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DOCTORAL DISSERTATION

Competition and Regulation in Telecommunications Industry

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ABBREVIATIONS AND ACRONYMS

AT&T	American Telephone and Telegraph Company
BEREC	Body of European Regulators for Electronic Communications
BOC	Bell Operating Company
CMLR	Common Market Law Reports
CPE	Customer-premises Equipment
DoJ	Department of Justice
DT	Deutsche Telekom
EC	European Community / European Communities
ECJ	Court of Justice of the European Communities
EEA	European Economic Area
EEC	European Economic Community
EFD	Essential Facilities Doctrine
EU	European Union
FCC	Federal Communications Commission
FTC	Federal Trade Commission
GC	General Court
GDP	Gross Domestic Product
IC	Integrated Circuit
ICT	Information and Communication Technology
IT	Information Technology
ITU	International Telecommunication Union
LEC	Local Exchange Carrier
LRAC	Long-run Average Cost
MCI	Microwave Communications Incorporated
MII	Ministry of Information and Industry of the People's Republic of China

MIIT	Ministry of Industry and Information Technology of the People's Republic of China
MOFCOM	Ministry of Commerce of the People's Republic of China
MPT	Ministry of Posts and Telecommunications of the People's Republic of China
NCA	National Competition Authority
NDRC	National Development and Reform Commission of the People’s Republic of China
NRA	National Regulatory Authority
NRF	New Regulatory Framework
OJ	Official Journal of the European Communities / European Union
ONP	Open Network Provision
PC	Personal Computer
P&T	Post and Telecommunications
PTT	Post, Telegraph and Telephone
RBOCs	Regional Bell Operating Companies
SARFT	State Administration of Radio, Film, and Television of the People's Republic of China
SAIC	State Administration for Industry and Commerce of the People's Republic of China
SMP	Significant Market Power
SSNIP	Small but Significant Non-Transitory Increase in Price
SSR	Sector-Specific Regulation
TD-SCMA	Time Division Synchronous Code Division Multiple Access
TFEU	Treaty on the Functioning of the European Union
TO	Telecommunications Operator
US	the United States

WTO	World Trade Organization

TABLE OF LEGISLATION

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Treaty establishing the European Community (consolidated version), OJ C 325/33, 24 December 2002.

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Commission Directive 90/388/EEC of 28 June 1990 on competition in the markets for telecommunications services, OJ L 192/10, 24 July 1990.

Council Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC), OJ L 196, 26 July 1990.

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Commission Directive 95/51/EC amending Directive 90/388/EEC with regard to the abolition of the restrictions on the use of cable television networks for the provision of already liberalised telecommunications services, OJ L 256/49, 26 October 1995.

Commission Directive 96/2/EC amending Directive 90/388/EEC with regard to mobile and personal communications, OJ L 20/59, 26 January 1996.

Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets, OJ L 74/13, 22 March 1996.

Directive 98/10/EC of the European Parliament and of the Council of 26 February 1998 on the application of open network provision (ONP) to voice telephony and on universal service for telecommunications in a competitive environment, OJ L 101/24, 1 April 1998.

Commission Directive 1999/64/EC of 23 June 1999 amending Directive 90/388/EEC in order to ensure that telecommunications networks and cable TV networks owned by a single operator are separate legal entities, OJ L 175, 10 July 1999.

Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive), OJ L 108/7, 24 April 2002.

Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive), OJ L 108/21, 24 April 2002.

Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), OJ L 108, 24 April 2002.

Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive), OJ L 108/51, 24 April 2002.

Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services, OJ L 337, 18 December 2009.

Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 on measures to reduce the cost of deploying high-speed electronic communications networks, OJ L 155, 23 May 2014.

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Commission Decision of 24 May 2004 relating to a proceeding pursuant to Article 82 of the EC Treaty and Article 54 of the EEA Agreement against Microsoft Corporation (Case COMP/C-3/37.792 — Microsoft) (notified under document number C(2004) 900), OJ L 32, 6 February 2007.

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Commission Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, OJ L 114, 8 May 2003.

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EUROPEAN COMMISSION COMMUNICATIONS

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Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A Digital Single Market Strategy for Europe, COM(2015)0192 final, 6 May 2015.

ABSTRACT

Telecommunications industry had been seen as natural monopoly industry for quite a long time, and therefore it was regulated to ensure universal services. However, with the development of technologies and the change of the view of economy theories, this industry remains little feature of natural monopoly. And modern telecommunications industry exhibits the characteristics of network effect, dynamic, convergence and sensitivities. Telecom market requires both deregulation and liberalization to improve the efficiency, innovation, and ultimately to enhance consumer welfare. The experience of deregulation in the United States and the European Union can be taken as a good example for the countries who are in the progress of opening the telecom market, such as China. Especially, the implementation of the EU competition law will provide the enlightenment for reform of telecommunications industry in China. On one hand, competition law should be applied to adjust the anti-competitive behaviors in Chinese telecom industry and independent sector-specific regulatory agency should be established to ensure fair market access and balanced market structure. On the other hand, in dealing with the conflicts between competition law and sector-specific regulation, at the beginning of liberalization, competition law should be taken precedence over the regulatory policy.

Key words: telecommunications, network industry, competition law, sector-specific regulation

RESUMEN

La industria de las telecomunicaciones ha sido considerada durante mucho tiempo como un monopolio natural y regulado. Sin embargo, con el desarrollo de la tecnología y los cambios de perspectiva en las teorías económicas, poco queda de la caracterización como monopolio natural en este sector. La moderna industria de las telecomunicaciones presenta las notas de efecto de red, dinamismo, convergencia y mutabilidad. El mercado de las telecomunicaciones requiere tanto desregulación como liberalización para mejorar la eficiencia, la innovación y, por último, para incrementar la protección del consumidor. La experiencia desreguladora de los Estados Unidos y de la Unión Europea constituye un buen ejemplo para los países que están en proceso de abrir el mercado de telecomunicaciones, como sucede en China. Igualmente, la implementación de un Derecho de la competencia como el de la UE debería ser el modelo para la reforma de la industria de las telecomunicaciones en China. Por una parte, el Derecho de la competencia debe aplicarse para controlar los comportamientos anticoncurrenciales en el sector chino de las telecomunicaciones y debe crearse una agencia reguladora específica para el sector que garantice un acceso leal al mercado y una estructura equilibrada. Por otra parte, al resolver los conflictos entre la normativa de la competencia y la ordenación del sector, debe otorgarse preferencia a la primera sobre la segunda al inicio del proceso liberalizador.

Palabras clave: telecomunicaciones, industria de red, Derecho de la competencia, regulación específica del sector.

INTRODUCTION

In the past decades, the global telecommunications industry has developed at an astonishing rate. Such development can be attributable to at least to two reasons. First, the globalization of the economy. Economic globalization allows that companies and individuals rely more and more on the long-distance transmission equipment for global communication, which leads to a massive demand for telecommunications. At the same time, the growth in demand is also accompanied with the requirement of enhancing the quality of telecommunications service. Secondly, the upgrade of technology over past three decades. Varieties of innovations such as optical fiber, digital technology provide the telecommunications operators more methods to meet their customers' needs.

However, the expansion of the communicable scope, the improvement of the communication quality and reduction of the size of our terminal devices are not the only result of the evolution of the telecommunications sector; economic environment in this industry has also changed. Traditional economic theory believes that because of economies of scale, economies of scope, network externalities and a series of typical economic characteristics, the telecommunications constitute a natural monopoly, and, therefore, it should be operated by the state monopoly on strict industry regulation. Under the guidance of this theory, before the 1980s, the telecommunications industry in most countries was run by monopolists and was imposed *ex ante* regulation by national regulatory agencies, involving market access, price, quality of service and universal service. But with advances in telecommunications technology, the characteristic of natural monopoly was gradually fading, which means that telecommunications can be and should be operated under normal market environment. The introduction to traditional theories, the identification of the characteristics of the telecommunications industry, and the challenges arising from these features together construct Chapter I of this work.

The process of liberalization triggered by the relevant theoretical development has been promoted deregulation in varying degrees around the world. Especially, in Europe and the United States, there are a lot of success stories on the economic effects. Before deregulation, the primary mode in the telecommunications industry was "monopoly under traditional regulation". As the technological advances took place in the telecom sector, the traditional pattern

was no longer suit for telecommunications. However, the usual rule can not be abolished completely. After all, at the beginning of liberalization, there was still certain characteristic of natural monopoly at the operational level of the telecom industry. For the maintenance of public interests, the telecommunications industry needs for continued regulation, which is different from the traditional telecommunications regulation focusing on promoting competition. Discussion on deregulation is the main content of Chapter II. This chapter concentrates on the rise and development of deregulation in the United States and the European Union, paying attention to the landmark legal documents. In the final part of this chapter, the development, regulatory structure and the status of Chinese telecommunications industry will be introduced, to lay the foundation for the suggestion of the reform of Chinese telecommunications sector.

Legal modifications, such as deregulation and removal of the monopoly, change telecommunications sector fundamentally. And conversely, after the liberalization of the industry, further changes would take place in the rules. The law must respond to the new challenges brought about by the liberalization of telecommunications, in particular, to ensure that the welfare and wealth creation potential are fully meet. Overall, instead of economic regulation, the comprehensive application of competition law is the future trend of telecommunications industry reform.

Concerning applying antitrust rules to *ex ante* economic regulation, the EU has mature experiences. Therefore, the purpose of Chapter III is to study whether and how the EU law is changing or is likely to change to adapt to the new realities of the evolution in the telecommunications sector. The discussion will be taken through the case study, to figure out how the norms of competition apply in the telecommunications industry. The specific approaches will provide invaluable experience for the liberalization of the telecommunications industry in China.

However, the application of deregulation policies and competition law is not self-consistent and smooth. The problem arises not only when competition law is applied in the high-tech sector that has been heavily regulated, but also at the level of legal application, where there will be conflicts between competition rules and extant regulation. Such conflicts may exist at the normative level, at the application level, or even in the division of authority. Chap-

ter IV will pay attention to such conflicts and different resolutions in different regions. In the final part of the chapter, we are going to discuss the conflicts between competition rules and regulatory policy in particular China telecom market environment and find the way they co-operate.

CHAPTER I

THEORY: COMPETITION, REGULATION AND TELECOMMUNICATIONS INDUSTRY

Chapter I: Theory

Telecommunications can be defined as the process of carrying information over a distance though the methods using electricity[1]. According to Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services, the regime of telecommunications shall cover the electronic communications services, electronic communications networks, associated facilities and associated services. Among them, electronic communications service refer to "a service normally provided for remuneration which consists wholly or mainly in the conveyance of signals on electronic communications networks, including telecommunications services and transmission services in networks used for broadcasting, but exclude services providing, or exercising editorial control over, content transmitted using electronic communications networks and services"[2]. And electronic communications network means "transmission systems and, where applicable, switching or routing equipment and other resources which permit the conveyance of signals by wire, by radio, by optical or by other electromagnetic means, including satellite networks, fixed (circuit- and packet-switched, including Internet) and mobile terrestrial networks, electricity cable systems, to the extent that they are used for the purpose of transmitting signals, networks used for radio and television broadcasting, and cable television networks, irrespective of the type of information conveyed"[3].

