

Is It Radical or Feasible for Drugs to Become A Global Public Good?

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Abstract: This paper mainly discusses whether drugs can become the global public good. By analyzing the industry chain of pharmaceutical companies, which can understand the industrial structure and investment demand of pharmaceuticals. When drugs change from for-profit products to public goods, the overall pharmaceutical environment will be affected, and the capital investment and market environment will change. Because the production of drugs is accompanied by high production costs, it is also important to maintain the intellectual property rights of drugs, which will lead to the formation of anti-competitive temporary monopoly in the market. Such monopolies lead to excessive concentration of power and technology, so national governments intervene to maintain a competitive market environment and potentially promote some medicines as global public goods. However, there will be many problems when all drugs are called global public goods. These contents will be outlined in detail in this paper. The article concludes with the conclusion that drugs can become public goods under certain and appropriate circumstances.

Keywords: Pharmaceutical, Market, Monopoly, Competition, Global health.

1. Introduction

This article is mainly in accordance with the logical order layer by layer progressive way to explain the content. Starting from the pharmaceutical industry chain, understand the manufacturing and R&D process of pharmaceutical products from product discovery, development, manufacturing, to distribution (Danzon, 2014). The pharmaceutical industry spends around 17% of its revenue on R&D, in sharp contrast to the average 4% of other industries. The average cost of bringing a new molecular entity (NME) to market is estimated at \$1.5 billion (Danzon, 2014). Therefore, by analyzing the production process of the pharmaceutical industry, the high production cost of the drug production process is reflected (Danzon, 2014). And by applying for patents to protect intellectual property rights, they safeguard their own interests, but at the same time, they bring temporary monopoly of the market (Mussh & Roses, 1978). Because this monopoly controls the market and drug pricing, it has a negative impact on the maintenance of a good market environment for the pharmaceutical industry (Mussh & Roses, 1978). Therefore, this paper elaborates the cases and significance of the national government's intervention in the introduction of relevant anti-monopoly (Danzon, 2014). These measures also said that in opposing the market monopolization potentially promoted the process of some drugs becoming global public goods (Vernon, 1962). This is followed by a classified discussion on whether drugs can be fully realized as global public goods. The former mainly analyzes the embodiment of drugs as global public goods in the period of infectious diseases, especially the key role of vaccines as global public goods in controlling disease transmission and maintaining world health security during the COVID-19 epidemic (Sparke & Williams, 2024). The latter assumes that all drugs become global public goods, analyzes the impact of the pharmaceutical industry and market environment, and analyzes the impact of drug manufacturers according to their production and circulation process (Danzon, 2014). From the seemingly contradictory situation of the national government as a part of the cartel behavior and the

advocate of anti-monopoly, the reasons are analyzed dialectically, and finally the conclusion is drawn whether it is feasible for drugs to become global public goods (Sparke & Williams, 2024).

This is followed by the main body, which conducts research and analysis on pharmaceutical and market practices in the pharmaceutical industry.

The industrial chain of the pharmaceutical industry is complex and closed and separable, which is mainly divided into product discovery, development, manufacturing and distribution, introducing drug production from the basic concept to market distribution (Danzon, 2014). In the product research and development process is also accompanied by high research and development costs, in the basic research, the use of chemical means to identify compounds and biological perspective to understand the biological mechanism; in drug discovery, screening potential drug candidates; in clinical trials, the safety and efficacy of drugs are analyzed and evaluated through chemical tests in the laboratory and animal tests (Danzon, 2014). In addition to animal testing, it will also be tested for safety in small groups of volunteers; efficacy and side effects are then evaluated in a larger patient population, as well as ongoing monitoring of side effects, among others (Dahdah, 2022). Further tests in the research and development process of professional and technical personnel, experimental high standard standard equipment and test evaluation scale, are accompanied by essential high fixed costs (Dahdah, 2022). Before drug research and development into the market, it needs to be approved by the regulatory authorities, and it needs to obtain the drug license from the domestic drug regulatory agency before it can be released into the market (Dahdah, 2022). This is followed by the manufacturing phase, where the drug is produced on a commercial scale by scaling up the manufacturing process. In the production quality control to meet the market regulatory requirements (Danzon, 2014). It then flows into the market for sales promotion and distribution in pharmacies, hospitals and healthcare providers (Danzon, 2014). After marketing, the efficacy and adverse

reactions of the drug will be continuously monitored, and the performance data of the drug in the actual application process will be collected (Danzon, 2014). Each process consumes a lot of manpower and material resources, and in addition to the time cost, it is also accompanied by a lot of capital investment (Danzon, 2014). Therefore, in order to recover the cost, it is necessary to control the market price and ensure the return on investment.

