than ex post mechanisms, such as using interpersonal obligations or violence to enforce debt collection. This research contributes to the literature on extralegal governance, gambling, and illegal markets.

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## Introduction

Participants in illegal online exchanges face many risks, from being cheated or deceived to being arrested by the police. Deception is rife because of the anonymity provided by the Internet, and there can be no formal contracts or protection from state institutions, such as courts (Hall and Antonopoulos, 2016; Lusthaus, 2012; Lusthaus and Varese, 2021). Indeed, far from receiving protection, illegal market actors face state suppression and police crackdowns (Varese et al. 2019; Wang and Antonopoulos, 2016). Yet despite these disadvantages, illegal online markets continue to flourish. Although researchers have started to investigate the development of certain types of illegal online markets, such as the stolen data market (Hutchings and Holt, 2015) and the online peer-to-peer lending market (Wang et al. 2021), there is still a lack of theoretical and empirical research into the extralegal governance institutions used by market participants to mitigate risk, build trust, and sustain illegal online transactions. Based on data from interviews about China's illegal online gambling market, this article aims to enrich our understanding of the social order of the illegal online market and show how cooperation is secured in cyberspace without state regulation.

Gambling is strictly regulated in mainland China, and the only form of legal gambling is through state-sanctioned lotteries, the China Welfare Lottery and the China Sports Lottery. Nonetheless, due to its convenience, accessibility and better odds compared to legal gambling, illegal online gambling is increasingly popular in China, from lotteries to sports betting and mah-jong. Even though China's online gambling sector emerged only recently, it reached sales of 403 billion RMB in 2022 (Thomala, 2023), only slightly below state-run lottery sales of 424.6 billion RMB in the same year (Ministry of Finance of the People's Republic of China, 2023). Drawing on first-hand empirical data and published materials, this article examines the ways in which market participants use institutional mechanisms to marketize their services, ensure fair play, facilitate the collection of gambling debts, and reduce the risk of police attention. It also finds that China's recent anti-crime campaign, the 'sweep away black' campaign, prompted participants in the illegal online gambling market to increasingly use ex ante mechanisms, such as requiring deposits, rather than enforcing debt collection through ex post mechanisms, such as interpersonal obligations, threats, and violence.

This research contributes to the existing literature in two ways. First, it contributes to the study of the social order of illegal markets in cyberspace and enhances the understanding of extralegal governance mechanisms that mitigate risks and enforce agreements without state support. A growing body of literature has examined various categories of risk and uncertainty and the problem-solving strategies used to sustain private ordering, such as strategies crafted by prison gangs (Skarbek, 2014, 2020), mafias (Campana and Varese, 2013; Gambetta, 2011; Varese, 2011), pirates (Leeson, 2009), diamond merchants (Richman, 2017), and builders of informal housing (Lin and Lin, 2023). However, there is still a lack of empirical research into how extralegal governance institutions secure cooperation in a virtual social environment, where people's strategic interactions are affected by a combination of online and offline factors. Important research has been done on the use of compromising information in the online peer-to-peer lending market (Wang et al. 2021) and the role of reputation and network mechanisms in the stolen data market and online drug deals (Décary-Héty and Dupont, 2013; Hardy and Norgaard, 2016), but a comprehensive study of this phenomenon from an extralegal governance perspective is still needed.

Second, and more specifically, this research investigates the emergence and operation of China's online gambling market. The

existing literature investigates online gambling from several perspectives, such as problem and pathological gambling (Gainsbury, 2015; Kuss and Griffiths, 2012; Wong and So, 2014), online gambling-related crime, such as money laundering, cyber fraud, and cyberextortion (Banks, 2014; Brooks, 2012; McMullan and Rege, 2007), and the motivations, habits, and preferences of players (Kim et al. 2015; Wood and Griffiths, 2008; Wood et al. 2007). Although recent research has explored the involvement of crime groups in offline gambling (Albanese, 2018; Lo and Kwok, 2017; Wang and Antonopoulos, 2016), insufficient scholarly attention has been paid to cooperation and risk mitigation in the illegal online gambling market. This article seeks to bridge this gap by adopting the theoretical perspective of extralegal governance and using first-hand empirical data.

## Theoretical discussion

Extralegal governance institutions refer to private or nonstate mechanisms, such as norms, rules, organizations, and behavioural equilibria, which are used to mitigate risks, promote cooperation, and deter opportunism (Dixit, 2004; Leeson, 2008). This section first examines the risks faced by participants in illegal markets and how these risks evolve when illegal transactions move online. It then discusses the governance institutions participants could use to mitigate these risks in both offline and online social settings.

**Risk and uncertainty in illegal markets.** Illegal markets emerge and flourish in the teeth of state prohibition. These markets supply in-demand goods or services that are unavailable in the legal marketplace (Schelling, 1971). State prohibition of production, supply and distribution of these goods and services generates enormous opportunities for criminal entrepreneurs (Dewey, 2019), but prohibition creates substantial risks for participants. These risks fall into two categories. First, participants in illegal markets face opportunistic behaviour, such as fraud, betrayal, and free-riding, which cannot be resolved by state institutions, such as the police and courts. Compared with participants in legal markets, illegal market participants are less inhibited about misconduct and are more likely to engage in opportunistic behaviour for a quick profit (Campana and Varese, 2013). Even though cooperation generates profits and satisfies individual needs, potential participants will hesitate if they see widespread distrust and opportunism in the illegal market. For instance, a buyer has less incentive to risk paying in advance when they are uncertain about whether the seller will deliver services or goods as promised; likewise, a lender is unwilling to lend money to a new borrower without sufficient collateral.

Second, illegal markets undermine the rule of law and state legitimacy, making them subject to police crackdown and government suppression. In authoritarian China, the government employs campaign-style law enforcement to deal with crime-related problems, including illegal markets (Trevaskes, 2007; Wang, 2020a). Harsh and unpredictable law enforcement poses the greatest threat to illegal market participants, especially suppliers and distributors of illegal commodities and services; they face a high risk of incarceration, and profits from illegal exchanges can be confiscated. State law, especially criminal law, specifies different types of criminal punishment and different severity levels for different roles: some participants are defined as producers or suppliers, some as street-level distributors, and others as customers (see Wang, 2020b). For instance, in China, operators or agents of online gambling websites are charged with operating illegal gambling businesses (*kaishe duchang zui*) and are subject to a maximum five-year custodial sentence according

to Chinese Criminal Law. In extremely serious cases, offenders may face a maximum ten-year custodial sentence. In contrast, the vast majority of gamblers are not subject to criminal punishment and instead receive, at most, 15 days of administrative detention according to China's Public Security Administration Punishments Law. This differential punishment divides market participants into distinct groups: high-risk actors, such as illegal gambling operators, and low-risk actors, such as gamblers. This division affects how market participants interact.

When illegal exchanges move online, both challenges and opportunities increase. On the one hand, network technology transcends geographical boundaries and enables participants to conduct transactions with a much wider group. On the other hand, the anonymity of the Internet boosts opportunistic behaviour, such as fraud and cheating. Interacting with strangers online is challenging; participants find it difficult 'to assess trustworthiness or to retaliate should dealing go sour and agreements need to be enforced' (Lusthaus, 2012, p. 71). Dishonest participants are still able to take advantage of internet anonymity to sell products and services by disguising their identity online, even after cheating their exchange partners (Lusthaus, 2018). To make transactions possible, illegal online entrepreneurs have to develop strategies to signal their trustworthiness or make credible commitments.

Even though anonymity and identity shielding enable illegal entrepreneurs to hide behind the screen, making it harder for police to investigate illegal exchanges, illegal online entrepreneurs still risk detection, for two reasons. First, network technology helps local law enforcement agents communicate with their counterparts overseas to follow online clues across jurisdictional boundaries. Second, the traditional way of mitigating risks of criminal prosecution—bribing police officers—does not work so well online; it is harder for criminals to suborn police officers in distant geographic areas, as they are unable to build trust through face-to-face contact.