Such definitions can clearly outline the relevant industry and imply its features. In this Chapter, the first research we have to do is to clarify the characteristics of the telecommunications industry. Based on these features, the industry was once classified as a natural monopoly industry under heavy regulation, and then companying with the development of technology gradually liberalized. Therefore, within the relevant industry, there are both signs of regulation and competition. In other words, competition and regulation in the industry play significant roles.

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[1] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.9.

[2] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services, Article 1.OJ L 108/33, 24 April 2002. Article 2.

[3] *Ibid.*

The concept of competition can be traced back to the father of the theory invisible hand, Adam Smith, who sees the competition as the driving force to promote the economic development[4]. Although the initial theory of perfect competition was controversial, which we will introduce in Section 2, but a competition-driven market has been considered as the best way to optimize the utilization of resources and the allocation welfare of members of the society. But competition is not an end but an instrument guaranteeing the accomplishments of the economic objectives, including the allocative efficiency, productive efficiency, and dynamic efficiency[5].

Regulatory objectives are consistent with the ones of competition in the above range. In certain circumstances, the market mechanism is an effective instrument of resource allocation[6]. However, the conditions of perfect competition, such as homogeneous products, fully flowing resources and fully transparent market information, rarely exist in real life[7]. According to the public interest theory, the government regulation can become an appropriate regulatory tool to compensate for the lack of market mechanisms.

The telecommunications industry was once considered as a natural monopoly industry, and therefore under heavy economic regulation. Then because of the advances in technology, such industry exhibited the characteristics which are suitable for competition. The relevant market was gradually deregulated. Such transition on economic regulation of the telecommunications does not mean that the target of telecommunications regulation has changed radically. But the methods to achieve the objectives have changed. In the context of monopoly, the national authorities take responsibilities for the consumers welfare of through the existing legal system. Now, the regulatory role is limited to promote and maintain the operation of the market, or to create conditions for the market which has not yet fully developed.

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[4] Smith, Adam. "An inquiry into the nature and causes of the wealth of nations, The Glasgow edition of the works and correspondence of Adam Smith, vol. 2." *Glasgow: Glasgow Publishers* (1976). p.105.

[5] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.46.

[6] Den Hertog, J. A. "General theories of regulation." (1999): 223-270. p.225.

[7] We will introduce the criticisms of perfect competition theory in detail in Section 2 of this chapter.

1. Characteristics of the Telecommunications Industry

In the common parlance, the word telecommunications signifies telephone, mobile phones, and the Internet. Basically, telecommunications is an exchange of information through electronic methods. As one of natural monopoly[8] industries once regulated, the characteristic of economies of scale and scope in the telecommunications industry has for a long time been used as a rationalization for the necessity of regulation to protect consumers from monopolist[9]. Such regulation was typically correlated with cross-subsidized price which was seen as a reciprocation for offering universal service.

In the 1950s, with the application of new technologies, such as transatlantic communication cable and commercial telecommunications satellite, the demands of consumer exploded and the theory of contestable market[10] raised, which both led to open the monopolized telecom markets to competition in United States. Since then the priority of policy changed from protecting consumers against the incumbent to introducing competition into incumbents and entrants. Such conversion was necessary because the monopolist retained market power through remaining natural monopoly assets, namely essential facilities[11]. In this section, we will describe the inherent characteristics of telecommunications industry itself and the economic studies on it.

The status of the telecommunications industry before the 1980s could be described quite easily. In the traditional view, the telecommunications industry was one of the network utilities, and to reach the public objective of universal service directly and effectively, this sector often be state-owned. As Telecommunications Operator (TO) should be established in the particular country, telecommunications markets were typically national, and the services had

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[8] Natural monopoly means that that the average cost decreases with the increase in the scale of the outputs produced; or economies of scope meaning it is cheaper to produce two products together than to produce them separately, which we will discuss in next section.

[9] Vogelsang, Ingo. "The endgame of telecommunications policy? A survey." *Review of Economics/Jahrbuch für Wirtschaftswissenschaften* (2013): 193-269. p. 193.

[10] See *infra* Section 2.3.4.a.

[11] Vogelsang, Ingo. "The endgame of telecommunications policy? A survey." *Review of Economics/Jahrbuch für Wirtschaftswissenschaften* (2013): 193-269.

been limited[12]. What's more, the traditional sectoral regulation did not make a distinction between infrastructure, terminal equipment and services, and all these operations were controlled by monopolized organization[13]. Sometimes, only the largest telecommunications customers have the abilities to use the extremely costly services self-provided.

Since the 1980s, competition appeared in telecommunications markets in the US, which will be discussed specifically in next chapter. The divestiture of AT&T and the publish of the Telecom Act of 1996 were both the milestones of that era. In Europe, under increasing pressure from the European Commission, deregulation has also been completed, although the progress was slower than that in the US.

Such overview is quite simple, but we can also arouse this question, why telecommunications industry was regulated and what promoted the market liberalization. And the inquiry should stem from the characteristics of the industry itself. The modern telecommunications industry has developed at least three unique features that are different from other industries mostly within the communications sector itself. The telecommunications industry will be identified as: (1) network effect; (2) dynamism; (3) convergence; and (4) sensitivities.

1.1. Network Effect

The network effect is an essential characteristic of the telecommunications sector, which indicates that the value of the good is proportional to sales[14]. In the telecommunications industry, the network effect usually exists on the software-level such as providing the communications services. Suppose there are 100 subscribers in a network. They can provide communication with each other by the service that the operator provide. If another consumer enters in the system, then original subscribers will be able to keep in touch with an additional person without any cost. Here is the benefit that the network will bring. The maximum benefit will be such situation, suppose that the capacity of the network is infinite, that there is only one net-

[12] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.11.

[13] Altes, Willem F. Korthals. "Regulation instruments from a legal perspective." *The telecommunications handbook*. CRC Press, Inc., 2000.

[14] Economides, Nicholas. "The economics of networks." *International journal of industrial organization* 14.6 (1996): 673-699. p.678.

work operated by a company, which contains all the consumers. From the downside, as long as a firm owns the most of the consumer, under the network effects (the consumers will pursuit the maximum opportunities to connect with others or get the software support) it will dominate the market.

Because of this significant feature, such sector was categorized as a public utility, which is considered as a natural monopoly and was placed under a strict regulatory. The common property of such kinds of public services as airlines, electricity, railroads, and post, is that they are connected with a network structure. The network is "a structure of lines and nodes with a limited capacity that determines the direction (one or two way) and distribution of the network services"[15].

In spite of the fact that telecommunications is a network industry, the sector expresses some particular features which make it different from other ones. First, telecommunications transmission is very fast. Unlike airlines, pipelines and rails, the network constructed by cable or optical fiber can transmit electronic signals at the speed of light. Secondly, the transportation of telecommunications takes place without any loss of quality and value, in other words, the telecommunication signals can not be consumed, which is unlike electricity. Thirdly, unlike transportation, telecommunications can be provided without specific network but by taking different approaches, such as the wired services, which are characterized by strong economies of scale and the wireless services, which are somewhat cheap to cover particular region and get cheaper the more thinly populated the area is, which is quite the opposite of the phenomena of natural monopoly[16]. These characteristics distinguish it from other industries. Telecommunications competition occur among different countries, the different levels, as well as some companies with a huge market capacity.

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[15] Schmidt, J. H. "Liberalisation of Network Industries: Economic Implications and Main Policy Issues." *European Economy* (1999). p.21.

[16] Burri, Mira, Electronic Communications as a Distinct and Unique Object of Regulation (September 4, 2009). Available at Sector-specific regulationN: http://sector-specific regulationn.com/abstract=1468491 or http://dx.doi.org/10.2139/ssrn.1468491

1.2. Dynamic

Because of the technological nature, the development of telecommunications industry is obviously rapid, which makes this sector have its second characteristic, namely dynamism[17]. The telecommunications industry is vigorously affected by technological development. Consumers are regularly hard to make purchase decisions without the experience of using the telecom equipment or services. This is rare in fixed-line telephony, but is peculiarly prevalent in mobile and internet services because volume, design, speed, and functionality are all under continuous development.

The development of telecommunications and other technology industry seems to follow Moore's Law, which is used to describe the fast development in digital electronics techniques[18]. In 1965, the co–founder of Intel, Gordon Moore, forecasted that "the number of transistors per integrated circuit (IC) would double every eighteen months"[19]. The consequence of this prophecy is that the cost of an IC is approximately increasing with the complexity, which means that the cost of accomplishing any certain task with ICs will be reduced in half roughly a doubling every year[20]. Thus, this prediction is being regarded as law, indicating the incredible pace of the development of telecommunications and other technology industry.

Indeed, the reason that makes communications market truly dynamic however is the implementation of these technological applications in real life and the effort of telecommunications companies to offer new products and services and to strive even harder to sell them[21]. The most direct problem caused by dynamism is the unpredictable nature of the telecommunications industry. Although new products emerge in endlessly, there is no one can accurately

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[17] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.25

[18] Tuomi, Ilkka. "The lives and death of Moore's Law." *First Monday* 7.11 (2002).

[19] DeLong, J. Bradford. "Do We Have a" New" Macroeconomy?." *Innovation Policy and the Economy, Volume 2*. MIT Press, 2002. 163-184.

[20] Mueller, Milton. "Digital convergence and its consequences." *Javnost-the public* 6.3 (1999): 11-27. p.20

[21] Burri, Mira, Electronic Communications as a Distinct and Unique Object of Regulation (September 4, 2009). Available at Sector-specific regulationN: http://sector-specific regulationn.com/abstract=1468491 or http://dx.doi.org/10.2139/ssrn.1468491. p.16.

predict the degree of consumer acceptance. Some technological products/services survived and even became a necessity of life while others became a flash in the pan. Regardless of the successful survival and even have become popular products and services, or to be eliminated ones, the technology research and development are required to invest a lot of capital, which exacerbates the situation. The history of the telecommunications industry is full of unfortunate cases in investment which based on the failure of the market forecast. Therefore, unpredictability of the telecommunications industry has become an integral part of the market assessment, which regulatory agencies must take into account.

1.3. Convergence

Convergence is the consequence of the dynamism of telecommunications and a result of the technological developments. This new phenomenon emerged at the beginning of early 2000's in the world of telecommunications. And one of the first users of the term 'convergence' in the information industries is Nicholas Negroponte, who used a chart forecast that the ability to digitize information and other developments in the computer industry would lead to the communications industries to merge, and therefore they should be studied and developed as a single craft [22].

In the context of technological evolution, convergence refers to taking over all types of media by only one technology, rather than a coming together of different technologies or industries [23]. Convergence in telecommunications has revolutionized the whole industry in an unprecedented way. Until the 1990s, the phone was just a tool to contact with someone. Television was an instrument to view the news and programs from the television station. Start from the year of 2000, especially the widespread use of computers and mobile phones, devices are no longer just satisfied with only one function, which was originally intended to provide. Cell phones can now be used not only as a means of calling and connecting with others but also to perform different functions, such as recording voice and video, taking pictures

[22] Negroponte, Nicholas. *Being digital*. Vintage, 1996. p.54.