By applying for patents, the original company prevents other generic drugs from entering the market (Danzon, 2014). Since generic drugs do not need to invest a lot of money in the early stage, they only need to copy the drug configuration of the original company, so the selling price will be much lower than that of the original company (Danzon, 2014). Through price competition, generic drugs will have a market advantage, but this situation will have a huge negative impact on the cost recovery of the original company (Danzon, 2014). Therefore, it is particularly necessary for original companies to apply for patents and protect the legitimate rights and interests of drug production and sales through intellectual property rights. The Agreement on Trade-Related Aspects of Intellectual Property Rights is usually referred to as TRIPS or the TRIPS Agreement in Chinese literature (Sparke & Williams, 2024). The agreement is an integral part of the legal framework of the WTO (Sparke & Williams, 2024). The agreement makes it clear that intellectual property is a private right (Danzon, 2014). For pharmaceutical companies, intellectual property rights such as patents provide the exclusive rights needed to ensure a return on investment (Sparke & Williams, 2024). Without these protections, there would be no incentive to invest in the costly and lengthy process of new drug development, which includes not only successful new drug launches but also compensation for failed projects (Sparke & Williams, 2024). This framework is considered key to fostering innovation and bringing new therapies to market. The original company also pays a certain fee to the manufacturer of the imitation drug to delay the release of the drug through payment delay and other means (Danzon, 2014). The original company can sell the original developed drug at its own actual price (Danzon, 2014). These behaviors will lead to the formation of large-scale market monopoly, because the R&D process will lead to the gradual concentration of resources in large pharmaceutical companies (Danzon, 2014).

Fifty or twenty pharmaceutical companies in the world have top technology, forming a mutually beneficial merger and acquisition relationship (Sparke & Williams, 2024). These superior pharmaceutical companies established links with the core high-income developed countries and exercised market power, resulting in excessive concentration of power and capacity, from temporary monopolies to large-scale monopolies (Mussh & Roses, 1978). This phenomenon, also known as "cartel", mainly refers to the collusive behavior of a group or other sellers to form anti-market competition by controlling the market and fixing prices, extending from strategic and explicit to implicit and then to the government (Sparke & Williams, 2024). In its most basic economic form, it consists of a group of firms or other sellers that cooperate to control the market, limit competition and raise the market price of their products (Sparke & Williams, 2024). Business behavior through merger and acquisition and other related economic incentive structure and legal infrastructure is equivalent to an implicit behavior of controlling market competition that can be called "collusion." (Sparke &

Williams, 2024). This hidden behavior has a potential and huge force. The concept of "cartel" is involved here, which is more to extend the existence of "collusive behaviors against market competition" in the market (Sparke & Williams, 2024). The generation and evolution of such behaviors are related to the network structure from market-state to company-state (Sparke & Williams, 2024). And then to enterprise-state-charity organizations, it has been extended to cover more fields. Therefore, this "collusion" behavior is also an important reason for the formation of temporary monopoly in the market (Sparke & Williams, 2024). Collusive behavior involves an agreement between two or more sellers designed to take action to suppress competition among sellers in a market (Sparke & Williams, 2024). Because sellers compete with each other to offer low prices to consumers, a collusive agreement increases the price consumers pay for the good (Sparke & Williams, 2024). Because of this harm to consumers, it is against the antitrust law for producers to fix prices through self-malice among themselves, so participants must keep secrets. Therefore, this "collusion" behavior is also an important reason for the formation of temporary monopoly in the market.

Market competition is a virtuous cycle of maintaining market order and promoting the development of higher-quality products in the market. Monopolistic behavior will lead to various problems in the market: driving up costs and reducing competitiveness; it leads to insufficient effective investment, from which the monopoly can obtain huge profits, thus weakening the enthusiasm of other enterprises to expand scale and production; the concentration of power and resources breeds the cancer of corruption (Mussh & Roses, 1978). Therefore, for monopoly phenomenon, it is crucial for the national government to intervene and introduce relevant anti-monopoly policies to maintain market stability. In 2023, the Federal Trade Commission has filed a lawsuit against Amgen over its acquisition of Horizon Therapeutics New efforts by Therapeutics to take antitrust action -- most notably the Inflation Reduction Act of 2022 (IRA) and its new federal rule capping Medicare beneficiaries' cost-sharing at \$2,000 a year, It has also boosted efforts by government agencies to negotiate prices with manufacturers on short lists of brand-name drugs (Sparke & Williams, 2024). A series of antitrust measures implemented by national governments also have potential value in promoting drugs as a global public good (Sparke & Williams, 2024). In maintaining market competition and lowering prices, promoting competition in the pharmaceutical industry through antitrust behavior can help lower the price of drugs and thus make them accessible to a wider range of people (Sparke & Williams, 2024). In terms of encouraging innovation, it prevents large companies from dominating the market through unfair means and ensures that small companies have the opportunity to innovate and bring drugs to market (Danzon, 2014). This diversity in research and development leads to the discovery and distribution of essential medicines that can be considered public goods, especially when these medicines are used to treat neglected diseases or global health crises (Danzon, 2014). In safeguarding global public health, effective antitrust enforcement can ensure access to affordable medicines in developing countries, thereby addressing global health equity. These involve unfair patent practices and monopolistic practices that regulate the supply of essential medicines to low - and middle-income countries. Antitrust policy can thus support the global availability of life-saving drugs, not just in

richer countries, and thus move one step closer to making drugs a global public good (Mussh & Roses, 1978).