It is worth noting that those who make transactions in cyberspace not only interact in a virtual world but may also collaborate offline (Lusthaus, 2018; Lusthaus and Varese, 2021), often using pre-existing social relationships. Specifically, criminal entrepreneurs often have to rely on their interpersonal networks to find potential clients or partners. Most advertising strategies and promotional approaches adopted by legitimate businesspeople are unavailable to criminal entrepreneurs, so sellers must advertise and promote their products or services among their acquaintances. Likewise, it is less feasible for criminal entrepreneurs to recruit employees in the formal labour market. Instead, illegal sellers rely on personal relationships to recruit trustworthy collaborators and employees (Leukfeldt et al. 2017a, 2017b).

**Governance mechanisms in offline and online contexts.** The operation of illegal online markets is sustained by a range of governance institutions. This part investigates extralegal governance institutions from offline and online perspectives, although the effectiveness and performance of these institutions can vary according to context.

*Offline extralegal governance institutions.* In the offline world, participants in illegal markets have developed a set of extralegal governance mechanisms to enforce agreements, overcome opportunism, and minimize the risk of criminal punishment. One of the most frequently used offline mechanisms is reputation, which relies on the transmission of interpersonal-based information. Before initiating transactions, participants evaluate the trustworthiness of potential partners by gathering information about their reputations, including credibility, competence, and

past behaviour. In practice, information is transmitted through gossip in relational networks (Giardini and Wittek, 2019). Unsurprisingly, many participants decline to interact with a person who has a record of cheating or betrayal. Given that reputational information is transmitted through close social relationships, it is reasonable for a person to behave honestly and cooperatively if they value the earnings potential of future interactions (Dixit, 2004; Greif, 2006). The interpersonal-based reputational mechanism is more efficient when the network is tight and small; it becomes expensive and inefficient when the network size significantly increases or the network becomes more socially and culturally diverse (Ellickson, 1991).

When participants in illegal markets want to exchange with those outside their close social networks, they need to solve the problem of asymmetric information, which is caused by the lack of reliable information about each other's trustworthiness (Leeson, 2008). In such circumstances, participants need to develop strategies to signal trustworthiness. By investing in a credible signal, participants can convince potential exchange partners that they are trustworthy in the sense that they are not playing a one-shot game and will behave cooperatively, honestly, and patiently instead of opportunistically (Gambetta, 2011; Gintis et al. 2001; Lin et al. 2024). Empirical evidence suggests that people, including criminals, have developed credible signals to enhance cooperation when interacting face-to-face. These signals range from investments, such as criminal rituals (Skarbek and Wang, 2015) and gift-giving (Posner, 1998), to implicit cues of intrinsic motivation or emotion, such as eye contact, a sincere smile (Cheng et al. 2020) and tattoos on the face or neck (Gambetta, 2009). Nonetheless, it is not always possible to ensure the credibility of such signals, because they can be simulated by opportunists who can reap the benefit from a one-shot game. Trustworthiness signals are clearly not a panacea, and other mechanisms are needed to secure cooperation.

Threats and violence are commonly used to enforce compliance in criminal markets such as offline gambling (Wang and Antonopoulos, 2016), drug dealing (Durán-Martínez, 2017), and kidnapping (Shortland, 2017). Organized violence, as a means to provide protection and achieve informal control, is often provided by professional third parties such as gangs or mafias (Gambetta, 1996; Varese, 2011). Due to their capacity to use violence, gangs are often invited to get involved in illegal markets to enforce contracts, deter fraud, and solve disputes (Andreas and Wallman, 2009). In many scenarios, the mere threat of violence is sufficient, especially when participants can credibly display their toughness or convince potential partners of the toughness of their confederates (Gambetta, 2009).

Nonetheless, the purchase of gang protection and the use of violence have several drawbacks. First, illegal entrepreneurs have to pay to obtain private protection or criminal enforcement, and rates can be high. Second, extensive use of violence attracts police attention. The risk of criminal punishment is particularly high in countries where the state tries to monopolize the use of coercive power within its territory (Barzel, 2002; Wang, 2020a; Weber, 2004). Low-risk actors, who face less severe punishment if arrested, can blackmail high-risk actors by threatening to report them to the police, putting high-risk actors in a precarious situation. In this context, an act of violence and the use of gang methods are compromising information that can be exploited by others (Campana and Varese, 2013, p. 266; Gambetta and Przepiorka, 2019). Finally, violence becomes less effective when illegal entrepreneurs shift transactions online because in-person enforcement becomes more expensive and less feasible (Wang et al. 2021).

In addition to market-based risks such as opportunistic behaviour, participants in illegal online markets face the threat

Table 1 Major categories of online gambling games.			
Category	1st category	2nd category	3rd category
Examples	Lottery games such as Mark Six, <i>shishicai</i>	Sports, race, and electronic sports betting	Poker, mah-jong, and others
Platforms	Gambling websites and software		Gaming-specific apps and social media platforms such as WeChat and QQ

of prosecution. To mitigate this risk, they often resort to bribing state agents (Wang, 2020a). Corrupt police officers can offer protection to illegal entrepreneurs in two main ways. They can choose not to investigate individuals with whom they have corrupt dealings, and, taking advantage of their privileged access to information, they can inform illegal entrepreneurs of imminent police operations in their jurisdiction. Nonetheless, purchasing protection from stage agents is not sufficient for securing the operation of illegal markets in cyberspace, and therefore other strategies are called for.

*Extralegal governance institutions in the online world.* As participants move their interactions online, they adopt governance mechanisms that are effective in offline markets to function online. The first of these is the system-based reputation mechanism. Unlike the interpersonal-based reputation mechanism, which relies on information provided by acquaintances, in the system-based reputation mechanism strangers rate and review distant partners, allowing external parties to assess the trustworthiness of potential partners. System-based reputation mechanisms are widely used in online markets. They include not only rating and feedback systems used on sharing economy platforms, for example, e-commerce sites such as eBay, Amazon, and Alibaba (Dellarocas, 2003; Standifird, 2001), but also comments made in the forums and websites of cybercriminal markets, relating for example to stolen data, drug dealing, and botnet services (Décary-Héту and Dupont, 2013; Hardy and Norgaard, 2016; Holt et al. 2015). However, reputation information can be seen as public goods (Bolton and Ockenfels, 2009); participants might have a tendency to free-ride on evaluations provided by others and lack the incentive to contribute to the information pool (Lev-On, 2009).

Similar to the offline context, signalling trustworthiness is a useful way for participants in cyberspace to show potential exchange partners their reliability and competence. Online signals point either to the credibility and ability of individual participants, such as illegal entrepreneurs, or to online marketplaces, such as websites or platforms. Trustworthiness signals are as expensive for individual entrepreneurs to produce online as they are offline. For example, a digital vendor can demonstrate their desire to encourage repeat business by spending time in a forum. Trustworthiness signals also include subtle clues, such as posting personal photos (Ert et al. 2016) and using criminal nicknames that are well-known in illegal communities (Lusthaus, 2012).

Platforms or websites often establish high-profile brands, user-friendly interfaces, institutionalized rules, and formalized programmes to signal their trustworthiness and attract a large number of clients. For example, high-profile brands not only indicate that the platforms have a large number of loyal clients, but they also signify the investment of digital entrepreneurs in advertising, indicating their intention to engage in long-term business (Möhlmann and Geissinger, 2018; Riegelsberger et al. 2007). Likewise, a website that offers effective security technology and a strictly enforced privacy policy can increase the sense of safety for clients and thus their confidence in using the website

(Riegelsberger et al. 2007). By contrast, it would not be surprising that clients hesitate to engage in transactions if the payment process of an online marketplace often fails or requires clients to send payment to the private account of a person they do not know.

