Research report on anti-monopoly of Chinese academic database

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Abstract. In recent years, academic databases led by CNKI have been frequently questioned by public opinion because of unfair high prices and unfair competition behavior, which has damaged the competition order and consumer interests, and anti-monopoly investigation on CNKI has also been carried out accordingly. China's anti-monopoly research in the field of academic database is far from perfect in four aspects: the definition of related market, the identification of market dominant position, the identification of abuse of market dominant position and regulatory measures. In order to solve this problem, this paper believes that we should start with the detailed data analysis of the academic database market itself and the industry leaders, combined with similar fields and foreign anti-monopoly practice and experience, and carry out a special analysis of the three steps of monopoly identification that conform to the characteristics of academic database and attach importance to the advantages of copyright.

Keywords: Academic databases; copyright monopoly; CNKI; Anti-monopoly regulation; Abuse of market dominance.

1. Introduction

In recent years, with the rapid development of the Internet, academic database has become an indispensable mainstream carrier of network academic information for today's academic workers. Under the general trend of anti-monopoly, anti-monopoly in the field of academic database deserves attention and research. Taking CNKI as an example, CNKI, with its high-quality and authoritative right to exclusively publish academic resources, is naturally in a relatively advantageous position when negotiating with some subjects such as scientific research institutions or universities.

This study analyzes CNKI's behaviors such as raising prices by virtue of its monopoly position, abusing intellectual property rights and unreasonable charges. Based on China's national conditions, this study actively draws on and absorbs advanced experience of foreign anti-monopoly regulation, and takes measures such as summarizing relevant laws and regulations, formulating unified law enforcement guidelines, creating a public interest litigation system, and building a pre-regulation model. To help solve a series of problems faced by the anti-monopoly law in regulating the abuse of intellectual property rights, safeguard the interests of consumers and the healthy operation of the economy. At the same time, it will enhance consumers' and authors' awareness of consumption and rights protection, promote the healthy development of academic data platforms, and provide a good development environment for China's academic innovation.

2. Literature review

Compared with traditional ordinary companies and traditional real economy, Internet platform has its own characteristics, mainly reflected in the double (multi-side) market characteristics of Internet platform market. For the definition of bilateral market in the Internet industry, Yang Wenming (2021)[1], Wang Wei (2021)[2] and Sun Jin (2021)[3] believe that the core of the bilateral market of Internet platform lies in whether the bilateral consumers can remain on the platform at the
same time. Different from the traditional economy, the digital economy mainly carried by Internet platform will increase with the increase in the number and efficiency of digital replicas. The marginal cost is negligible, but at the same time the returns to scale are increasing.

Ding Xiaodong (2021)[4] emphasized the importance of market definition through the "Transit case" of the United States. However, Zheng Pengcheng (2016)[5] believes that the current means of market definition are inevitably subjective based on the reasons constructed by people, and such subjective factors will bring convenience to the parties. Such result-oriented market definition will become mere form and even damage the core value of the anti-monopoly law.

As for the definition of general Internet platforms, Wang Wei (2021)[2] believes that this market is vulnerable, and the main power source of this market is user stickiness, that is, low marginal cost makes it easier to expand the scale of the platform, and long-term continuous services make the connected user groups expand continuously and create platform dependence. This adds power to the platform. The vulnerability of the platform lies in the fact that its static market share is easily affected by technological innovation and product service iteration. Any monopolistic behavior of the platform will entice new competitors to enter the market. However, it is precisely this vulnerability that makes it subject to dynamic competition constraints and thus avoid the attention of the anti-monopoly law. Zhang Chenying (2021) [6] also believes that dynamic competition is a powerful means to break platform monopoly.