Public goods are mainly characterized by non-excludability and non-competitive consumption, which mainly means that they can enjoy the benefits brought by goods without paying any cost, and each person can obtain goods with the same power, without affecting the benefits of others when they obtain the benefits of goods (McDermott, 1978). More often, the promotion of public goods is supported by the national government as the driving force (McDermott, 1978). It is called upon by the institutions in power and supported by corresponding capital investment, so that drugs can be more accessible to people of different social classes under relatively fair conditions, so as to transform into public goods (McDermott, 1978). But becoming a public good is not primarily about profit, and it would go against the huge profits that pharmaceutical companies have long enjoyed. The next two sections will specifically analyze the pros and cons of the feasibility of drugs as public goods.

The feasibility of drugs becoming a global public good is mainly reflected in drugs related to the control of infectious diseases, which also challenges the traditional market-based approach to drugs. During the COVID-19 pandemic, vaccines were regarded as potential public goods (Sparke & Williams, 2024). During the COVID-19 pandemic, the world called for vaccine equity, abandoned the intellectual property rights of COVID-19 vaccines under the TRIPS Agreement, and considered vaccines as public goods and worked for them, emphasizing the need for vaccine universal access and ending the pandemic (Alshrari, 2022). European countries have pledged to make vaccines available free to every citizen, supporting widespread vaccination to contain the spread of the virus. The EU has contracted with drug makers to order batches of vaccines to ensure adequate supplies during the pandemic (Sparke & Williams, 2024). In China, vaccines are also provided to the whole country for free, and every citizen is called to get vaccinated. The state issues instructions, each provincial and municipal region implements them, and communities supervise people to get vaccinated for free (Sparke & Williams, 2024). Therefore, the direct attributes of public goods are non-excludability and non-competitive consumption, which are suitable for the control of infectious disease vaccines. This drug has become a global public good, which not only maintains global public health security, but more importantly plays a key role in social stability and the operation of various industries (Sparke & Williams, 2024). But vaccines mainly work on infectious diseases rather than treating individual diseases. Therefore, this kind of non-profit drug production program must be supported by government funds as the capital investment for product research and development, so as to maintain the normal operation of the industrial chain (Sparke & Williams, 2024). Thus, treating vaccines and medicines as global public goods substitutes for the pursuit of equity and public health, not profit. While some see this as a radical shift, the emphasis on global health needs and equitable access justifies the idea, especially in the context of pandemics or endemic diseases that affect global populations. The debate addresses broader topics such as intellectual property rights, public versus private interests, and global governance, suggesting a transformative approach to health as a universal right rather than a commodity.

The pharmaceutical industry can make huge profits a year even in non-infectious times. So what would happen to the pharmaceutical industry and the market when all drugs

became public goods? While there are many benefits to making drugs a global public good, making all drugs a global public good is more often seen as idealistic and radical, with many adverse effects. First of all, the nature of public goods is not to make profits, so they cannot obtain high profits through product R&D innovation in market competition. In the process of product research and development, when drugs become public goods, it will potentially inhibit the investment of pharmaceutical companies in product research and development (Sparke & Williams, 2024). Because there is no promise of a market return, the high cost of upfront pharmaceutical inputs cannot be recovered as quickly. This creates dependence on international aid and international supply chains. Second, there are challenges in the regulation and control of drug quality, because drug regulatory standards vary from country to country (Mussh & Roses, 1978). If high standards of drug quality are to be maintained, international regulation needs to be coordinated to achieve international harmonization of drug quality control and monitoring (Mussh & Roses, 1978). In addition, there will also be unfair distribution in the distribution and access of drugs. Under the same conditions that drugs become public goods and everyone can obtain such resources, the access and distribution of drugs may be hindered in remote areas with low resources and inadequate services due to infrastructure obstacles (McDermott, 1978). Market incentives and state finances are also affected. As pharmaceutical companies' profits are greatly weakened, the traditional pharmaceutical environment will require sustainable financial models, new financing schemes, and governments and international organizations that may face budget constraints. Finally, and more importantly, if drugs are regarded as global public goods, they are faced with complex intellectual property issues such as patent rights, and there are difficult contradictions and challenges in the protection of pharmaceutical intellectual property rights and the popularization of drugs as public goods (Cernak, 2013). Especially in the development of drugs for diseases such as HIV/AIDS, intellectual property rights also play a role in controlling prices and achieving price returns because of the high cost of manufacturing and development. Therefore, there is no possibility that it can be realized as a public good in nature, which leads to a large gap in the access of rich and poor countries, and many Africans cannot obtain the drug, resulting in a serious public crisis (Danzon, 2014).