[23] Mueller, Milton. "Digital convergence and its consequences." *Javnost-the public* 6.3 (1999): 11-27. p.12

and surfing the Internet. The rate of convergence could be substantially matched to Moore's Law, as introduced above.

Technological power, however, is just a part of the convergence legend. Convergence also means the progress that the data interchange in the common protocols and technical standards, which is a social and economic issue rather than a technical one. This process is performed profoundly by network effects and dynamism. Thus, in various aspects, the progression of convergence is a description of the rise and decline of diverse media forms designed to bring together [24].

Convergence has not only profoundly affected the structure of the telecommunications industry, such as broadcasting and IT sectors, but also has implicated the development of regulatory policy. Regulation has to adjust adequately to the changes occurring in order not to hinder the development of the process while at the same time sustaining to serve its goals [25].

1.4. Sensitivities

Besides dynamism and convergence, telecommunications industry also exhibits certain sensitivities, not only to regulation but also to the reactions of the public. Telecommunications is a network sector that involves high sunk costs and the need for considerable investments. Indeed, such investments are based on the prediction of the market development, which relies heavily on regulatory policy requirements. Thus, the current policy on telecommunications represents a factor that is included naturally in the prediction of the market, in the short-term and often also, in the long-term plans of firms. Therefore, there is an interaction effect between current regulatory policy and market development. On the one hand, regulation is developed based on market conditions. On the other hand, regulation can determine how the market develops.

[24] Mueller, Milton. "Digital convergence and its consequences." *Javnost-the public* 6.3 (1999): 11-27. p.12.

[25] European Commission, Green Paper on the convergence of the telecommunications, media and information technology sectors, and the implications for regulation: Towards an Information Society approach, COM(1997) 623, 3 December 1997. p. iii.

The telecommunications sector has been found to be very sensitive to regulation. There are disputable rationales for the appropriate regulation. As the statement made in *Electronic Communications: the Road to the Knowledge Economy*, "predictability provides incentives to innovate and facilitates long-term investment"[26].

In such sector, not only the investments and managements, but also the development requires a stable regulatory environment, predictable regulatory decisions and tolerant regulatory approaches. Innovation plays a major role in such sector because telecommunications industry is dependent on the development of new technologies and the applications of new products and services. To promote innovation, regulatory policies need to tradeoff, first of all, the relationship between regulating the major market participants and allowing new entrants access to new and extension services, and then to maintain competition, on the one hand, and remain the technology-neutral in order to keep the future development, on the other.

As another pole of regulation policies, consumers additionally increase the complexity to the telecommunications industry. In the knowledge economy, demand strictly determines supply. The expectations of consumers are the most important prediction of market players. In telecommunications sector, however as we discussed above, market is constantly changing. Hence this prediction may be completely impossible. That's why the high-tech companies give up to predicting the expectations of consumers. They attempt to influence the the ideas of customers and produce the expectations for them, because "in network market, expectations are crucial and can easily be self-fulfilling: the product or technology expected to prevail does prevail"[27].

In this section, it has been proofed that the telecommunications sector is unique. Though it was regulated as standard public utilities, it owns many specificities which keep it apart from the other areas. Telecommunications belongs to the network industries that mightily show the network effects. And the dynamism of the telecommunications is a feature that differentiates the sector from the other network ones, such as electricity or water industries. Poli-

[26] European Commission, Electronic communications: The road to the knowledge economy, at p.4.

[27] Shapiro, Carl, and Hal R. Varian. Information rules: a strategic guide to the network economy. Harvard Business Press, 2013. p.211.

cymakers have to persist in considering potential transformation which distinguished telecommunications markets [28].

Indeed, network effects and dynamic bring the policy of telecommunications industry into a dilemma. On the one hand, although telecommunications as a natural monopoly has been challenged, it still makes sense that some parts of the network are still falling into the technically natural monopoly, which can quickly develop into an essential facilities. On the other hand, since this sector is a very dynamic industry, which relies on innovation a lot, introducing new market players or the open of the market is the key element of the whole industry. What's more, it is important to add competitive neutrality into this field. As a dynamic regulatory perspective, the entire sector shows convergence, requiring a certain amount of experimentation to find out which technology and infrastructure are most appropriate for which service [29]. Apparently, the network effect, dynamism and convergence of electronic communications makes a relatively complex task to design adequate regulatory regime.

[28] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.40.

[29] Geradin, Damien, and Michel Kerf. Controlling market power in telecommunications: antitrust vs sector-specific regulation. Oxford University Press, 2003.

2. Theories of Competition and Monopoly

When we talk about the method of promoting industrial and economic development, there will be a general consensus which is competition. The concept of competition can be traced back to Adam Smith's theory of invisible hand, in which competition was seen as an optimal solution to drive the promotion of economy [30].

Competition, in a large sense, means a struggle of conflicting interest[31]. In commercial world, it signifies striving for the consumers and business on the market[32]. In legal documents, competition is defined as "a process of rivalry between firms...seeking to win customers' business over time"[33]. Specifically, the competition includes two basic meanings. In term of behavior, competition is the action to contest with each other in a particular market to get the exclusive trading opportunities with the third party. In term of structure, competition refers to all market players within a particular market who do not have the ability to control the entire market. That is to say, in the market there is no one who can artificially control the market price.

Even more, in the theory of perfect competition, the market without monopoly will bring consumers and the society maximum benefit and competition was considered as an automatic mechanism, which can bring more benefits than State management or planning. Therefore, many different approaches took place, such as demonopolization, which means to introduce competitors into relevant marker; liberalization, referring to the lessening of government regulations and restrictions; and privatization, which is a method of transferring the ownership of public sector or public property from the public sector to the private sector. The visible hand of government changed its duty from controlling the competitive market to protecting the competition of the market. Competition itself became a core of the market. Thus,

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[30] Rothschild, Emma. "Adam Smith and the invisible hand." *The American Economic Review* (1994): 319-322.

[31] Ely, Richard T. "Competition: its nature, its permanency, and its beneficence." *Publications of the American Economic Association* (1901): 55-70. p.58.

[32] Whish, Richard, and David Bailey. *Competition law*. Oxford University Press, 2012. p.3.

[33] CC3 Revised, Guidelines for Market Investigations: Their role, procedures, assessment and remedies, April 2013. p.7.

the important issue is to figure out which kind of effect that the competition can bring to the market. The theoretical way is to compare the market in the condition of perfect competition and the one under monopoly.

2.1. The Benefits of Perfect Competition

A perfect competitive market is that, in the first place, the price of each product is equal to its cost of production, in which the producers and sellers can only maintain the investment in the industry with the profits. Secondly, each one who will pay the price is able to buy the products[34]. According to this feature, economics design the model of perfect competition, (1) all the products of sellers are entirely homogeneous, so consumers do not care who sells the product, as long as the price is the same; (2) in this market, each seller is too small to control the entire market; (3) all resources are fully flow, which means all sellers can get what they need to put into production; (4) the market participants are fully aware of the market price, output information, and other market information. The economic activity can be take in three classes or levels, goods, production, and innovation [35]. Correspondingly, we can also divide the efficiencies under such classification into allocative efficiency, productive efficiency, and dynamic efficiency, in order to analyze impact of the perfect competition.

2.1.1. Allocative efficiency

Allocative efficiency means the allocation of resources is “impossible to make any one individual better off without making at least one individual worse off; consumer surplus is at its largest”[36]. Products and services are allocated in accordance with the price that consumers will pay. Taking players acting as price takers into account, the market equilibrium turns out as an efficient allocation of resources when

[34] Stigler, George J. "Perfect competition, historically contemplated." *The Journal of Political Economy* (1957): 1-17. p.6.

[35] Weizsäcker, CCv. *Barriers to entry: a theoretical treatment*. Vol. 185. Springer Science & Business Media, 2012. p.5.

[36] Barr, Nicholas Adrian. The economics of the welfare state. Stanford University Press, 1993. p.46

the price of production equals with its marginal cost, and as the result, the social welfare is maximized [37].

Conventionally, monopoly means to dominate the supply, and further the price[38]. Under perfect competition, the producer assumes that it has an economic desire to maximize the profits, which will lead him to produce as privately profitable as possible. As long as can acquire more benefits by manufacturing goods than the cost, it will continue to produce. Until the marginal cost exceeds the price, it will stop expanding production. In this situation, the producer will make his output to the point that marginal cost equals to the good price. In another words, the perfect competition makes the allocative efficiency achieved, which maximize the profit of producer meanwhile the consumers can obtain the goods at the price they prepare to pay.

2.1.2. Productive efficiency

Beside allocative efficiency, under perfect competition, products and services will be offered at the minimum cost, getting to productive efficiency. The producer who is free from the competitive pressure may provide in a costly way. Because of fearing of being expelled from the perfectly competitive market, the manufacturer cannot charge above the marginal cost. It has to produce in an efficient way. Otherwise, the other competitor would occupy his market share with lower price based on a more efficient productivity. If every competitor produces in such way, the price and the average cost will coincide. In other words, the price keeps same with the cost in the equilibrium under the perfect competition.

2.1.3. Dynamic efficiency

Dynamic efficiency is related to innovation. Producer under perfect competition takes innovation and development of new products as a part of a strategy of competition for consumers. But this opinion has been challenged. John Kenneth Galbraith

[37] Lebourges, M., Jeanjean, F., & Saavedra, C. (2012). The inefficiency of perfect competition in the electronic communications industry. *Available at SSRN 2176311*. p.8.

[38] Chamberlin, Edward Hastings. "The theory of monopolistic competition: A re-orientation of the theory of value." (1949).

argued that because the technology development is getting costly, only the firm that has the resources with a considerable size can afford[39]. From this perspective, the monopolist has such economic strength to implement ongoing research and development, and more importantly, it has motivation which tries his best to maintain the monopoly.

2.2. The Cost of Monopoly

Being opposite to perfect competition, the monopoly producer can affect the price by reducing the output through the relationship between supply and demand. But in perfect competition, the producers have to sell the goods at the price equal to marginal cost. It has no ability to change the output by his unilateral action.

Compared with the perfect competition, in monopoly realm, there is only one enterprise making product sales in a particular market. The monopolist has the power to control the market, which the producers do not have in the perfectly competitive market. As long as the monopolist reduces the volume of output, the output of the entire market will be reduced. Then the market-clearing prices will go up. Or it increases the price of the products, and then sales will decrease. With the motive 'to maximize profits in monopolist price', monopolist charge higher than that in the competitive markets. Since the output is lower than that under perfect competition, a part of the consumers will be expelled from getting the goods or service with the price they prepared to pay. The effect of charging a monopoly price is "to transfer wealth from the consumers of a product to the owners of the firm selling it"[40], while the allocative efficiency is also reduced. Consumers who can not afford the monopoly prices will abandon the transaction or choose other suboptimal alternatives, which is so-called "deadweight".

Furthermore, a monopoly will lead to "X-inefficient", which means the productive efficiency of the monopoly producer without the competitive stress is sometimes lower than the

[39] Kenneth, G. J. (1993). American Capitalism: The concept of countervailing power. New Brunswick, N.J., U.S.A. : Transaction Publishers.p.86.