As for the research on non-traditional markets, Wang Wei (2021) [2], Ning Lizhi, Wang Yu (2018) [7], Li Mingli (2014) [8] and Yang Wenming (2021) [1] believe that based on core music library and exclusive copyright resources, this market does not have the vulnerability of traditional Internet database platform market. And that makes it very difficult to maintain dynamics within that market. This also confirms Gao Wei's (2021) [9] view on the digital platform market, that is, the market tends to monopolize. Moreover, the academic database market has special bilateral characteristics. Sun Jin and Yuan Ye (2019) [10] believe that from the different perspectives of search users and paying users, the two functions of search engine, literature download and reading of academic database may form different related markets. Therefore, the traditional definition method is not easy to apply. Guo Rengui and Lin Xiuqin (2022) [11] believe that among the factors for identifying the market related to academic databases, the most important is that academic database vendors should define the relevant market according to their paying user groups.

In most markets, to judge whether a business entity has a dominant position, it is often necessary to refer to market share. But the special nature of the services provided by academic databases weakens the power of market share. Sun Jin (2021)[3] measured the difficulty of defining the relevant market of a specific product against the market share, and presumed that the objective difficulty of the former would certainly affect the accuracy of the latter. Wang Xianlin (2016)[12] attaches importance to the dynamics and relativity of the contemporary dynamic competition mode, and believes that the influence of market share and market concentration should not be emphasized, but the judgment of more flexible entry barriers in practice should be focused on to meet the needs of dynamic competition and innovation. Liu Guixiang (2016)[13] highlighted the relative weakening of the role of market share. Compared with the investigation of market share, the substantive investigation of operators' "actual market control ability" should become the focus of practice.

Wang Wei (2020) [14] believes that the concentration of exclusive copyright in the field of digital music will lead to three major effects: "direct exclusion", "supply squeeze" and "market blockade". The judgment on the degree of copyright concentration and the importance of copyright will undoubtedly play an important role that cannot be ignored in the determination of market dominance in a specific market. Sun Jin and Yuan Ye (2019) [10] took the statistics and evaluation of intellectual property factors as the focus of the identification of market dominance in the field of academic database platforms. Guo Rengui and Lin Xiuqin (2022) [11] believe that the higher the degree of dependence of other academic database providers on the academic database provider in competition, the higher the probability of academic database providers having market dominance.
In the context of the exclusive authorization of many academic database platforms, Sun Jin, Yuan Ye (2019) [10] and Wang Wei (2020) [14] respectively talked about certain difficulties in the identification and supervision of unfair high prices. Sun Jin and Yuan Ye (2019) [10] believe that to judge whether the price increase of academic database is "unfair" high price, it is necessary to analyze from the principle of rationality and comprehensively consider the welfare that consumers can get, the impact on the competition in the industry and the reasonable and fair distribution of social resources. Wang Wei (2020) [14] put forward two unique solutions. One is the incremental comparison method for determining unfair high prices, that is, to evaluate whether the incremental changes in the market surface prices are reasonable from three perspectives: horizontal, vertical, and historical price-cost. The second is to require the operators of academic journal databases to open their business information, which should include the calculation rules of their asking prices for reference by regulators and consumers. On the other hand, Tang Yaojia (2017) [15], Mei Xiaying and Ren Li (2017) [16], from the perspective of standard essential patents, draw on domestic and foreign cases and foreign advanced experience, and believe that when determining excessive pricing, it is necessary to focus on whether the operators have made the guarantee of intellectual property license and the actual value contribution of intellectual property.

3. Experience and reference on the abuse of market dominance

3.1 Reference to homogeneous platforms

In today's era of rapid development of network digital technology, content, namely copyright resources, has become the core of competition in digital media platforms such as digital music platform, film platform and electronic book platform. The academic database field can also draw on the same definition method to define the market dominance by judging the number of core journals or the total number of journals.

Taking digital music platform as an example, its abuse of market dominance is mainly reflected in the defects of exclusive transaction mode and the improper application of copyright. Exclusive transaction mode is the main manifestation of the transaction mode between copyright owners and service providers in the online music market, and this mode has several manifestations: exclusive premiere license, exclusive use license and exclusive agency. In this market, music copyright resources become the core competitiveness because of the particularity of "exclusive authorization". In the academic database market, the "exclusive and only authorized publication journal" has become the unique intellectual property advantage of some databases. In this case, even if the operator does not have a large market share, it can still control some consumers by virtue of its intellectual property advantages, so that it has no choice and forms a "relatively dominant operator".