Here, there may be some seemingly contradictory places. In terms of national interest and industrial policy, governments may support cartel behavior, mainly to protect domestic industries that are beneficial to national security, stabilize the economy, or promote technological progress (Clarke & Evenett, 2003). By participating in the relevant cooperation of these companies, the government aims to improve the market competitiveness and realize the control of resources (Vernon, 1962). Under revenue generation and economic objectives, the government's participation in cartel behavior is mainly to maximize the income of state-owned and state-supported enterprises (Clarke & Evenett, 2003). For example: oil, natural gas, etc., where national firms may participate in production quotas agreed by international cartels such as Opec (Clarke & Evenett, 2003). Based on political and economic pressures, the state may also succumb to lobbying efforts that seek to build and maintain strong group power in the cartel. Such arrangements are necessary to protect jobs, maintain industrial capacity and ensure solid

economic growth, so governments more often acquiesced or actively supported them (Clarke & Evenett, 2003). In the consideration of public interest, the government may think that the coordinated behavior among enterprises is necessary to achieve the goal of public interest. For example, environmental protection, research and development of infrastructure, etc., are mutually beneficial to maximize the public interest. Thus, in this case, the government may allow or encourage cooperation among competitors (Lerner, 1934). Thus as a participant in cartel behavior. The above are the reasons for the government to participate in cartel behaviors, which are reflected in a few cases in order to maintain national order, stabilize economic development and promote the maximization of national public interests (Clarke & Evenett, 2003). But there is a difference between monopoly and cartel participation. Cartel behavior is more of a trend and a way to centralize power, while monopoly is a decision to dominate the market that exists as a *fait accompli* in the hands of the monopoly. Although the ultimate goal of a cartel is to achieve a similar effect as a monopoly, no single entity controls the entire market; it is constructed by multiple enterprises for the common benefit. They may be unstable over time because, driven by interest, each member has an incentive to violate the agreement in order to gain more market share and profit. Monopoly is when a firm or entity has exclusive control over a particular service or good in the market, eliminating all direct competition (Mussh and Roses, 1978). Unlike cartels, monopolies are stable and involve a single entity exercising market control, so there is no need to rely on agreements with potential competitors.

The national government not only enables more people to obtain benefits more fairly through antitrust, but also promotes corporate mergers through participating in cartels to achieve more public interests and control key resources (Sparke & Williams, 2024). Therefore, whether drugs can become a global public good is still idealized and cannot be fully realized, which depends on the overall interests of the country. In promoting public health security, some drugs can become public goods, but it cannot be realized if it is contrary to the maintenance of the overall national public interest (McDermott, 1978).

The next part summarizes and Outlines the content of the above analysis and research in this paper.

2. Conclusion

In the research process of the pharmaceutical industry chain in this paper, it is known that the price return level can be maintained by intellectual property through patent application. During this period, excellent drug manufacturers have relatively core development technologies, and control prices on the basis of applying for patents to recover high R&D costs, accompanied by huge profits, so they form a temporary monopoly situation for market competition (Cernak, 2013). Governments began to introduce antitrust policies related to this monopoly, which also promoted the realization of drugs as a global public good (Mussh & Roses, 1978). Vaccines and other medicines became global public goods during the pandemic, which greatly helped control the spread of the epidemic (Alshrari, 2022). However, if some drugs become global public goods, it will have an impact on the entire pharmaceutical industry and market environment, and will face the situation of limited pharmaceutical investment funds and unbalanced market competition control

(Vernon, 1962). So there are still many challenges to making drugs a global public good. Some medicines, such as vaccines and drugs to control the spread of epidemics, currently appear to be promoted as global public goods, which play a role mainly in equity and safeguarding the world's public health environment (McDermott, 1978). However, specific therapeutic drugs cannot become global public goods at present, due to their high development cost and R&D investment (Cernak, 2013). The attitude of the national government plays a crucial role in this regard. From the fact that the government tacitly agrees to join the cartel behavior and anti-market monopoly, it can be seen that whether the drug can become a global public good mainly depends on whether the benefits of the measure outweigh the disadvantages for the global public interest. The advantages and disadvantages are not only reflected in the transmission of disease and access to drugs, but also in the market environment, national interests, economic development and stable prices. Therefore, some drugs such as vaccines can become global public goods when it is inevitable for a few special diseases to obtain drugs at high prices, and when infectious diseases have an impact on the global public interest. But the idea of pursuing all medicines as global public goods is clearly radical.

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