[40] Posner, Richard A. Natural monopoly and its regulation. Cato Institute, 1999. p.4.

producer in the competitive market. “X-inefficient” was first proposed by Liebenstein[41]. Through the observation in an empirical way, Liebenstein found that even though the monopolist used all resources into producing, but it still lack efficiency which might be higher in a competitive market. In the situation where competitive pressure is slight, many people will pay much attention on maintaining such status and getting better in personal relations instead of inputting greater effort on seeking growth[42]. In innovation, monopoly producer has less interest in innovating or developing, because it’s not necessary for him to offer better goods or service for attracting customers. Even more, the manager of the monopolist to keep enjoying the peaceful life will use the resources to consolidate the situation of monopoly, such as to raise barriers to entry, to lobby regulatory agencies, or to threat of potential competitors, etc.

Therefore, under the assumptions of perfect competition theory, adequate competition is the only option under the market economy. On the contrary, the monopoly will only lead to inefficient. The original intention of the establishment of the competition law is to foster economic efficiency by safeguarding competition[43]. However, we have to recognize clearly that the theory is just a model that the economists constructed in the paper. Perfect competition does not exist in the real market, but monopoly does. Now we must turn to the commercial life before the final judgment on the contest.

2.3. Theoretical Criticism to Perfect Competition and Monopoly

Significantly, the theory of perfect competition reveals that in the completely competitive situation, market mechanism can optimize the allocative efficiency of social resources and improve the overall efficiency of the economy. And also, this theory points out that monopoly as the opposite of competition transfers the welfare of consumers into the hands of a monopolist and reduces the overall social efficiency. However, this theory is not as perfect as

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[41] Leibenstein, Harvey. "Allocative efficiency vs." X-efficiency"." *The American Economic Review* (1966): 392-415.

[42] *Ibid*. pp. 412-413.

[43] Jones, Alison, and Brenda Sufrin. EU competition law: text, cases, and materials. Oxford University Press (UK), 2014. p.1.

its name. The main criticisms focus on that perfect competition theory is contrary to experience and it only emphasizes the economic efficiency of society but other values.

2.3.1. Inconsistent with the experience

The first criticism for perfect competition comes from experience. The theory of perfect competition is merely a theory, the conditions of which can not be reached in real life. Perfect competition postulates that in relevant market, there are measureless buyers and sellers, all merchandise are homogenous; the information on market situation are perfectly informed by consumers; all resources fully flow, which means all sellers can get what they need to put into production: there is no barrier to entry which may hinder the emergence of potential competitors, and there is no barrier to exit which may prevent entrants from quitting the market. Naturally, no market in reality will satisfy all conditions.

Perfect competition and monopoly are just like two poles in the structure of the market and between them there are many possible positions. Not to mention that consumers can not grasp full information in the market, it is tough to achieve the condition of the homogeneous commodity. Many firms sell the goods in slight differences from their competitors. And some companies take the method of cultivating the loyalty of consumers to stake them. In other words, an increase in price not directly means the loss in business. Anyway, even one of the producer increase the amount of homogenous product, because of the asymmetry of information, consumers are unable to grasp immediately.

Not only the perfect competition never exist in practice, but an absolute monopoly, in fact, is also rare. Exclusive monopoly means that a company offers all products for specific markets, is not common. Because of this, competition law mainly pays attention to the enterprises who have significant market power, not only those who monopolize the whole market.

2.3.2. Perfect is not perfect

Besides the empirical evaluation of perfect competition and monopoly, the theory was criticized in other aspects. First of all, an absolute minimum cost will not maximize the benefit of the society. The interest has many dimensions, such as social security, environment, and technological progress. If the producer only keeps the economic cost low, without taking the social responsibility, maximized economy will bring disaster on the entire society. It has been asserted that "competition law should not concern itself with these social costs", leaving them to specific legislation[44]. And we need to realize clearly that perfect competition does not bring the maximization of social benefits, which is not indeed the purpose that competition should have.

Secondly, rationality is only a hypothesis. It is doubtful that whether market participants can make rational judgments on the market circumstance, and whether there is a rational understanding of the border. From the microscopic point of view, directors of a firm may not hold the opinion that to earn as much as benefits for their share owners is the crucial issue they confront. They might be more concerned about how to expand the scale of enterprises, to get more salary to live a comfortable and wealthy life[45].

Lastly, perfect competition hypothesis is established on a static model of competition, neglecting the dynamic nature of markets. In a static model, assumptions are made about certain aspects of the technology for firms, the nature of demand, how the companies interact with each other, and other factors[46]. But in the view of the dynamic market for a long run, the incumbent will not dominate the market forever. Because of the competitive forces in markets, their power of controlling the market will be diluted by innovation and new entrants.

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[44] Robert H. Bork, The Antitrust Paradox: A Policy at War with Itself, New York: The Free Press, 1993, at pp. 114-115

[45] Scherer, Frederic M., and David Ross. "Industrial market structure and economic performance." University of Illinois at Urbana-Champaign's Academy for entrepreneurial leadership historical research reference in entrepreneurship (1990). pp. 44-46

[46] Evans, David S., and Keith N. Hylton. "The lawful acquisition and exercise of monopoly power and its implications for the objectives of antitrust." *Competition Policy International* 4.2 (2008): 203.

2.3.3 Perfect competition theory is not suitable for high-tech market

In the opinion of classic economic theory, perfect competition is the optimal market structure[47]. However in some markets, the incumbents have the possibility to develop and apply new technologies to amplify attainable resources. The conflict between perfect competitive market structure and innovation is an old quandary in economy. Schumpeter was the first to propose a different perspective that "only companies that have market power, at the best the monopolist, can support the costs related to innovation, indeed, is the innovation itself determines that a monopoly position"[48]. In his opinion, the market structure constructing with the companies that have significant market power is the sacrifice that the whole society has to give out for technological improvement [49]. In the opposite theory, it seems that the firms who invest in research and development in competition market can profit more than those invest in monopoly [50].

The new theory proposed by Vives reconciles the contradictory theories above[51]. He concludes that competition can have a positive or negative impact on innovation, which depends on what measure of competitive pressure we use[52]. If the competitive pressure comes from increasing the number of firms in the market, the incentives for innovation will decrease. On the contrary, if the competition comes from promoting the diversity of products and increasing price rivalry, innovation will be strengthened. In other words, perfect competition theory which takes a sufficient

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[47] Lebourges, Marc and Jeanjean, François and Saavedra, Claudia, The Inefficiency of Perfect Competition in the Electronic Communications Industry (November 15, 2012). Available at SSRN: http://ssrn.com/abstract=2176311 or http://dx.doi.org/10.2139/ssrn.2176311 p.9.

[48] Laino, Antonella. Innovation and monopoly: The position of Schumpeter. University Library of Munich, Germany, 2011. p.1.

[49] Lebourges, Marc and Jeanjean, François and Saavedra, Claudia, The Inefficiency of Perfect Competition in the Electronic Communications Industry (November 15, 2012). Available at SSRN: http://ssrn.com/abstract=2176311 or http://dx.doi.org/10.2139/ssrn.2176311 p.9.

[50] Arrow, Kenneth. "Economic welfare and the allocation of resources for invention." *The rate and direction of inventive activity: Economic and social factors*. Princeton University Press, 1962. 609-626.

[51] Vives, Xavier. "Innovation and Competitive Pressure*." *The Journal of Industrial Economics* 56.3 (2008): 419-469.

[52] *Ibid*. p.455

number of entrants as a precondition cannot promote innovation or be suitable for the high-tech market.

2.3.4. Alternative theories

When the myth of perfect competition was broken, a series of competition theories emerged in the spectrum between perfect competition and monopoly. The most representative is that the theory of contestable markets which pays attention to the degree of freedom of market entry and exit, the theory of workable competition which focuses on imperfect competition, and the theory of effective competition which shifts to the market power and the potential competition.

a. Contestable markets

Contestable markets theory was first advanced by Baumol, in which firms will be forced to operate in an efficient way ensuring an optimal allocation of resources[53]. This theory aims to apply to a full range of market, including even the structures of monopoly and oligopoly[54]. The essential conditions for a absolutely contestable market are that access into or quit an industry is costless. The aspect of exit mechanism is essential. A firm in a contestable market should be able to quit without suffering losses when the profit in relevant industry disappears.

The perfect competition focuses on the conditions of the market itself, such as a large number of potential buyers and potential sellers, full information and so on; but in a contestable market, the possibility of 'hit and run' is concerned. Even though there is only one or two firms in an industry, if there is no hindrance to entry or exit, the market is an absolutely contestable one, therefore it is not necessary for competition authorities or regulation agent to intervene. Furthermore, the theory of contestable market suggests that regulation may not promote competition or efficiency in

[53] Baumol, William J. "Contestable markets: an uprising in the theory of industry structure." *Microtheory: applications and origins* (1986): 40-54.

[54] *Ibid.*

a market. The artificial impediments of entry and exit are unprofitable protecting the incumbent to get monopoly profits.

The theory of contestable markets reveals that not only the market itself should be payed attention to, the barriers to entry and sunk costs are also important to determine the extent of competition. It can be said that this theory has brought a dynamic point of view.

b. Workable competition

Some economists recognize the limitations of the theory of perfect competition, which is it does not exist, cannot exist or even never exist, but they try to find a best model that can be reached practically[55]. They presented the theory of "workable competition". In this theory, supporters insisted that since the perfect situation cannot be attained, then it's better to find an answer in imperfections which exist in reality. A workable competitive framework is considered to have a profitable effect on performance, and for this reason that it is worth pursuing and maintaining[56].

The theory of workable competition does not point out what the competition should be or how to make the market competitive. It just indicates that it will be serviceable if the scholars and policy makers focus on the imperfect competition. The value of this theory is that it changed the object of research and regulation from pursuing the perfect competition to the pursuit of efficiency under imperfect competition.

c. Effective competition

Based on the consensus that perfect competition is not a useful standard, the hypothesis of effective competition has been put forward[57]. Effective Competition is

[55] Clark, John M. "Toward a concept of workable competition." *The American Economic Review* (1940): 241-256.

[56] Whish R, Bailey D. Competition law. Oxford University Press, 2012. p.16

[57] Smith, Blackwell. "Effective Competition: Hypothesis for Modernizing the Antitrust Laws." *NYUL Rev.* 26 (1951): 405. p.412.

such kind of situation in which the business performance tends to serve the public interest in increasing values in goods and services for more people, in proportion to human effort[58]. Effective Competition Theory pays attention to adequate alternatives of consumers and the freedom of firms to enter or to leave market. Therefore, two aspects appear especially important: market power and potential competition[59]. Enterprises inevitably suffer a proper level of competitive pressure which comes from their present and potential competitors. And therefore the competition authority should only play the role to censor whether such restriction exists on the market.

The expression of effective competition is also used in modern legal provisions and regulator. For example, European regulatory policy takes the "establishing effective competition" as a core objective of for network industries[60]. In January 2000, the Office of Communications in the UK published a strategy statement. One of the its goals is to realize "effective competition in all main UK telecoms markets"[61]. And the identical expression is used in the Directive on measures to reduce the cost of deploying high-speed electronic communications networks[62]:

> *"Measures aiming at increasing efficiency in the use of existing infrastructures…while maintaining effective competition, without adversely affecting the safety, security and smooth operation of the existing public infrastructure."*

Therefore, the theory of effective competition can be seen as dominant view today and is supported by the official documents.