Online platforms, such as forums, websites, and apps, serve two distinct roles. First, they can act as direct contracting parties, engaging in sales transactions with clients. Second, they can function as third-party enforcers, providing a marketplace for online transactions and associated enforcement services to both vendors and clients. As providers of goods and services, online platforms have to establish themselves as major suppliers of certain commodities by building their reputation and earning the trust of their customers. As third-party enforcers, trustworthy online platforms must address the issue of customer opportunism, where customers may attempt to exploit the platform for their own gain. As previously mentioned, violence is not a credible threat in an online setting, so alternative institutions must be developed. One common mechanism is the use of hostage-taking, which involves demanding a deposit or initial payment as an *ex-ante* mechanism to deter cheating by either party (Raub and Keren, 1993; Weesie and Raub, 1996). In addition, online platforms must establish clear rules to regulate online transactions, including rating and escrow systems, reporting and refund functions, and sanction mechanisms.

To lower the risk of detection and prosecution, illegal entrepreneurs in cyberspace use Internet infrastructure and network technology to conceal evidence of their activities. Several methods are commonly employed, such as frequently setting up new websites, using others' accounts, employing web proxies located overseas, and avoiding the use of terms that are subject to police monitoring. However, these strategies can erode clients' perception of entrepreneurs' credibility and reliability as well as the services and goods they provide. This highlights the need for market participants to develop shared norms and an understanding of these concealment strategies.

The online gambling market in China

Gambling, including online gambling, is heavily regulated in mainland China. Even though China has two government-authorized lotteries, the China Welfare Lottery and the China Sports Lottery, they do not provide online betting services.<sup>1</sup> The gambling games offered lack variety and have relatively low payout rates, which may not provide enough entertainment and excitement for players. As a result, the illegal online gambling market emerged to provide more convenient and accessible gambling games, as well as more thrilling experiences that satisfy players' demands for entertainment.

Online gambling games can be divided into three major categories (see Table 1). The first category consists of lottery games, where the outcomes usually depend on the players' luck. Mark Six (*liuhecai*, a 7-out-of-49 lottery-style game with six general winning numbers and one special winning number) and *shishicai*, a fast-paced gambling game where players select random numbers or number combinations are typical examples. The second



category is sports and race betting, where players place bets on the outcomes of sporting events such as football, basketball, motor racing, horse racing, and electronic sports. Sports and race betting differ from other forms of online gambling in that they combine the thrill of gambling with the entertainment of watching sports (Church-Sanders, 2011). This creates an immersive experience for players, adding to their sense of entertainment, relaxation, and excitement. For example, during the overlap of the 2022 World Cup and the lockdown imposed by China's zero-COVID policy, online football betting helped players alleviate boredom and provided them with a topic of conversation, which enabled them to keep interacting with their friends in spite of the social distancing.<sup>2</sup> Alongside the popularity of video games and electronic sports, skin gambling has emerged and prevailed in recent years (Shan, 2023). Players wager virtual items or "skins" (i.e. cosmetic items used in video games to alter the appearance of a player's character and weapons) as a form of currency (Zhang, 2023). The third popular category of online gambling games is poker and mah-jong, where skill and strategy, as well as chance, determine the outcome (Gainsbury, 2012).

The operation of gambling games is technically underpinned by digital and telecommunications infrastructure, websites, software, and social media platforms. Online gambling, especially lotteries and sports and race betting, is often conducted on dedicated gambling websites and software. These platforms offer functions such as placing bets, displaying real-time odds, and facilitating payment of deposits and winnings. These websites and platforms are well-organized, integrated and highly automated, allowing users to engage in illegal transactions with operators or their agents.<sup>3</sup>

Poker and mah-jong are commonly played on gaming-specific apps. Operators usually make use of social media platforms like WeChat and QQ to establish chat groups that enable players to communicate with each other and with the operator. Operators also rely on these chat groups to organize games, facilitate payment transactions, and collect debts or winnings. During the process, operators serve as third-party enforcers, and they earn commissions for their role in facilitating the games.

Both internet technologies and social media platforms, as infrastructural supports, are not sufficient to sustain the illegal online gambling market, however. Institutional arrangements are also needed to mitigate both market-based risks and government repression. Empirical evidence shows that operators have developed strategies to marketize their services, ensure fair play, facilitate the collection of gambling debts, and avoid police attention. A crucial issue for the survival of the market is debt collection, and there are two main approaches to this. The first involves settling gambling debts between players and operators ex post, with players paying their debts or operators paying out winnings after the games have ended. This method is commonly known as a 'credit-based transaction platform' (*xinyu wang*) and relies on credible commitments made by players and operators. Like credit cards, credit-based transaction platforms enable players to place bets without deposits, which motivates them to engage in gambling activities. The second approach settles gambling debts ex ante. Websites and software adopting this approach are known as 'cash-based transaction platforms' (*xianjin wang*) and require deposits from players before gambling can begin.

## Method and data

This article is based on empirical data collected through in-depth offline and online interviews conducted between 2021 and early 2023. We conducted 47 individual and 10 group interviews with stakeholders in the online gambling market, including players ( $n = 26$ ), agents ( $n = 8$ ), and operators ( $n = 22$ ), as well as six

police officers and a prosecutor who provided valuable insights (see Table 2). We conducted interviews in four cities (Chaozhou, Guangzhou, Meizhou and Shenzhen) in Guangdong province and two cities (Ganzhou and Shangrao) in Jiangxi province.

China's online gambling market operates clandestinely, making it very challenging for researchers to find participants, particularly operators and agents. It is even more challenging to gain their trust and convince them to be interviewed. To address these challenges, we used the snowball sampling method to generate a pool of participants. We selected sites where we had already established trust relations with acquaintances who could help us persuade suitable participants to accept our invitation. Being vouched for by these acquaintances was essential for building trust with participants whom we had not previously contacted (Wei et al. 2023). The trust we gradually established significantly increased their willingness to share their stories and perceptions.

We ensured confidentiality during our interviews by disallowing participants from disclosing any sensitive information, such as names and IDs of offenders or criminal enterprises, if the information had not been revealed by the media to the public. The existence of social connections or the involvement of trusted middlemen made participants believe that we would use their personal experiences and opinions in an appropriate and secure way. Besides informing participants about our ethical guidelines for interviews, we used their nicknames when communicating with them. This tactic not only helped protect their privacy but also gave them the impression that we were professional and reliable, which, in turn, strengthened their willingness to share their knowledge, stories, and experiences. Moreover, we often initiated the interviews with a casual conversation about participants' daily lives and some interesting stories about our mutual friends. The use of warm-up questions made our participants feel relaxed and comfortable, which helped encourage them to share their experiences and perceptions concerning the gambling market. As trust was gradually built, many participants were willing to introduce us to their friends or partners involved in gambling activities.