One of the powerful means to regulate the phenomenon of copyright concentration in digital content is to conduct a centralized examination of relevant market players, that is, the market entry barriers caused by copyright concentration should be evaluated from the aspects of substantive copyright share and the term of exclusive rights. In the music, video, e-book and academic database markets, there is a need to distinguish between core and non-core value differences, which in the academic database market is embodied in the difference between core and non-core journals. The term of exclusive rights is another important factor. Taking the Hoffmann-LaRoche case as an example, the Court of Justice of the European Union held that the relevant market operator could gain a business advantage by holding a majority market share for a long time. The larger the market share and the longer the market share, the more likely it is to attract the attention of anti-monopoly law.

The opening of key facilities, as a relatively mild means, can prevent operators from improperly using copyright advantages to achieve the purpose of monopolizing the market. As an information product, copyright itself is not competitive, and opening key resources to other competitors does not affect the use of the original holder. In practice, "sublicensing" and "open licensing" between different music platforms can be regarded as a kind of copyright opening behavior. In the academic database,
it can be reflected as the individual sale of a journal, that is, in practice, it is specifically reflected as the behavior of colleges and universities directly ordering individual journals rather than the overall subscription database according to their own needs. In the case of reasonable pricing, this is also a kind of open behavior for the key copyright, which has a reference significance for the anti-monopoly of academic database.

3.2 The reference of foreign relevant experience

Academic publication is an atypical information product with high fixed cost and low variable cost, which makes the regulation of monopoly enterprises in the industry difficult. The specific regulatory solutions abroad are mainly divided into two directions: the gatekeeper system of the European Union and the open access system of the United States.

For the application of the "gatekeeper" system, it is necessary to clarify the identification of the "gatekeeper", and it can be identified as a "gatekeeper" if it meets the three conditions that have a significant impact on the internal market, the core service channel that the platform provides for the contact between goods and consumers, and the platform currently has or can be expected to have a stable and lasting status in the relevant market. The EU adopts pre-supervision and case-by-case enforcement measures for "gatekeepers", which not only enriches the means of anti-monopoly law to regulate digital platforms, but also improves the efficiency of regulation and strengthens the power of regulatory means.

As the subscription cost of academic database increases year by year, many universities and academic institutions are overwhelmed, and an Open-Access model is gradually formed in the international academic community [17], which provides readers with free reading documents for the purpose of economic sharing. As for how this model works, the Budapest Open Access Initiative distinguishes between two types: self-archiving, called the Green Path, and open access journals, called the Golden Path. Both types allow users to read, download, copy, distribute, print, retrieve, or link freely without imposing financial, legal, or technical burdens on the user. In addition to the academic open access theory, there are also independent "rebels" in the private sector to rebel in some ways, such as Alexandra Elbakyan, who founded the world's largest "pirated" academic papers website Sci-Hub.

4. Academic database monopoly identification analysis framework

4.1 Analysis of academic database related market definition methods

The correct definition of relevant market should be based on the characteristics of academic database market, which can be divided into two dimensions: demand substitution analysis and supply substitution analysis. In terms of demand substitution analysis, academic database services generally include derivative services such as academic literature retrieval, download, reading and academic paper review. From the perspective of supply substitution, combined with the characteristics of academic database market, such as high cost, prominent copyright effect and exclusive copyright concentration, its entry threshold and market barriers are quite high, resulting in fewer potential competition groups in the market, and the overall supply substitution degree is not high. From the perspective of demand substitution analysis, the relevant service market of academic database should be the search, download and reading service of academic literature, and it can be refined according to the characteristics of academic database in specific cases. Due to the existence of the Internet firewall, the user group and the main market are all in China, so the relevant regional market can only be the Chinese market. If we take CNKI as an example, its related market can be defined as paid Chinese literature retrieval, download and reading services.
4.2 Analysis of reference factors for determining academic database market dominance

The determination of market dominant position is a key step in the determination of monopoly. In terms of identifying factors, it can be divided into traditional market share, that is, structural factors that can directly reflect the market structure, and non-structural factors such as intellectual property rights, Copyrights, policies, and entry barriers.