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[58] *Ibid.* p.413.

[59] Christian M. Bender, Georg Götz and Benjamin Pakula, Effective Competition: Its Importance and Relevance for Network Industries, Intereconomics 2011, p.1.

[60] V. Reding: The EU Telecoms Reform 2007: Better, more consistent rules for effective competition and sustainable investment, SPEECH/07/765, 28.11.2007.

[61] Ofel: Oftel strategy statement: Achieving the best deal for telecoms consumers (2000) Chapter 3, Section 2.

[62] Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 on measures to reduce the cost of deploying high-speed electronic communications networks.

2.4. The Challenge Comes from the Natural Monopoly

The new theories instead of the theory of perfect competition in order to provide a new theoretical basis for competition law. However, the proposition that competition can play a regulatory role in all markets is still challenged by the phenomenon of natural monopoly. Competition may not bring the best outcome for those markets which are subject to the natural monopoly.

A natural monopoly exists in such industry that the output of a single company can provide the product or service at a lower cost than two or more companies. In such markets, there might be obvious economies of scale, which means that the cost declines with the increase of the production; or economies of scope which means it is economical to manufacture two or more products together than to produce them independently[63]. Competition in such industries is regarded unacceptable because the existence of a vast number of companies would cause unnecessary duplication of facilities. A natural monopoly is an economic phenomenon, unlike the monopoly we discussed above. In natural monopoly industry, competition can not bring efficiency, but destroy it.

Additionally, natural monopolist sometimes assumes the universal service obligations, under which the service providers cannot choose their customers, which is fundamental freedom of contract in normal market. Public ownership is such a solution that can solve the problem that how to made the natural monopolist behave beneficially to the whole society. Another way is to introduce regulation to the private producer, keeping the competition away the step of operating the industry, but adding competitive tools, such as bidding, into the step of entering the market.

The natural monopoly can be divided into a permanent natural monopoly and a temporary natural monopoly according to the duration of the exclusive status[64]. An important distinction of permanent versus temporary natural monopoly is that the long-run average cost

[63] Viscusi, W. Kip, Joseph E. Harrington, and John M. Vernon. *Economics of regulation and antitrust*. MIT press, 2005. p.401.

[64] Viscusi, W. Kip, Joseph E. Harrington, and John M. Vernon. *Economics of regulation and antitrust*. MIT press, 2005. p.402.

(LRAC) falls continuously as output increase in a permanent natural monopoly. No matter how large market demand is, a single undertaking can supply it at lowest cost.

In a temporary natural monopoly, LRAC declines at beginning until to a particular output and then becomes constant after that. With the market demand growing, a single firm can not satisfy it, and the cost stops declining. That means the market needs more companies to output. For example, a microwave telephone system consists of some stations—about twenty to forty miles apart—that transmit signals of specific frequencies. Each station requires land, building, a tower and antennas, electronic equipment, and so on. These inputs do not increase proportionately with the number of circuits, and therefore as volume increases the fix costs can be spread over more calls. This spreading effect becomes less and less significant, however, as volume grows. In reality, the phenomenon is common. Over long periods of time, with new technology being introduced in, such as in telecommunications industry, it is likely that the cost function will shift. In opposite, permanent natural monopoly is probably a rare category.

Natural monopoly theory has provided perhaps the strongest rationale for this heavy regulation of utilities[65]. In the case of natural monopoly, on the one hand, the market is unable to improve efficiency through competition, on the other hand, indulging monopoly status will undermine consumer welfare. Therefore, according to the public interest theory, it is necessary to apply economic regulation on natural monopoly industry.

For natural monopoly industries, the purposes of economic regulation are, first of all, to prevent monopoly firms from fixing monopoly prices and to maintain social distribution efficiency; secondly, to avoid destructive competition, ensure the social productivity and the stability of supplement; thirdly, to control unfair competition between monopolies[66]. In other words, the purpose of regulating natural monopoly is to reduce the inefficiencies of the monopoly and to ensure universal service. Therefore, regulation is implemented to set price con-

[65] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.18.

[66] Geddes, Rick. "Public utilities." The Encyclopedia of Law and Economics (1998). p.116.

trol at the level which induces allocative and productive efficiency[67], to control cross-subsidization[68] within the monopolistic firm, and to avoid cream-skimming[69] by competitors in situations where the monopoly does not have legislative protection[70].

2.5. Is Telecommunications Industry a Natural Monopoly or Not

As we have discussed in the last section, one of the most prominent characteristics of characteristics of telecommunications industry is network effect, which can bring substantial economies of scale or scope. Therefore, traditionally, it was considered to possess the features of the natural monopoly, for the high sunk and fixed costs of the fixed base stations and network facilities[71]. As a result, in the telecommunications industry, it is considered that only a single firm would be able to satisfy the industry's demand at a lower cost than two or more firms can[72].

To ensure both productive and allocative efficiency and to guarantee the universal service[73], the telecommunications industry was applied on heavy regulation as the other natural monopoly industries, such like railway, water, and electricity. The methods of regulation are different across the Atlantic. In the US, the Government imposed price controls and universal

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[67] Depoorter, Ben WF. "Regulation of natural monopoly." Encyclopedia of Law and Economics, Part V-Regulation of contracts (1999). p.505.

[68] Cross-subsidization refers to the practice where the difference between the price charged to the targeted consumers and the cost of supply might be funded by cross- subsidization from the prices paid by other consumers or, in a multi-product firm by the purchases made for other products or services. See Depoorter, Ben WF. "Regulation of natural monopoly." Encyclopedia of Law and Economics, Part V-Regulation of contracts (1999). p.504.

[69] The fundamental problem of cream skimming is that it often disrupts a regulatory compact between the incumbent and the regulator to subsidize the high-cost/low- profit customers that are the skim milk of the market with revenues from the low-cost/high-profit customers that are the cream of the market. Cream-skimming occurs when a supplier concentrates only on those areas of the market where the costs of supply are lowest.

[70] Depoorter, Ben WF. "Regulation of natural monopoly." Encyclopedia of Law and Economics, Part V-Regulation of contracts (1999). p.504.

[71] Sharkey, William W. "The theory of natural monopoly." *Cambridge Books* (1983). p.213.

[72] Panzar, John C., and Michael Waterson. "Is postal service a natural monopoly?." *Competition and innovation in postal services*. Springer US, 1991. 219-231. p.222.

[73] See *infra*. Chapter I, Section 3.

service obligations to the private incumbent[74]. Alternatively, in Europe, such regulation was frequently achieved by taking over the ownership of the utility[75].

However, technological developments have driven certain natural monopoly markets transform to more competitive ones[76]. In the telecommunications industry, such transformation was the obvious. Microwave, satellite, and optical fiber transport technology provide good alternatives to traditional copper cable networks and also weakened the natural monopoly characteristics of the telecommunications industry. For this reason, parts of the network were opened to competitive entry[77]. However, in the market of local wireline loop, where the network directly connects with terminal users, there is still the characteristic of natural monopoly, because it is not reasonable to rebuild a same wireline network to satisfy an undifferentiated function. Even though natural monopoly remains in this part, it does not mean that the market cannot be competitive. A full and fair access to such network is required, without discrimination and under appropriate conditions and price[78].

Overall, telecommunications sector has mostly casted off the feature of natural monopoly, and has become into a fully competitive market. The legal practices of the EU can be taken as a suitable example. In the EU, the telecommunications market is competitive which was confirmed at the legal level. According to Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets, since 1 January 1998, the EU telecommunications markets, including telecommunications equipment market, telecom services market and telecom network should achieve full liberalization, allowing free access[79]. Therefore, Member States

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[74] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.71.

[75] All European nations but Luxembourg sold shares of Public Telecommunications Operators to private investors. See Bauer, Johannes M. "Regulation and state ownership: conflicts and complementarities in EU telecommunications." *Annals of Public & Cooperative Economics* 76.2 (2005): 151-177.

[76] Joskow, Paul L. "Regulation of natural monopoly." *Handbook of law and economics* 2 (2007): 1227-1348.

[77] Hausman, Jerry A., and William E. Taylor. "Telecommunication in the US: from regulation to competition (almost)." *Review of Industrial Organization* 42.2 (2013): 203-230. p.206.

[78] Regulation (EC) No 2887/2000 of the European Parliament and of the Council of 18 December 2000 on unbundled access to the local loop, Official Journal L 336 , 30/12/2000, Article 3 (2).

[79] Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets. OJ L 74, 22.3.1996, p. 13–24, p. 13

must abolish existing exclusive rights and privileges in these areas, to achieve the purposes of fully liberalized the relevant market.

3. The Regulation in Telecommunications Sector

After introducing the role of competition in the telecommunications industry, it is necessary to pay attention to the regulation which never has not been terminated since it emerged in the relevant market. In order to achieve different objectives, governments apply regulation on various industries. Some of them were selected because they were crucial to the public interest or the national security. The telecommunications sector has been considered to belong to such particular industry for both reasons. Currently, the telecommunications industry is deemed to be a very important economic sector for the future because of the characteristics of convergence. To regulate such industry, we need to determine the regulatory objectives and then to develop instruments of regulation to promote these goals.

3.1. Objectives of the Telecommunications Regulation

The objective is an essential part of the regulation designing process. Without it, regulation will lose its direction and function. As Robert Bork pointed, "only when the issue of goals has been settled is it possible to frame a coherent body of substantive rules"[80]. The objectives of telecommunications regulation can be divided into two parts, social and economic ones[81]. In the social objective, the universal service and consumer protection are the most important ones. Innovation, consumer welfare, and efficiency together form the economic goals of regulation.

3.1.1. Universal service

Universal service policies refer to "those regulatory and fiscal measures that Governments undertake to make sure that as many people as possible are connected to the telecommunications infrastructure"[82].And in a certain sense, the most impor-

[80] Robert H. Bork, The Antitrust Paradox: A Policy at War with Itself, New York: The Free Press, 1993 (first published New York: Basic Books, 1978), at p. 50.

[81] Melody, William H. "Policy objectives and models of regulation." To Dallas Smythe (1907-1993), friend and colleague of many contributors to (1997): 11. p.13.

[82] Mueller, Milton. "Universal service policies as wealth redistribution." *Government Information Quarterly* 16.4 (1999): 353-358. p.353.

tant objective of telecommunications regulation is straightforward: to ensure that everyone has access to reasonable service at reasonable prices[83].

This goal is embodied in telecommunications regulation in many countries and regions. The concept "universal service" first appeared in the Willis-Graham Act in 1921 of the US, which imposed universal service obligations on telecommunications companies, but simultaneously exempted the telecommunications industry from the Sherman Act[84]. The EU as a supranational entity, whose universal service obligations mainly reflected at the national level of Member States. Before the liberalization of the EU, the universal service obligation was imposed on posts, telephone and telegraph organizations[85]. And the current European Community universal service regulation is primarily contained in Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (the Universal Service Directive)[86].