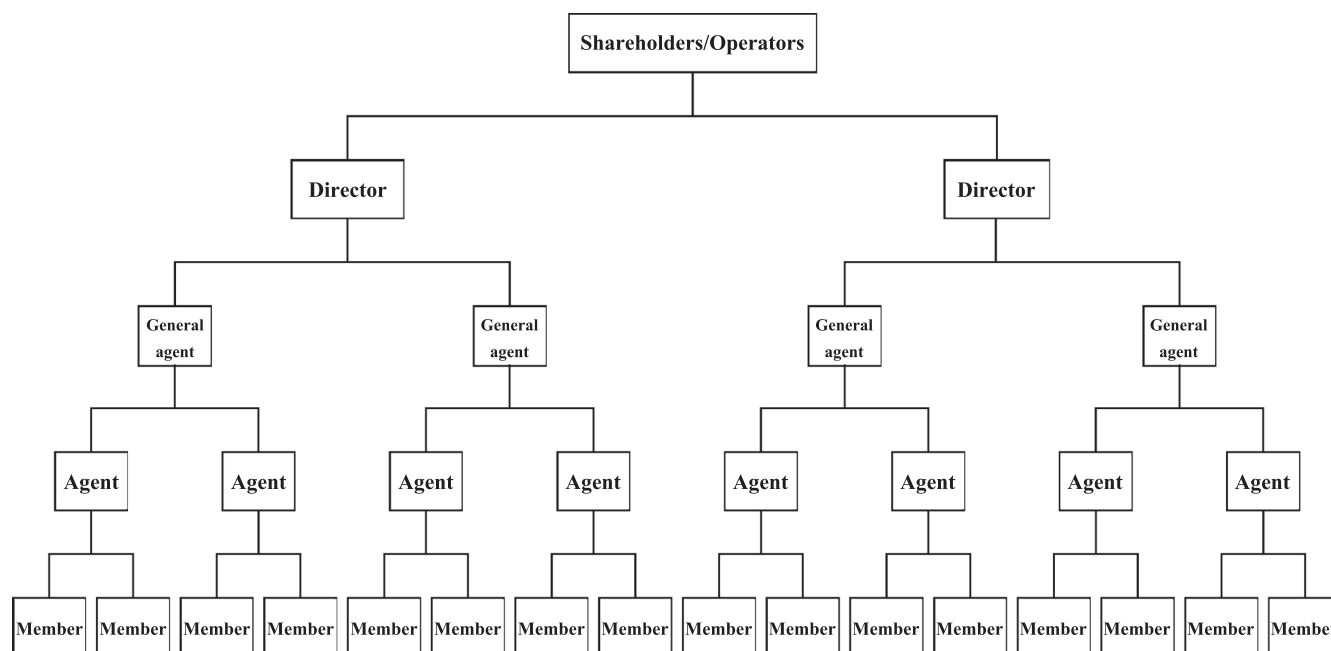
We also sought to include participants from as many cities as possible. This strategy not only helped us mitigate selection bias during the identification of interviewees (Robinson, 2014) but also enabled us to expand our interview data pool. Given the illegal nature of online gambling, conducting interviews with dozens of participants, particularly agents and operators, in a single city was impractical. By selecting interviewees from six cities, we were able to gain valuable information regarding players' gambling preferences, illegal entrepreneurs' strategies to mitigate market-based uncertainty and the risk of criminal punishment, and the response of local law enforcement to illegal online gambling. While our interview data may not be comprehensive, it provides valuable insights into the social order of China's illegal online gambling market.

Besides conducting in-person interviews, we also recruited interviewees<sup>4</sup>, particularly players, online. We conducted interviews over the phone, particularly during the 2022 World Cup when online betting on football was widespread. It was a period of restrictive COVID-19 lockdown in China, and offline interviews were less feasible. Unlike agents and operators, who were cautious about being approached by strangers, those betting on football were less likely to face criminal charges and were thus more willing to share their motivations, experiences, and opinions. Given that the risk and severity of punishment are fairly low for players, the monetary awards serve as an effective mechanism to motivate players to participate in our interviews. These interviewees were diverse in terms of their city of origin and level of gambling experience. The phone interviews created a helpful set

Table 2 List of Interviewees.			
Interview	Description	Year	Place and type of interview
IG202101	Agent	2021	Shenzhen, in-person interview
IG202102	Operator	2021	Chaozhou, in-person interview
IG202103	Operator	2021	Chaozhou, in-person interview
IG202104	Operator	2021	Chaozhou, in-person interview
IG202105	Agent	2021	Chaozhou, in-person interview
IG202106	Agent	2021	Chaozhou, in-person interview
IG202107	Agent	2021	Shangrao, in-person interview
IG202108	Operator	2021	Meizhou, in-person interview
IG202109	Operator	2021	Guangzhou, in-person interview
IG202110	Operator	2021	Chaozhou, in-person interview
IG202111	Operator	2021	Shenzhen, in-person interview
IG202112	Operator	2021	Meizhou, in-person interview
IG202113	Agents	2021	Ganzhou, in-person group interview
IG202114	Operators	2021	Chaozhou, in-person group interview
IG202115	Agents	2021	Ganzhou, in-person group interview
IG202116	Operators	2021	Chaozhou, in-person group interview
IG202117	Operators	2021	Chaozhou, in-person group interview
IG202118	Operators	2021	Chaozhou, in-person group interview
IG202119	Operator	2021	Guangzhou, in-person interview
IG202120	Player	2021	Chaozhou, in-person interview
IG202121	Players	2021	Chaozhou, in-person group interview
IG202122	Players	2021	Chaozhou, in-person group interview
IG202123	Player	2021	Chaozhou, in-person interview
IG202124	Policeman	2021	Chaozhou, in-person interview
IG202125	Policeman	2021	Chaozhou, in-person interview
G202126	Policeman	2021	Shenzhen, in-person interview
IG202127	Policeman	2021	Guangzhou, in-person interview
IG202128	Policeman	2021	Shenzhen, in-person interview
IG202129	Procurator	2021	Shangrao, in-person interview
IG202201	Operator	2022	Chaozhou, in-person interview
IG202202	Policeman	2022	Guangzhou, in-person interview
IG202203	Player	2022	Guangzhou, in-person interview
IG202204	Player	2022	Guangzhou, in-person interview
IG202205	Player	2022	Guangzhou, in-person interview
IG202206	Operator	2022	Guangzhou, in-person interview
IG202207	Operators	2022	Guangzhou, in-person group interview
IG202208	Player	2022	Ganzhou, in-person interview
IG202209	Player (World Cup)	2022	Telephone interview
IG202210	Player (World Cup)	2022	Telephone interview
IG202211	Player (World Cup)	2022	Telephone interview
IG202212	Player & Agent (World Cup)	2022	Telephone interview
IG202213	Player (World Cup)	2022	Telephone interview
IG202214	Player (World Cup)	2022	Telephone interview
IG202215	Player (World Cup)	2022	Telephone interview
IG202216	Player & Agent (World Cup)	2022	Telephone interview
IG202217	Player (World Cup)	2022	Telephone interview
IG202218	Player (World Cup)	2022	Telephone interview
IG202219	Player (World Cup)	2022	Telephone interview
IG202220	Player (World Cup)	2022	Telephone interview
IG202221	Player (World Cup)	2022	Telephone interview
IG202222	Player (World Cup)	2022	Telephone interview
IG202223	Player (World Cup)	2022	Telephone interview
IG202224	Player	2022	Guangzhou, in-person interview
IG202301	Agent	2023	Guangzhou, in-person interview
IG202302	Operators	2023	Guangzhou, in-person group interview
IG202303	Agent	2023	Shenzhen, in-person interview
IG202304	Operator	2023	Chaozhou, in-person interview

of data on China’s online gambling market, complementing the data obtained through in-person interviews. In order to understand the mechanisms used to settle gambling debts, we employed a game theoretical model with game trees (e.g. the extensive form) to show our empirical data on the strategic interactions between players and operators or agents, which will be discussed later in this article.

**Mitigating market-based risks**  
Our empirical data shows that participants in China’s online gambling market have developed strategies and organizational structures to signal trustworthiness, gain the trust of exchange partners, and facilitate illegal transactions. Of the three major categories of online gambling games (see Table 1), the following discussion focuses on the first and second categories of online



**Fig. 1 The pyramid-like structure used by the online gambling industry.** \*Fig. 1 is based on interviews IG202103, IG202111, IG202113, and IG202117.

gambling games facilitated by gambling websites and software. The discussion also includes an explanation of how social media platforms facilitate gambling games that belong to the third category.