In terms of structural factors, market share has always been the focus of judgment in China's anti-monopoly judicial practice, but due to the characteristics of academic database market, the application of market share in this field is relatively weak. First, the academic database market has a strong public nature, so the market share of a single academic database on download and reading is difficult to reach 1/2 of the relevant market share stipulated in the Anti-Monopoly Law.

Under the premise of the relative weakening of structural factors, non-structural factors, such as intellectual property and policy factors, play a more prominent role in determining market dominance. Intellectual property factors are the most critical non-structural factors in the academic database market, and the concentration of a large number of Copyrights and the high quality of exclusive Copyrights will play a large role in establishing market dominance. In a specific research field, an authoritative paper is naturally irreplaceable, and whether it has a specific copyright or not determines whether consumers can switch to it. CNKI full-text periodical database includes 3964 exclusive and unique authorized periodicals, accounting for 43% of the total number of periodicals in China; Among them, there are 778 core journals, accounting for 42% of all core journals. There are 194 top 3 journals in each discipline, accounting for 64% of the total number of top 3 journals. The quantity and quality of its exclusive authorized publications far exceed other databases including VIP Information network and Wanfang Database, which is a strong basis for determining its market dominance.

In terms of policy, CNKI is the only master's/doctoral degree evaluation basis database designated by the Academic Degrees Committee of the State Council, and is currently the only academic database authorized to publish doctoral dissertations in China. Policy advantages bring great intellectual property advantages, which are also difficult for other academic databases to catch up with through normal business activities, forming huge industry barriers.

4.3 Typology analysis of abuse of dominant market position

The abuse of market dominance is regarded as the object of regulation that really disturbs the order of market competition. At present, the determination of monopoly behavior has gradually shifted from the "principle of itself breaking the law" that the behavior appears to be illegal to the "reasonable principle" that combines the influence of multiple factors. Under the guidance of the above principles, we can classify and analyze the abuse of the dominant position in the academic database market.

Unfair high prices are the first point of reference for identifying abuse of market dominance. Due to the large differences in the price influencing factors of different databases, such as business model, intellectual property share, quantity and quality of copyright purchase, the widely used price comparison method is relatively limited in this field, but it can still be defined by intra-industry or cross-industry data comparison: According to the financial report of CNKI, since 2003, the gross profit margin of CNKI has remained above 50% for 18 consecutive years, and even exceeded 70% during the peak period. At the same time, it has continuously raised prices since 2016, and the annual price increase has exceeded 10%, and even reached 18.98% at one time.

Some unreasonable sales behaviors of academic databases such as CNKI relying on intellectual property advantages can also be identified as abuse of market dominance according to the principle of reasonableness. It can be classified as individual publication, bundle selling and differential pricing.

5. Regulation measures

"Regulation" is not only a negative measure such as "prohibition, oppression, or restriction" guaranteed by the coercive power of the state, but also can be completed by non-public institutions.
Therefore, when exploring regulatory measures, we should keep the principle of modesty, not only rely on mandatory measures to carry out binding regulations, but also pay attention to the use of incentive measures.

5.1 Binding measures

It shall be clear that the price structure information of the database service provider has a mandatory disclosure obligation. Although there were measures to significantly reduce the service prices of CNKI in the administrative penalty imposed on CNKI in December, fundamentally, the database side still holds an information advantage, and there is information asymmetry in transactions between database providers and consumers. Therefore, giving database providers a mandatory disclosure obligation for price structure information is the long-term solution.