3.1.2. Consumer protection

Consumer indeed in telecommunication refers to the ultimate beneficiaries of all the members of society. Therefore, consumer protection covers a very wide range, large to ensure universal service, and small to contract terms. The concept of consumer is explained in the Commission's 2004 Notice on the application of Article 101(3) (ex Article 81(3)): "The concept of 'consumers' encompasses all direct or indirect users of the products covered by the agreement, including producers that use the products as an input, wholesalers, retailers and final consumers, i.e. natural persons who are acting for purposes which can be regarded as outside their trade or pro-

[83] Melody, William H. "Policy objectives and models of regulation." To Dallas Smythe (1907-1993), friend and colleague of many contributors to (1997): 11. p.13.

[84] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.71.

[85] Bauer, Johannes M. "Universal service in the European Union." *Government Information Quarterly* 16.4 (1999): 329-343. p.332.

[86] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (the Universal Service Directive), OJ L 108/51, 24 April 2002.

fession. In other words, consumers within the meaning of Article 81(3) are the customers of the parties to the agreement and subsequent purchasers. These customers can be undertakings as in the case of buyers of industrial machinery or an input for further processing or final consumers as for instance in the case of buyers of impulse ice-cream or bicycles"[87].

Regulations should ensure that consumers be protected from abuses of dominant market position, as long as such abuses are available under the present telecommunications market structure. Therefore, there are many specific standards to protect consumers throughout the entire EU treaty and regulatory framework, regulating both operators and agencies. Consumer protection has been explicitly a target in regulation and the interpretation and application of the law.

In telecommunication, this particular sector, the purpose of protecting consumers also need an accurate explanation and require specific tools to address these issues. In accordance with Article 8(4) of the Framework Directive[88], the national regulatory authorities (NRAs) are taking all reasonable measures to promote the interest of the citizens, such as (a) ensuring the access to universal service; (b) ensuring a high level of protection for consumers in their dealings with suppliers, in particular by ensuring the availability of simple and inexpensive dispute resolution procedures carried out by a body that is independent of the parties involved; (c) ensuring a high level of protection of personal data and privacy; (d) promoting the provision of clear information, in particular requiring transparency of tariffs and conditions for using publicly available electronic communications services; (e) addressing the needs of specific social groups, in particular disabled users, elderly users and users with special social needs; (f) ensuring that the integrity and security of public communications networks are maintained; (g) promoting the ability of end-users to access and

[87] Commission Notice — Guidelines on the application of Article 81 of the EC Treaty to technology transfer agreements, OJ C 101, 27.4.2004, para.84.

[88] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services.

distribute information[89]. Furthermore, a liberated market which introduces new entrants who can provide consumers the possibilities to choose between services, telecom operators, and even the networks, such as number portability and carrier selection policy.

3.1.3. Innovation

As we have discussed above, innovation is critical feature of telecommunication. Technology promotes the development of relevant industry and makes it much more dynamic. And in accordance with Article 8(2)(c) of the Framework Directive mentioned above, the "promotion of innovation" is a specific goal for the NRAs. Innovation brings dynamic efficiency, and incentives market participants to promote the quality and variety of their products or services. Furthermore, dynamic efficiency could also maximize social welfare in the long-term[90].

There are two types of innovation, respectively innovation for new services and innovation for network infrastructures[91]. The former is mostly provided by operators, and the latter is always provided by equipment suppliers. They have to make the decision that whether and when to embrace the new technologies, because the application of them is sometimes costly and risky. In this sense, adoption is similar to the introduction of innovation in the telecommunications sector. Typically, regulation might influence the innovation of market participants. The price regulations would change the profits, which as the result affect the innovation in the industry. Or the entry regulation would also affect the innovation decisions. A liberal market access policies to promote the enterprise innovation to maintain competitiveness in the market.

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[89] Article 8(4) of Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services.

[90] Bourreau, Marc, and Pinar Doğan. "Regulation and innovation in the telecommunications industry." *Telecommunications Policy* 25.3 (2001): 167-184. p. 168.

[91] *Ibid*.

In the development of network infrastructure, the role of innovation is even more apparent. Network effects determine that the development of the network does not rely only on the quality and price of the products and the services, but also on the size of the network. A larger one will be more attractive. Extremely, the winner takes all, and the loser gets nothing.

Telecommunications regulation should take into account the enterprise's risk and innovation of great interest to the industry and the community into account. It will be a good method that redistributes the benefit through specific regulation to promote innovation.

3.1.4. Efficiency

The efficiency which is pursuit by economic regulation can be divided into three parts which are allocative efficiency, productive efficiency, and dynamic efficiency. In theory, it can be confirmed that, under certain situations, market mechanisms is the best way to allocate resources [92]. When competition is imperfect, such as in natural monopoly situation, or the situation of market failure occurs, government regulation can become an appropriate regulatory tool to compensate for the lack of market mechanisms to improve economic efficiency [93].

For this reason, when the telecommunications industry belonged to natural monopoly, the way to maximize efficiency is achieved though heavy state regulation[94]. With transforming views of the economic theory of telecommunications, the theory of natural monopoly is not suitable for this sector. Although the goal of maximizing efficiency in telecommunications industry does not change, but the methods do. The task of economic regulation in telecommunications industry now is to cultivate the market that has not yet developed, or to promote and maintain the operation

[92] Kenneth J. Arrow, “The Potential and Limits of the Market in Resource Allocation” in George R. Feiwel (ed.), Issues in Contemporary Microeconomics and Welfare, London: Macmillan Press, 1985, pp. 107–124, as referred to by Den Hertog, J. A. "General theories of regulation." (1999): 223-270. p.225.

[93] Den Hertog, J. A. "General theories of regulation." (1999): 223-270.p. 225.

[94] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.48.

of the mature market, to maximize efficiency in the telecommunications market through competition policy.

3.2. The Instruments of Telecommunications Regulation

The regulatory tools acting on telecommunications markets can be roughly divided into sector-specific regulations and competition law[95]. Sectoral regulations once were the only regulatory instrument applied to the telecommunications sector. With the introduction of competition and liberalization, competition law has been seen a significant instrument in this market. As the last section of this chapter, the role of sector-specific regulation and competition law in the telecommunications industry will be briefly introduced. The specific analysis will be showed in the next two chapters.

3.2.1. Sector-Specific Regulation

Sector-specific Regulation (SSR) comprises rules and directives, adopted on the specific issues on specific markets, such as the ones in the telecommunications sector. As introduced above, the telecommunications industry that discerned as a natural monopoly was entirely regulated by sector-specific regulation, which were seen as the alternative to the competition. After liberalization, with the introduction of competition, the regulation model will change to multiple hybrid ones[96]. When the market fails, and competition cannot develop its role, regulation is used to maintain economic efficiency and mimic the effective market. And because the target of Government is only to limit the specific activities of monopolist, the regulatory framework is typically quite simple.

In the EU, the SSR of telecommunications is a series of rules that are applied throughout the Member States. The task of this regulation is to encourage competition, to promote the performance of the market and to ensures the rights of basic

[95] Dunne, Niamh. Competition Law and Economic Regulation. Cambridge University Press, 2015. p.48.

[96] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.106.

users [97]. This regulatory framework contains of five directives, and two regulations. They are the Framework Directive[98], the Access Directive[99], the Authorisation Directive[100], the Universal Service Directive[101], the Directive on Privacy and Electronic Communications[102], the Regulation on Body of European Regulators for Electronic Communications[103], and the Regulation on roaming on public mobile communications networks[104].

3.2.2. Competition Law

Competition law lies at the heart of the EU legal framework for the creation and supervision of the internal market[105]. Influenced by the Ordoliberal Program,

[97] European Commission, "Telecoms Rules", last updated on 11/09/2015, https://ec.europa.eu/digital-agenda/en/telecoms-rules, 23/12/2015

[98] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services and Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services (Better Regulation Directive 2009/140/EC).

[99] Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities and the Better Regulation Directive 2009/140/EC.

[100] Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and the Better Regulation Directive 2009/140/EC.

[101] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services and Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws (Citizens' Rights Directive 2009/136/EC).

[102] Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector and Directive 2006/24/EC of the European Parliament and of the Council of 15 March 2006 on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks and amending Directive 2002/58/EC and the Citizens' Rights Directive 2009/136/EC.

[103] Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009 establishing the Body of European Regulators for Electronic Communications (BEREC) and the Office.

[104] Regulation (EU) No 531/2012 of the European Parliament and of the Council of 13 June 2012 on roaming on public mobile communications networks within the Union.

[105] Dunne, Niamh. Competition Law and Economic Regulation. Cambridge University Press, 2015. p.21.

competition law was not only seen as an institutional anchor of economy policy [106], but competition law is also "a set of measures and instruments used by Governments that determine the overall conditions of competition that are likely to be met in specific markets"[107].

The main EU competition provisions are included in Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU) and the Merger Control Regulation[108], relating to (1) agreements or concerted actions between firms which restrict competition; (2) the abuse of dominant position by incumbents or (3) mergers and acquisitions. In a broad term, competition policy also includes all aspects of government activities which influence the conditions under which undertakings compete with each others in a relevant market, such as privatization, deregulation, liberalization, government restrictions on competition, and subsidies [109].

There are also a number of competitive provisions in the TFEU, which are Article 106, regulating State-owned undertakings and the undertakings that granted special or exclusive rights; Articles 107 to 109 govern State aid, relating the support given by the Member States to economic operators. Any guidelines which elucidate the enforcement of general competition rules are also a part of EU competition law [110], but not but not mandatory ones, such as Commission Notice on the definition of relevant market for Community competition law.

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[106] Gerber, David J. Law and competition in twentieth century Europe: protecting Prometheus. Oxford University Press, 1998. p.256

[107] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.107.

[108] Council Regulation 139/2004 of 20 January 2004 on the control of concentrations between undertakings (OJ L24/1, 29.01.2004).

[109] Maskus, Keith E., and Mohamed Lahouel. "Competition policy and intellectual property rights in developing countries." *The World Economy* 23.4 (2000): 595-611. p.595.

[110] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p. 109.

4. Conclusion

The core purpose of the first chapter, which is fundamental to the subsequent content, is to introduce and explain the theories that will be used or applied in following chapters. The theoretical starting point of this chapter is the characteristics of the telecommunications industry. The main features of the relevant industry are, respectively, network effect, dynamic, convergence, and sensitivity. These four characteristics are critical for the selection of mechanism to promote the industrial development.

Due to the network effect, the telecommunications industry was once considered as natural monopoly industry and subjected to strict regulation of the Government. But also because of the strong dynamic, the natural monopoly characteristic weakened continuously in the telecommunications sector, where competition can be introduced to increase the overall efficiency, including allocative efficiency, productive efficiency, and dynamic efficiency. The characteristics of convergence and sensitivity to regulation lead to the cautious selection of competition and regulatory policies.

In short, because of the own characteristics, the telecommunications industry needs competition, but cannot completely abandon the regulation, to improve the economic and social welfare. Therefore, the primary purpose of the subsequent chapters will introduce and analyze the two most important regulatory instruments, SSR and competition law, and discuss the relationship between them.

CHAPTER II

RELAXATION AND OPTIMIZATION: THE REFORM OF REGULATIONS TO TRANSFORM TELECOMMUNICATIONS INDUSTRY TO COMPETITIVE MARKET

In the last decade of the 20th century, telecommunications industry has undergone unprecedented change within global scale. Many of the State-owned telecom operators have been privatized, and the government implement the pro-competitive and deregulation of telecommunications policy, which swept the world [111].