**Organization, marketing, and ensuring fair play.** To attract clients, online gambling operators and agents need to market and advertise their products and services. Commonly adopted marketing approaches, such as television advertising, are obviously unavailable, so operators and agents must find alternatives. The most typical way to attract clients is to use personal networks. As our empirical data and Fig. 1 show, operators and agents of web-based and software-based gambling platforms often resort to a pyramid-like structure to scale up their business. Our observation is consistent with the existing literature. For example, Liu (2023) randomly selected 100 cases from China Judgement Online concerning charges of operating casinos and found that a pyramid-like structure was adopted in up to 74 cases. Operators act as ‘shareholders’ and establish two or three layers of agents. These operators are typically composed of individual bookmakers who take a significant share of the money wagered. These operators often have a clear division of labour based on their skills, resources, and experience. Some are technical experts responsible for providing overseas servers and designing and managing gambling platforms. Others possess extensive social networks that bring in agents and customers. Some are members or leaders of local gangs or have close ties with these gangs, allowing operators to resort to threats and violence if necessary. Finally, there are influential or wealthy individuals serving as operators who convey an image of competence and credibility, signalling the trustworthiness of their platforms.<sup>5</sup>

In the pyramid-like structure, agents may be referred to by other titles, such as ‘general agents’ or ‘directors’. Agents at a lower level are developed and managed by those at a higher level. Their role is to seek out clients and provide them with services, such as assisting them with registering on websites and placing bets. The profits of these agents primarily come from service fees (*shui*) offered by operators. These fees are typically a certain percentage of the amounts wagered by their clients, who are also known as ‘members’. As an agent advances, their percentage of

service fees also increases. The specific level of service fee is subject to market competition and may vary. As one interviewee mentioned, the service fee once dropped from 10% to 2% as more operators and agents entered the market.<sup>6</sup>

In social-media-platform-based gambling, however, operators do not develop such a comprehensive organizational structure. They rely on their personal networks to identify and attract players, and they use platforms such as WeChat and QQ to manage their players and enforce agreements. They often reward individuals who introduce new players by giving them red envelopes that usually contain cash.<sup>7</sup>

Furthermore, the growth of live streaming in China has given rise to the emergence of informal sports presenters, known as anchors, who draw in viewers to bet on sports streaming applications such as Justfun, QiE.tv, and Blue Whale Sports. These anchors have expertise in specific sports and good knowledge of athletes, which allows them to provide insightful commentary and make more accurate predictions about match outcomes than an ordinary gambler could. Recognizing the value of these anchors in attracting gamblers, operators often establish partnerships with them. Figure 2 depicts a progressive rewards system that motivates anchors to attract more gamblers.<sup>8</sup> Anchors demonstrate their exceptional prediction abilities by regularly posting their prediction records on their personal websites.<sup>9</sup>

Additional marketing methods operators use include spam messages and emails sent indiscriminately to potential gamblers, as well as pop-up advertisements on certain websites, especially those associated with pornography or electronic gaming. One interviewee mentioned that during the 2022 World Cup, she was frequently exposed to such advertisements and noticed that ‘the gambling apps were very active’.<sup>10</sup> To attract new players, gambling websites and software companies often offer coupons and bonuses to incentivize registration.

Operators of gambling platforms make great efforts to ensure fair play, or at least convince potential clients that the gambling games they provide are not subject to outcome manipulation. To ensure fair play, operators often use focal/reference points to show that their games are determined by chance rather than any external factors. Specifically, the outcomes of illegal online gambling games are derived from those of licensed, legalized



**开云体育**

**迎新奖励再加码  
千元礼金领不停**

活动时间：2022/10/01-2022/10/31

**活动内容**

开云体育合营伙伴可在活动周期内，每发展一个有效新增用户，即可享受最高可达**1000元**/每个新增礼金，奖励上无封顶。

有效新增	新增奖励	发放奖励
第1个	300元	300
第2个	400元	700
第3个	500元	1,200
第4个	600元	1,800
第5个	700元	2,500
第6个	800元	3,300
第7个	900元	4,200
第8个	1,000元	5,200

第8个以上有效新增，直接拿1000元/个，  
比如如有9个新增直接拿9000元

**· 发放周期 ·**

上半月 **1-15 日** | 下半月 **16-31 日**

**活动规则：**

- 有效新增用户定义：当月累计存款≥500或有效流水≥1000且是首存会员；
- 活动奖励礼金将在活动审核完成后的48小时工作日发放至合营伙伴后台绑定账户内；
- 同一手机号、姓名、邮箱地址、银行卡号等信息的游戏账号，仅可参与一次，若有违规者，将不享受此红利；
- 为避免文字理解差异，开云体育保留本次活动最终解释权。

**Fig. 2 Progressive reward system for sports anchors.** The information mentioned in the panel on the left indicates that sports anchors who collaborate with gambling websites to attract new players will receive monetary rewards. The rewards increase with the number of players that the anchor attracts. For instance, the anchor could receive a reward of 300 RMB from the gambling website when they attract the first player for the website. Attracting a second player could bring an additional reward of 400 RMB, while the third player could bring a reward of 500 RMB, and the fourth one 600 RMB. The rewards can go as high as 1000 RMB per player.

numbers, but the winning numbers remain identical to those of the licensed Hong Kong game.

Similarly, when it comes to sports or race betting, operators usually base their illegal gambling games on high-profile matches. This is because gamblers tend to believe that high-profile matches are less likely to be fixed. As a football fan explained:

Athletes who compete in lesser-known matches may not earn as much money or receive the same level of recognition and sense of achievement from their sport as those who compete in televised matches. I don't think these athletes [who compete in lesser-known matches] would refuse the opportunity to earn quick money [by engaging in match-fixing]. But for athletes in top-level matches, for example, I don't think that an athlete in the Argentina vs. France final would say, 'I'll take money to let the opponent win.' It's a lifelong honour that they wouldn't compromise.<sup>11</sup>

In another popular lottery game, *shishicai*, operators from different gambling platforms base their games on results from a well-known website called 168, which acts as a third party for lottery draws.<sup>12</sup> Because many platforms use 168 as their reference point for the outcomes of lottery games, the likelihood of outcome manipulation in 168 is very low. Therefore, using a well-known website as the reference point can be seen as a signal of credibility and trustworthiness.

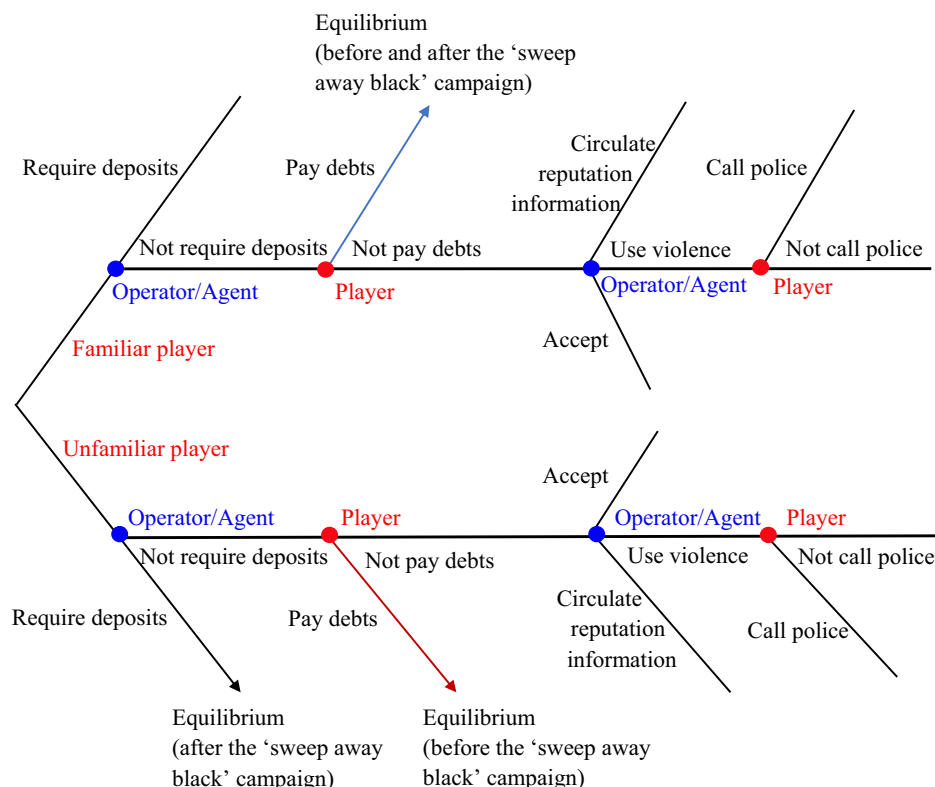
**Settling gambling debts.** Settling gambling debts is a crucial issue in the online gambling market. As previously mentioned, gambling websites, software and applications can be divided into two categories: credit-based transaction platforms that settle gambling debts ex post and cash-based transaction platforms that settle debts ex ante. The smooth operation of credit-based transaction platforms is dependent on credible commitments made by players and operators. Our empirical data shows that the operators of credit-based platforms are wealthy, influential people who are strongly motivated to pay out winnings in order to avoid damaging their social standing and losing users to competing platforms.<sup>13</sup>