Database and other digital content platform, there are intellectual property rights, copyright concentration and other problems. The most direct regulatory means to restrict the copyright concentration of digital content platforms is the centralized review of operators. The content of the review includes two aspects: first, the review of mergers between digital content platforms or mergers and acquisitions for the purpose of transferring full or partial control; Second, review the copyright concentration behavior of digital content platforms that directly obtain copyright ownership or obtain content copyright licenses through exclusive licensing.

Considering the development history of China's market economy, for platform economy, the two governance mechanisms of anti-monopoly and supervision should be dualistic and divided, and the mutual relationship should be adjusted dynamically. It is necessary to give play to the role of the market in allocating resources and the role of the state's mandatory force in regulating related markets.

The dichotomy between regulation and antitrust is not easy. First, it is necessary to establish the basic institutional framework of dual separation and governance. We should classify the service types of different platforms, clearly delineate the scope of platform services that are easy to restrict competition, grade the scale and influence within the scope of its services and constantly adjust according to the actual situation, and reach a certain standard threshold is the "gatekeeper". It is necessary to regulate the activities of gatekeepers within the scope of the services of the basic platform and clarify the boundaries of the binary separation of supervision and antitrust. Second, it is necessary to speed up the formulation of the digital platform law, formulate the anti-monopoly law to implement relevant supporting provisions, promote the reform of various supporting systems, and provide institutional protection for the dual division and rule. Third, it is suggested to establish a special digital market bureau to formulate clear norms of conduct for super platforms and avoid the uncertainty of anti-monopoly law enforcement mechanism.

In the administrative punishment imposed by the State Administration for Market Regulation on CNKI, it is emphasized that the public interest attribute of the platform should be strengthened, but in order to implement it, we propose to create a public interest litigation system for it, break through the general principle of "who claims who provides evidence", and give the burden of proof to the perpetrators who abuse the dominant position of the market, so as to reduce the burden of proof for consumers. This special method of proof allows the industry association, the consumer rights and interests protection Association as the subject of public interest litigation to assist consumers in litigation and provide legal aid to consumers.

5.2 Incentive measures

First, establish and support alternative public academic databases to strengthen some academic databases with insufficient capabilities, improve their competitiveness, and enable them to compete with databases with dominant market positions such as CNKI.

Second, introduce competition in the academic database market. In terms of policy, the government should be encouraged to conduct administrative licensing of specific academic databases in a more cautious manner. There is nothing wrong with granting specific status and titles to some
academic databases for a while, but long-term special status often gives the beneficiary database a market advantage that is difficult for other competitors to catch up with.

Third, reasonable reference to the "open access" model. Based on the experience of foreign countries and the actual situation of relevant markets in China, it is possible to adopt the open access mode, but it needs to be supported by government funds and policies.

Last, proper use of decentralized technology represented by blockchain to seek new solutions for anti-monopoly governance of academic databases. On the one hand, blockchain technology improves the user's participation in the platform construction, and helps to achieve the balance of power and equal status between the platform and the author; On the other hand, the distributed characteristics of blockchain technology also provide technical guarantee for the pay-per-view sharing model, and provide favorable conditions for the negotiations between university libraries, scientific research institutions and the Knownet.

6. Conclusion

With the rapid development of knowledge economy, the monopoly of database platform has become a common problem in the world, and how to regulate the monopoly behavior of academic journal database has become a new problem in anti-monopoly law. It can be seen from the case of Knownet that the database monopoly has attracted China's attention, but the regulatory means are limited, and the focus is on post-binding measures. However, for the crux of the problem, it is still necessary to innovate the regulatory path from different aspects, such as alternative public academic databases, public interest litigation system, and actively introducing market competition. At present, the revision of China's Anti-monopoly Law is progressing smoothly, various innovative measures are gradually being implemented, and the state is also increasing investment in the establishment and improvement of public database platforms, hoping to create a better academic environment for China, promote the construction of socialist cultural undertakings in China, and is expected to contribute Chinese wisdom and Chinese solutions to the world's anti-monopoly digital platforms in the future.

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