Being as a network-bounding industry, telecommunications were organized as monopolies, owned or controlled by the public for almost a century. The reasons are as follow. First of all, there was a belief that we mentioned in last chapter, such industry was considered to be natural monopoly, which means that there was no more place for the second operator concerning about the economic efficiency. Therefore, governments usually gave telecommunication carrier prerogatives, such as in the United States[112], or made it public ownership directly such as in Australia[113]. Secondly, the monopoly status was the price paid for universal service. To make sure that all the consumers including unprofitable ones get undifferentiated service, Governments usually made a regulatory contract with telecommunication utilities, granting them exclusive rights to make up their cost through cross-subsidize. Third, because of the importance of this industry, governments are reluctant to give up control. On one hand, telecommunications industry was viewed initially as especially critical to security and defense[114]. On the other hand, national monopoly industries were often metropolitan, which relates to the employment of millions of laborers and also represents a significant part of the GDP[115].

Therefore, to improve production efficiency and adapt to the development of science and technology, it's necessary to open the market and introduce competition to telecommunication market, transforming state monopoly into competitive market. To achieve this goal, the

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[111] Intven, Hank. Telecommunications regulation handbook. Washington, DC: World Bank, 2000. p.1-1

[112] In the US, the then chairman of the American Telephone and Telegraph Company (AT&T), who convinced the government that a regulated monopoly with universal service obligation was a better model to adopt than a system of traffic interexchange among competing networks. The subsequent adoption of the Willis-Graham Act in 1921exempted telephone companies from the Sherman Act.

[113] OECD. (2013). OECD Communications Outlook 2013. OECD Publishing.

[114] Melody, William H. "Policy objectives and models of regulation." To Dallas Smythe (1907-1993), friend and colleague of many contributors to (1997): 11. p.11.

[115] Geradin, Damien. "The liberalization of network industries in the European Union: where do we come from and where do we go." *Annual Report of the European Regulation for Electricity and Gas* (2006). p.2.

most important issue is to find out the prerequisites for a competitive market, and then accordingly to reform or optimize the regulation which ensured monopolies.

1. The Fundamentals of Competitive Market

This liberalization of telecommunications markets was promoted by several factors. First of all, empirically, customers can get better telecommunications services, and the innovation can grow faster in more liberalized markets [116]. Secondly, the demand for capital forced the telecommunications industry to liberate in order to attract private capital [117]. Thirdly, the introduction and growth of wireless services, such as Internet and mobile, provided alternative services fixed networks [118]. Therefore, the liberalization of the telecommunications market is an inevitable result with development of technology and the mature of market.

Generally speaking, the liberalization of telecommunications industry is based on three cornerstones [119]. First of all, the removal of privileged rights that were given to certain firms. Secondly, it's necessary to establish a regulatory framework including substantive obligations and independent regulatory authorities. The last one is the application of competition law, which will provide protection for the open market. Giovanni De Fraja has expounded the trade-off between privatization and liberalization policies in network industries [120], indicating that privatization may not enhance efficiency, but a full liberalization program would do, especially when private firms compete with an inefficient state-owned incumbent. In this way, it's important to promote and to protect liberalization. In this chapter, we only pay attention to the elimination of special or exclusive rights and the establishment of a regulatory framework. And the application of competition rules, as the third cornerstone of building up a competitive telecommunications market, will be discussed in next chapter.

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[116] Intven, Hank. Telecommunications regulation handbook. Washington, DC: World Bank, 2000. p.1-1

[117] *Ibid.*

[118] *Ibid.*

[119] Geradin, Damien. "The liberalization of network industries in the European Union: where do we come from and where do we go." *Annual Report of the European Regulation for Electricity and Gas* (2006). p.4.

[120] De Fraja, Giovanni. "Chicken or egg. Which should come first, privatisation or liberalisation?." *Annales d'Economie et de Statistique* (1994): 133-156.

1.1. The Elimination of Exclusive Rights

The proper meaning of liberalization is to remove the exclusive right, which refers to the monopoly status that had been granted to individual companies by a Member State though "any legislative, regulatory or administrative instrument within a given geographical area"[121]. Eliminating such privilege is often complicated by convoluted political compromises instead of a vast number of legal disputes[122]. Therefore, one of the characteristics of the liberalization process is progressivity. In the EU, the liberalization of market was always proceeding step by step. Such pattern gives the incumbent a buffer to reconstitute in order to face the upcoming competition. And for the Member Stares who was unwilling to open regulated market, such an approach was also helpful to reach a compromise [123].

Under liberalization directives, Member States were required "to abolish the exclusive rights granted to their respective public telecommunications operators over telecommunications terminal equipment, services and infrastructure"[124]. To fulfill this objective, Member States are not only prohibited granting or maintaining in force exclusive right, but also have to make sure that any undertaking is able to be authorized to provide telecom services or establish, extend or provide electronic communications networks and allow undertakings to share the established telecom network without restrictions and prejudice[125]. As the result of those Directives, the range of States' interference in the telecom sector has been distinctly defined, special and exclusive rights are wiped out, and the application of Article 106(2) is in principle

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[121] Commission Directive 2002/77/EC of 16 September 2002 on competition in the markets for electronic communications networks and services, Official Journal L 249 , 17/09/2002 P. 0021 - 0026, Article 1.1.

[122] Geradin, Damien. "Twenty years of liberalization of network industries in the European Union: Where do we go now?." *Available at SSRN 946796* (2006). p.5.

[123] *Ibid.*

[124] Commission Directive 90/388/EEC of 28 June 1990 on competition in the markets for telecommunications services, Commission Directive 94/46/EC of 13 October 1994 amending Directive 88/301/EEC and Directive 90/388/EEC in particular with regard to satellite communications, Commission Directive 95/51/EC of 18 October 1995 amending Directive 90/388/EEC with regard to the abolition of the restrictions on the use of cable television networks for the provision of already liberalized telecommunications services, Commission Directive 96/2/EC of 16 January 1996 amending Directive 90/388/EEC with regard to mobile and personal communications and Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets.

[125] Commission Directive 2002/77/EC of 16 September 2002 on competition in the markets for electronic communications networks and services, Official Journal L 249 , 17/09/2002 P. 0021 - 0026, Article 2.

excluded, since the general economic interest can be guaranteed by competition-neutral approaches such as universal service funds[126].

1.2. The Establishment of Regulatory Framework

Liberalization requires a regulatory framework which is an important part of telecommunication competition system. The regulatory framework for telecom market should not only comprise specific obligations but also require the establishment of independent regulatory authorities [127].

On one hand, these regulations mainly demanded for maintain or increase universal service obligations which was considered as an essential part to the EU model[128]. On the other hand, such obligations were also used to applicate and promote competition on the open markets. The removal of the privileges is a necessary condition to establish a competitive market, but not a sufficient condition. Even if the exclusive rights are deprived by legislation, relevant markets will not become competitive automatically. Incumbents are able to take various methods to preserve their dominance, such as the control of essential facilities and network, well-known trademarks and brands, superior technology, sufficient cash flow, and special relations with their national government[129].

Therefore liberalization requires the rules that make sure third-party access to the network. For example, cost assignment rules is designed to prevent cross-subsidization between competitive segments and non-competitive ones, also the number portability policy is designed to reduce switching costs. These pro-competition rules intend to construct a fair-play-stage between incumbents and new competitors. But to attract new entrants, sometimes such regulation is more beneficial to them. For example, the long-distance carrier AT&T has been

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[126] Larouche, Pierre. "EC competition law and the convergence of the telecommunications and broadcasting sectors." *Telecommunications Policy* 22.3 (1998): 219-242. pp.220-221.

[127] Geradin, Damien. "Twenty years of liberalization of network industries in the European Union: Where do we go now?." *Available at SSRN 946796* (2006). p.5.

[128] *Ibid*.

[129] Geradin, Damien. "The opening of state monopolies to competition: main issues of the liberalization process." *EUROPEAN MONOGRAPHS* 23 (2000): 181-206.

regulated more rigorously by the Federal Communications Commission (FCC) in the United States than new entrants. Such kind of regulation not only attracted the new players, but also limited the market power of the incumbent and equalized the market structure.

1.3 The Independency of Regulatory Authority

Against the incumbents, the regulatory framework is basically restricted to supervise the price and the quality of products and services. This authority is generally exercised by an independent ministerial department. The "independent" here does not mean the independence from Government, but rather imply the independence to enforce regulation without excessive political interference or enterprises lobbying. The task of these independent regulatory authorities is to supervise the relevant sector and to implement the regulation. And in telecommunications industry, the reliance on independent regulatory authority is nearly an inevitable and evolutionary result [130]. Although there are exceptions, such as in New Zealand, the independent regulatory authority is absent in telecommunications industry, of which the matters are shared by the Ministry of Economic Development and the Commerce Commission, in worldwide, the establishment of independent regulatory authority shows the necessity in the highly complicated and technological telecommunications market nowadays [131].

But for the competitive market just to set up, regulation is generally more important such as to create a level-playing field between incumbents and new entrants and to avoid the conflict of interests, which should be implemented by an independent institution[132]. Therefore, besides substantive obligations, a competitive market requires the procedural provisions to create independent regulatory authorities in Member States. These authorities have to maintain independent from both the operators and the Government, which sometimes has some association or economic interest with the incumbents. Another justification of establishing independent regulatory agency is the requirement of specialization. In technology-inten-

[130] Broumas, Antonios G. "The Necessity of Sector Specific Regulation in Electronic Communications Law." *Journal of International Commercial Law and Technology* 4.3 (2009). p.179

[131] *Ibid*.

[132] Geradin, Damien. "Institutional aspects of EU regulatory reforms in the telecommunications sector: an analysis of the role of national regulatory authorities." *Journal of Network Industries* 1 (2000): 5-32.

sive markets, the routine authoritative activities must be superseded by professional management who can adapt more effective methods of operation to the dynamic market circumstances[133]. As manager of the telecom market, regulator of telecom industry should at least be provided with the same kinds of specialized expertise as the market participants to ensure the ability to monitor the industry and the enforcement of the policies applied in accountability standards.

[133] Melody, William H. "Policy objectives and models of regulation." To Dallas Smythe (1907-1993), friend and colleague of many contributors to (1997): 11. p.20.

2. The Reform of the Regulations in Telecommunication Market

Normally, profound and extensive technological development in telecommunications has driven regulatory reforms. With the improvement of new information and communication technologies, such as microwave, digital switching, and optical fiber transport, telecommunications industry is filled with continuous uncertainty. New technologies, convergence, new products and services, emerging participants, significant level of mergers and acquisitions as well as divestiture activity have all changed the circumstance of market, and at the same time substantially alter the regulation which applied on this sector from traditional rate of return based regulation to competition based[134]. The characteristics of the telecommunications industry as natural monopoly was weakened and the network was opened to the possibility of competitive entry.

Once competitors entered, traditional regulation became unadaptable. After the introduction of competition, regulation will lead the possibilities of consumer welfare losses which were affiliated with the entrance and outcome by less efficient companies and by postpones of providing estimable and new products [135]. Such inefficiencies can not be avoided under the circumstance of asymmetric information and restricted competition, but can be alleviated through good regulations[136].