Operators or agents of credit-based platforms use several mechanisms to ensure players to pay their gambling debts. To better understand the operation of the institutional mechanisms adopted to settle these debts, we employed a game tree to capture the strategic interaction between operators or agents and their familiar or unfamiliar players (see Fig. 3). Each branch of the tree shows the strategy of operators or agents and players with respect to paying or collecting debts, and the equilibrium indicates the outcome of their interaction under certain conditions.

When operators or agents deal with players they are familiar with, they often do not require players to pay a deposit; they rely on the reputation systems embedded in interpersonal networks, rather than violence, to recover gambling debts. In a pyramid-like structure, agents are responsible only for collecting gambling debts from their own clients. If a client fails to pay, the agent who

gambling, or high-profile matches. For example, the popular but illegal lottery game Mark Six, which is run in mainland China, uses winning numbers based on those of the licensed Mark Six in Hong Kong. Mainland Chinese operators may offer players additional wagering options, such as betting on a single general winning number or the even or odd nature of the winning special





**Fig. 3** The game tree of settling gambling debts.

owns that client must cover the debt; the higher-level agent is not responsible for collecting these debts. This structure incentivizes agents to carefully assess the trustworthiness of their clients, which helps to minimize the risk of non-payment.

Agents consider three key elements when evaluating their clients. First, they prefer to work with people they already know. As an agent we interviewed noted: 'It must be someone with whom we are familiar and who can be easily located, such as a relative or very close friend, so that they cannot escape [their debts].'<sup>14</sup> Second, related to the first point, agents need to target credible players. As one interviewee noted, 'developing trustworthy players is the only solution [that ensures gambling debt collection], because the authorities do not acknowledge these debts.'<sup>15</sup> Agents often rely on information provided by their network of acquaintances to identify potential gambling players with a good reputation. A player with a reputation for debt evasion is not welcome and can even be ostracized in the social network.<sup>16</sup> Third, agents often prefer clients with financial capacity, as this closely correlates with the probability that the clients will honour their debts. An operator shared with us how he judged a player's trustworthiness by saying, 'if a player is rich, he has credit.'<sup>17</sup> Likewise, another operator noted, 'I evaluate a player's trustworthiness based on how wealthy they are.'<sup>18</sup>

Agents on credit-based platforms evaluate players' trustworthiness and financial capacity and use this evaluation to determine the level of credit to grant. Once gambling debts exceed the credit limit, players must settle their debts before they can continue betting. As shown in the upper part of Fig. 3, when operators and agents deal with players they are acquainted with, the reputation mechanism is generally sufficient to ensure prompt debt settlement by players. When operators or agents collect debts ex post and players fulfil their obligations, the assurance of the reputation mechanism creates an equilibrium. In most cases, threats, violence, and police intervention are not necessary to enforce compliance.

To maximize profits, operators and agents must expand their pool of clients by attracting people they have not yet known, but the reputation mechanism is not sufficient for settling debts with such players. Before China's 'sweep away black' campaign, unfamiliar players were not required to pay deposits in order to gamble. To ensure that players fulfilled their obligations, operators and agents commonly relied on threats, violence, and even self-harm. An interviewee who was an agent told us:

In the past, we resorted to self-harm to collect debts. Self-harm works like this: we'd come to your (i.e. a player in debt) house, and if you refused to pay, our collector would take a beer bottle and smash it on their own head. If you still refused to pay, they would do it again.<sup>19</sup>

Local police opted not to intervene even when debtors reported being victimized by gang methods, because police officers were not responsible for dealing with interpersonal lending disputes. As discussed, some operators and agents are themselves members or leaders of local gangs and often manage offline gambling houses before becoming involved in online gambling businesses. The use of gang methods to enforce agreements was not uncommon in collecting debts resulting from online gambling.<sup>20</sup>

To reduce the risk of police crackdown, gangsters often employed 'soft violence' (*ruan baoli*, psychological coercion without causing physical injuries) to enforce compliance. Soft violence methods included blocking access to a debtor's home, splashing paint on the door of debtor's home, and occupying the debtor's home until the debts were settled.<sup>21</sup> In most circumstances, the threat of soft violence was enough to compel debtors to pay their debts. An operator of an online mah-jong gambling platform based in Chaozhou, a city in Guangdong province, mentioned that he used to invite a professional debt collector to help him recover debts from a player in Beijing, a long way from Chaozhou. The debt collector sent a message to the debtor stating that he knew her home address and would visit her there and

cause a disturbance if the debt remained unpaid.<sup>22</sup> This message was enough to persuade the debtor to fulfil her obligations.

In 2018, the Chinese government launched a nationwide anti-crime campaign named ‘sweep away black’ to combat the widespread use of soft violence (Wang 2020a). This campaign targeted gambling operators and agents who used gang methods to collect debts. Many debtors took advantage of the government’s intensive efforts to eradicate gangs and repress illegal markets to escape their obligations. As a number of interviewees mentioned, debtors could threaten agents or operators: if an agent pursued a debt, the debtor would report the agent’s involvement in illegal gambling to the police (as the lower right part of Fig. 3 shows).<sup>23</sup> An experienced agent told us:

When a player loses a lot of money [in gambling], he may choose to report the gambling activities to the police.... He will be fine, but his agent will be taken away (i.e. arrested) by the police.<sup>24</sup>

The decreased cost-effectiveness of gang methods or soft violence and the increase in associated risks compelled operators and agents of online gambling platforms to change how they got paid from ex post to ex ante. In other words, as Fig. 3 shows, prior to the ‘sweep away black’ campaign, the threat or use of violence ensured that unfamiliar players paid their debts ex post. However, after the ‘sweep away black’ campaign, violence became a more risky strategy, leading to a change in the equilibrium of participants’ interaction so that operators and agents now require deposits from players.

As a result of the anti-crime campaign, cash-based transaction platforms have become increasingly popular; they complement and sometimes replace credit-based transaction platforms. In other words, settling gambling debts through payment of deposits has become an increasingly important mechanism. Operators and agents only allow a limited number of players who are very trustworthy and financially sound to stay on a credit-based transaction platform and settle their debts ex post. However, requiring deposits puts players at a disadvantage: dishonest operators and agents may withhold players’ deposits and refuse to pay out winnings. To address players’ concerns, operators and agents must demonstrate their trustworthiness. One way for operators to signal trustworthiness is to establish their online platform as a high-profile brand. Operators, therefore invest in increasing the exposure of their platforms to potential players. For instance, *Yabo*, a high-profile sports betting platform, sponsors football teams and matches, and its brand logo is printed on team uniforms and on advertising hoardings in football stadiums.<sup>25</sup> When an online gambling platform has a significant market presence, players are less likely to fear that the platform’s operators and agents will engage in dishonest practices.<sup>26</sup>

Another way for operators to increase players’ sense of safety is to set up user-friendly interfaces and establish convenient and secure payment methods. As Fig. 4 shows, the gambling platform —*Oubao*—not only provides 13 payment methods but also informs clients about scams they may encounter when gambling. The user-friendly interface developed by this gambling platform also increases players’ trust in the platform. One player told us that the clean, simple interface boosted her confidence in using the OB sports platform, another well-known gambling platform.<sup>27</sup>

### Avoiding police crackdowns

Avoiding criminal investigation, prosecution and imprisonment is a significant task for all online gambling participants, particularly operators and agents. An avoidance strategy for operators

### 支付方式 Payment Methods



### 【提款安全重要提醒】

尊敬的会员：近期我司发现有个别地区（如南宁等）基站发送不明信息或致电，诱骗玩家操作点击提款到账。请各位会员切勿相信任何要求“点击确认收款”的致电和短信，务必前往手机银行APP中核实金额。如您需要协助请立即联系24小时在线客服。请认准欧

○ 今日不再提醒

**Fig. 4 Payment methods offered by Oubao, a cash-based transaction platform.**

Dear Members, Recently, we discovered that in certain regions (such as Zhen, Nanning, etc.), some base stations are sending suspicious messages or making calls to deceive players into clicking on links to withdraw funds. Please do not trust any calls or messages requesting you to “click to confirm receipt.” Please always verify the amount through your mobile banking app. If you need assistance, please contact our 24-h online customer service.

and agents is to purchase protection from police officers by bribing them. Operators and agents described to us the methods they use to establish friendly relations with local police officers; for instance, they invite officers to expensive restaurants,<sup>28</sup> purchase cigarettes for them,<sup>29</sup> or pay monthly protection fees.<sup>30</sup> Some operators even offer police officers a certain percentage of their business shares.<sup>31</sup> In return, these corrupt police officers choose not to enforce the law against the operators and agents who pay them and also give the operators confidential information about police anti-gambling initiatives.

Operators and agents also use technology and internet anonymity to avoid the legal consequences of their actions. Some operators rent web servers located overseas, for instance in Hong Kong, Taiwan, or Cambodia, which makes it difficult for police officers to trace the location of a gambling platform.<sup>32</sup> Operators also frequently alter network routings to their websites and update the security codes for player accounts. As an operator explained:

We change our security codes monthly in order to avoid our business being reported to the police and to prevent

police investigation of our players and agents. If one of us is placed under criminal investigation, we promptly change the security code and website to reduce the risk of others being implicated.<sup>33</sup>

As Fig. 5 shows, when using social media platforms to organize gambling activities, operators and agents frequently remind players to avoid using sensitive words or sharing screenshots related to the gambling platform, because this can attract police attention. A player shared with us the insider language used during the 2022 World Cup:

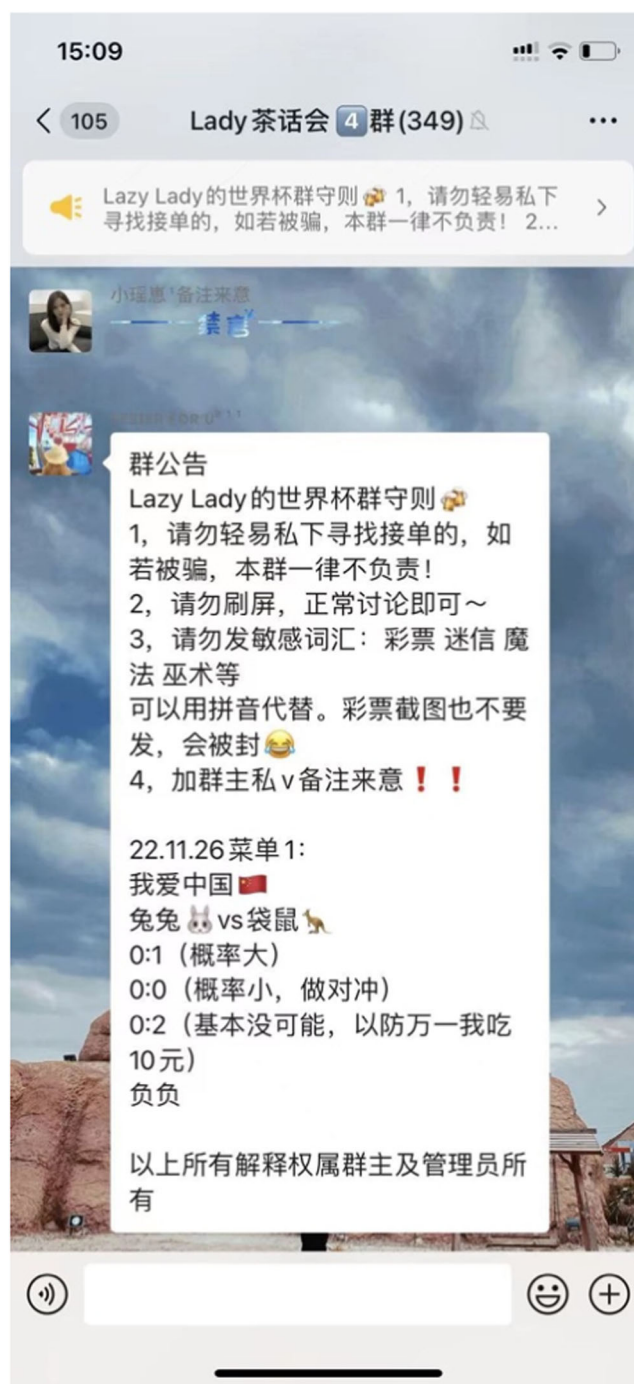
We use 'pizza' to indicate the Italian team and 'helicopter' to indicate the French team. For instance, 'a piece of pizza and two helicopters' means a player is betting on the Italians losing 1–2 to the French.<sup>34</sup>

To prevent leaving a trail that could aid a criminal investigation, agents often suggest that players settle debts with cash instead of electronically.<sup>35</sup> If electronic payment is unavoidable, operators and agents often use a 'puppet' to handle the transactions. Specifically, a 'puppet' refers to an elderly person who is willing to sell their personal identification information for profit. Operators and agents use intermediaries to purchase the identification, phone SIM card, bank account, and login details for online platforms such as Alipay and WeChat of elderly people and use these accounts for money transfers. If police investigate these transactions, they will only get as far as the puppet, an elderly person who has no connection to the operators and agents of the gambling platform, is unaware of the illegal gambling activities, and is not criminally liable. This strategy poses significant technical challenges for law enforcement agencies. As one police officer acknowledged, it can be highly challenging and resource-intensive to identify all the participants involved in a case of illegal online gambling and ascertain the amount of money being wagered.<sup>36</sup>

## Discussion

Since the mid-1990s, illegal gambling operations that were primarily organized locally and regionally have moved to the Internet and become globalized (Spapens, 2014). Gambling, both online and offline, is subject to varying forms of regulation in different jurisdictions (Newburn, 2018). Some countries, such as member states of the European Union, regulate most types of gambling, while other countries, like the United States, and jurisdictions such as Macau, legalize and regulate specific types of gambling, such as casinos and sports betting (Spapens, 2014). The gambling industry in mainland China deserves further examination, because the Chinese authorities outlaw most types of gambling, and the two state-sanctioned lotteries are far from sufficient to meet players' increasing demands for entertainment and excitement.

The rapid development of information technologies and the disparity in government regulation of gambling across different jurisdictions have significantly facilitated the growth of the online gambling industry in mainland China. In contrast to traditional and local gambling businesses (e.g. gambling houses) that often face a significant risk of criminal prosecution, criminal entrepreneurs who operate online gambling businesses are often able to avoid detection and criminal punishment by using internet anonymity and renting web servers overseas. These entrepreneurs set up user-friendly interfaces, establish convenient payment methods, and use outcomes of foreign-licensed gambling and high-profile matches as reference points to convey clear signals of trustworthiness and their competence to ensure fair play. Through intense communication with players in online chat groups, illegal entrepreneurs have managed to create new norms:



**Fig. 5 A WeChat group designed for organized gambling activities.** Group Announcement: Rules for the Lazy Lady World Cup Group: 1. Please be cautious when you exchange in private transactions; if you are cheated, this group will not take any responsibility. 2. Don't flood the screen, please discuss normally. 3. Please avoid using sensitive words such as lottery, superstition, magic, witchcraft, etc. You can use *pinyin* instead. Do not post lottery screenshots or the group will be blocked. 4. Please state your purpose when adding the group manager as your WeChat friend.

the frequent altering of network routings to their websites and the periodic updating of the security codes for player accounts, which have been widely accepted by all players.

The case study of online gambling in China enables researchers to explore the offline dimensions of illegal online gambling businesses. We find that interpersonal trust relationships are the



starting point for the launch of this type of illegal business in cyberspace and play an essential role in establishing the pyramid-like structure, deterring opportunistic behaviour, attracting potential customers, and enforcing loan repayment. Nevertheless, the online gambling business is not restricted to interpersonal trust relationships, because operators and agents at various levels can expand their businesses beyond direct personal interactions. They use spam messages and emails and outsource many marketing tasks to anchors. The adoption of these marketing strategies enables operators and agents to attract new players with whom they do not have existing offline connections. This generates the need for operators to use cash-based transaction platforms to regulate these new players' gambling activities and settle gambling debts.

The study of online gambling in China also provides an ideal opportunity for researchers to examine the effects of law enforcement actions on the operation of illegal businesses in cyberspace. Increased law enforcement due to China's latest anti-crime campaign has brought higher levels of risks and uncertainties, especially for operators and agents of online gambling who still prefer to use coercion and violence to enforce overdue loans. To lower the risk of detection and criminal prosecution, which can be achieved by reducing reliance on violence and coercion, operators and agents have to replace credit-based transaction platforms with cash-based transaction platforms, especially when they regulate new players' gambling activities on their websites or apps. This gives rise to two consequences: on the one hand, increased reliance on cash-based transaction platforms may discourage potential customers from gambling on these platforms, requiring operators to demonstrate clearer and stronger signals of their trustworthiness than before by improving their online persona, websites, and apps; on the other hand, the common use of cash-based transaction platforms has reduced operators and agents' reliance on interpersonal trust relationships, which may allow operators to expand their gambling businesses beyond interpersonal connections. The topic of the extent to which increased reliance on cash-based transaction platforms constrains or expands online gambling businesses deserves further empirical investigation.

## Conclusion

Participants in illegal online markets encounter substantial risks because they lack access to contract enforcement provided by state institutions and face the threat of police investigation. Furthermore, their interactions are facilitated and constrained by Internet anonymity. Despite these risks, illegal markets continue to flourish online. However, until recently, there has been little empirical research examining how participants in illegal online markets use both offline and online strategies to address the risks they face. This article aims to fill the literature gap by focusing on a case study of the illegal online gambling market in China and examining the extralegal governance institutions that have been developed to address both market-based uncertainty and the risk of criminal prosecution.

Drawing on in-depth interviews, this article reveals the operation and evolution of institutional mechanisms that ensure cooperation and minimize risk in the illegal online gambling market. Our empirical evidence suggests that operators and agents of illegal online gambling platforms develop a pyramid-like structure to manage their businesses and incentivize agents to attract players. They also use live streams, spam emails, and pop-up advertisements on websites to increase their pool of potential customers. Moreover, operators and agents seek to convince players that they can ensure fair play by directly referring to the outcomes of licensed gambling websites and high-profile overseas

sports matches or outcomes provided by trustworthy third parties. China's recent efforts to repress organized crime and illegal markets have led to a decreased use of threats of violence by illegal market participants, a decline in credit-based transaction platforms, and the rapid development of cash-based transaction platforms. Operators and agents now prefer to settle gambling debts by requiring deposits from players. In addition, bribing police officers and using network technologies remain complementary strategies for reducing the risk of criminal punishment.

In the digital era, illegal online transactions have become increasingly prevalent, causing harm to society and presenting additional challenges to law enforcement agents. Researchers can contribute to addressing these challenges through theoretical and empirical examinations of illegal online markets. More research is needed to understand how offline mechanisms facilitate illegal online transactions, how network technologies promote the exchange of illegal goods and services in cyberspace, and how law enforcement actions influence the evolution of strategies used by illegal entrepreneurs. We hope our work will focus scholarly attention on illegal markets and assist further research and policy development.

## Data availability

The data utilized is subject to confidentiality restrictions. Following the research ethics, the researchers have the responsibility to protect the privacy of the interview participants; the interview data, therefore cannot be shared. Regrettably, we are unable to fully share the data publicly. However, if readers have a specific interest or a reasonable need to access the data, we encourage them to contact the corresponding author for further details and potential arrangements.

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## Notes

- 1 The China Sports Lottery used to offer online betting services, but these services were shut down in 2014.
- 2 Interviews IG202210, IG202211, IG202218, IG202220, and IG202222.
- 3 Operators of gambling websites and software are shareholders. They not only collect service fees from players but also engage in gambling games directly. Agents, on the other hand, only charge service fees; they do not participate in gambling games. In order to incentivize agents to sign up more players, operators sometimes distribute a portion of the profits from service fees to agents. For a more detailed discussion, please refer to the section "Mitigating market-based risks".
- 4 The majority of interviewees were betting on football.
- 5 Interview IG202101, IG202103, IG202108, IG202110, IG202112, and IG202113.
- 6 Interview IG202116.
- 7 Interview IG202113.
- 8 Interview IG202205.
- 9 Interview IG202206.
- 10 Interview IG202220.
- 11 Interview IG202213.
- 12 Interview IG202113.
- 13 Interview IG202109, IG202114, IG202116, and IG202302.
- 14 Interview IG202212.
- 15 Interview IG202215.
- 16 Interview IG202113.
- 17 Interview IG202111.
- 18 Interview IG202201.
- 19 Interview IG202203.
- 20 Interview IG202114 and IG202301.
- 21 Interview IG2021101 and IG202115.
- 22 Interview IG202117.
- 23 Interview IG202102, IG202103, IG202105, IG202106, IG202107, IG202108 and IG202111.
- 24 Interview IG202101.
- 25 Interview IG202217.



26 Interview IG202210.  
 27 Interview IG202217.  
 28 Interview IG202106.  
 29 Interview IG202102.  
 30 Interview IG202103.  
 31 Interview IG 202129.  
 32 Interview IG202108, IG202111, and IG202113.  
 33 Interview IG202103.  
 34 Interview IG202211.  
 35 Interview IG202207.  
 36 Interview IG202125.

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### Author contributions

Wanlin Lin: Conceptualization, methodology, investigation, formal analysis, data curation, writing—original draft, visualization. Peng Wang: Conceptualization, formal analysis, resources, writing—review and editing, supervision, project administration, funding acquisition.

### Competing interests

The authors declare no competing interests.

### Ethical approval

Ethical approval was obtained from the Human Research Ethics Committee of the University of Hong Kong (reference no. EA200198) on 16th November 2020. The ethical approval permits the researcher to conduct fieldwork and interviews, and collect data. The research was conducted in accordance with the guidelines set by the Human Research Ethics Committee of the University of Hong Kong.

### Informed consent

All participants were adults, and no vulnerable individuals were involved. Informed consent was signed or acquired by interview participants before the interview started. Interview participants were fully informed of their rights to withdraw from the interview. They answered our questions voluntarily and without any obligation. The anonymity of participants was assured.

### Additional information

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