2.1. Deregulation: Relax from the Onerous Regulatory Instruments

The late 1970s is generally regarded as the period of “deregulation”. But it should be noted that the term “deregulation” itself is highly misleading: “deregulation” does not mean to abolish the external control directly, but to reduce excessive Government intervention in concept and form.

The severity of the failure of regulation described in the 1970s was somehow exaggerated, but many industries had been constrained by sets of detailed rules which were too com-

[134] Boyer, Marcel. "The measure and regulation of competition in telecommunications markets." (2005).

[135] Hausman, Jerry A., and William E. Taylor. "Telecommunication in the US: from regulation to competition (almost)." Review of Industrial Organization 42.2 (2013): 203-230. p.208.

[136] *Ibid*. p.209.

plex and inflexible, and some of them were difficult to meet the requirements of the public interest[137]. It is doubtful whether the regulators could develop a set of standard for different local circumstances and technical conditions. And it was also questionable that the motivation of regulators was totally the pursuit of "public". But nevertheless, the worldwide trend of deregulation is still an indisputable fact.

The progress of deregulation has different expressions in different countries. In the US, deregulation is mainly for liberalization, while in Europe shows the characteristics of privatization, which correspond with their political and economic system respectively[138]. In the case of the US, the democratic tradition in political and the liberalism emphasized in the economy co-determined that the process of deregulation was designed to eliminate mandatory factors which were remained by government when it intervened the market actively in the particular period; but for Europe, it is necessary to find a solution which can lead the utilities to the market after a large-scale nationalization.

2.1.1. The motivation of deregulation

Deregulation in telecommunication has been prevalent around the world since early nineties due to the following three dimensions, respectively: technological, economic, and ideological[139]. First of all, on technological dimension, satellite and microwave transmissions technology questioned the "natural" feature of telecommunications industry exercised by incumbent owned by State or private firms. The new technology allowed the networks be duplicated and provide competitive services with much lower cost than before.

On the economic one, secondly, the new scope of services that required by individuals and business might be difficult for national telecommunications monopo-

[137] Ogus, Anthony I. Regulation: Legal form and economic theory. Bloomsbury Publishing, 2004.

[138] Lazer, David, and Viktor Mayer-Schonberger. "Governing networks: telecommunication deregulation in Europe and the United States." *Brook. J. Int'l L.* 27 (2001): 819. p.821.

[139] Rubsamen, Valerie. "Deregulation and the state in comparative perspective: The case of telecommunications." (1989): 105-120. p.106.

lies to offer without liberating the network and market[140]. The technological convergence of telecommunications and data processing made a discrepancy between the basic voice telephone service and value-added services. The incumbent can not maintain its market power on value-added services where the competition has eroded reason to keep a monopoly. All this competition in enforced services and difficulty of distinguishing basic from enhanced services has resulted in demands for a significant change in regulatory regime for telecommunication monopolies. The purposes of deregulation in telecommunication are lower costs and choices of products, in particular for the corporate users. Low cost and methods of more convenient, intelligent data processing can bring extra benefits for firms. From the American experience, deregulation cannot only low the cost of the whole society but also strengthen the business firms relevant, helping them expand overseas markets.

Thirdly, through the ideological explanation, deregulation made an alteration in the standpoints of policymakers against the benefits of regulation. There are three major factors supporting deregulation. First, prices of maintaining regulation are high. On one hand, the regulation itself contains administrative costs. One the other hand, inefficient management and deterioration of the services are unbearable. Second, with a shared vision of economists which introduced in the last Chapter, consumers become the victims when ineffective regulation exists. Third, excessive regulation brings more complaints from industry and business firms.

2.1.2. The deregulatory initiatives

The less incentives of cost-based regulation had become an issue for a long time, but the last straw that breaks the camel was its incompatibility within the liberalized market. The problem was a multi-product regulated firm facing competition in one market but another no.

[140] Rubsamen, Valerie. "Deregulation and the state in comparative perspective: The case of telecommunications." (1989): 105-120. p.107

Originally, the purpose of the deregulation was to break the connection between regulated prices and costs with various methods[141]. In the US, the State of Vermont was first used administrative contract to replace traditional regulation in the year of 1987. Shortly after that, the FCC introduced "a form of price-cap regulation of long distance for AT&T and carrier access services for the Bell Operating Companies (BOCs)"[142].

There were several significant benefits from breaking the mandatory association between costs and prices. First, obviously the contorted incentives had been rectified. Secondly, structural controls to prohibit cross-subsidies became inessential[143]. Considering the unbinding between price and cost, the rationality of cross-subsidization had been eliminated. And the last, apparently the strongest motivation to remove these remaining ties was the promotion of innovation in telecommunications. The undertakings had less incentives to make risky investment on research and development for the limited scope of profits.

2.2. Reposition: Optimizing the Role of Regulator in Network Infrastructure

2.2.1. As trusted publisher of market information

Just like in any industry, to promote the transparency of information for consumer is a important element of competition and efficiency. The most important function of the telecommunications regulator, which is commonplace, is to provide consumers with information about the characteristics of telecommunications products and services, especially pricing. Because of the complexity of the pricing system, it is possible for the competitors to weaken price competition.

As a trusted information publisher, the regulator should be capable of informing the customers about the real price structure of the different packages in telecom-

[141] Hausman, Jerry A., and William E. Taylor. "Telecommunication in the US: from regulation to competition (almost)." *Review of Industrial Organization* 42.2 (2013): 203-230. p.219.

[142] *Ibid*.

[143] *Ibid*

munication market. It will be quite easy to set up the required infrastructure to satisfy the information needs of customers and respond to their demand for comparative information on alternatives[144]. Regulations are usually considered that the consumers can independently compare prices and other elements, such as security, flexibility, reliability, availability, and consumer-friendly of telecom products and services.

It is the responsibility of the regulator to make such information in an industry utility such as telecommunications be published. Administrator should foster consumers the ability to automatically and accurately screening information. For example, in the UK and Germany reputation management seems to be a goal of communication in addition to providing information[145]. The regulators in Germany aim at informing the decisions and positions of the public industry. Primarily, communication is used not only for information but also for building regulators' reputation[146].

2.2.2. As protector of network infrastructure

On one hand, regulator is the price maker in local wireline access network. In telecommunications, traditional theory holds that that the bottleneck is the local loop, and the potentially competitive segment is long distance. The local loop may be probably not anymore an essential facility because of the development of new technologies of wireless. However, the local wireline network still remains the feature of natural monopoly. Although the alternative technologies have conquered the other fields in telecommunications network, there is no rationality to duplicate the wireline access network, which directly connects with terminal business clients or consumers. The possible methods that can be taken in this market, is to open all the access to network facilities under the attainable technologies at appropriate prices and conditions. Therefore the price for accessing essential facilities is regulated, to ensure that the network is open to all the players without discrimination. What's more, the de-

[144] Boyer, Marcel. "The measure and regulation of competition in telecommunications markets." (2005). p.28.

[145] Puppis, M., Maggetti, M., Gilardi, F., Biela, J., & Papadopoulos, Y. (2014). The Political Communication of Independent Regulatory Agencies. *Swiss Political Science Review*, *20*(3), 388-412. p. 397.

[146] *Ibid*.

termination of the price is crucial. Excessive pricing will expel the potential entrants to seek substitution, which will reduce the efficiency of the whole society. Low Pricing, however, can not give the incumbent adequate incentives to promote the network and to make innovation.

On the other hand, the telecommunications regulator has to be the booster of efficiency in network infrastructure investments. First of all, investments in network facilities are sometimes enormous along with high risk. Because of the significant economies of scale, the investment is hard to organize. And once failed, the cost will difficult to Secondly, because of the development pace of network infrastructures are out of step, unified deployment and coordination of regulator is essential. Thirdly, the variability of demand and the irreversibility of resources in network construction require new evaluation and insurance methods, for which network investors are not fully qualified.

Therefore, an appropriate assistance of the regulator is necessary. In such situation, the regulator has to guarantee that the access to essential facilities is attainable, without discrimination and at appropriate conditions and prices. What's more, it has to ensure the reciprocation of the incumbent, in order to encourage the construction of network infrastructures.

2.2.3. As safeguard of competitive market

Standard economic theory holds that the profits of natural monopoly ascend speedily when the market grows, because of the linear growth of revenues with the increasing number of consumers, while the costs arise very slowly, due to the characteristic of economies of scale, economies of scope and network economies[147]. In a traditional industry, such profitability will attract more participators. However, in a natural monopoly industry, what is important to the potential competitors is not the

[147] Depoorter, Ben WF. "Regulation of natural monopoly." Encyclopedia of Law and Economics, Part V-Regulation of contracts (1999). pp.498-499.

present price and profit that the incumbent takes, but the possible price and profit will be, when they join the market and become rivals to the incumbent[148].

For the reason that, a competitive market requires not only a more efficient approach to regulate monopoly pricing or predatory pricing, but also a more realistic approach to foster a level-playing field in short-term competition, while at the same time to maintain a high level of incentives for long-term competition[149]. Such approaches depend on carrying out the unregulated pricing policy to all telecommunications players, which has to be supervised and enforced by the regulator. In "The Digital Single Market strategy", to create the proper circumstances and a level-playing field has been seen as one of three pillars to the further development of EU telecommunications sectors[150].

Regardless of deregulation and re-regulation, policymakers in formulating regulation should bear the following principle in mind, and regulations should be adjusted to make sure that it applies only if competitive options do not exist or are not efficient enough in the market.

The policy should be accomplished by the following mechanism. If there are sufficient competitive alternatives, consumers can turn to other services providers instead of the one who applied rejection. If there are sufficient competitive alternatives, the real problem is whether the market is allowed to enter. If the answer is affirmative, it should be traded off that the cost of short-term static efficiency and benefit of waiting for entry as the long-term dynamic efficiency. When the entry is impossible, the objective of trying to promote entry should be abandoned and the secondary goal of promoting competition in complementary services which are possible should be taken through access regulation. In summary, the regulation does not itself become the reason for the suppression of competition[151].

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[148] Boyer, Marcel. "The measure and regulation of competition in telecommunications markets." (2005). p.21.

[149] Gentzoglanis, Anastassios, and Anders Henten, eds. Regulation and the evolution of the global telecommunications industry. Edward Elgar Publishing, 2010. p.122.

[150] A Digital Single Market Strategy for Europe, COM(2015) 192 final, p. 3.

[151] Yoo, Christopher S. "Deregulation vs. Reregulation of Telecommunications: A Clash of Regulatory Paradigms." *Journal of Corporation Law* 36 (2011): 847. p. 867.

3. Telecommunications Reform across Two Sides of the Atlantic

The United States and the European Union have successfully achieved the ambition of the liberalization of their telecommunications sectors. The former led this effort by opening its long-distance market and introducing competition in the 1970s and with the implement of the Telecommunications Act of 1996 which forced opening the market for local and intrastate telecommunications[152]. Since the 1980s thereafter, European telecommunications had experienced a profound wave of liberalization, encouraging the promotion of competition rather than maintaining natural monopolies in the industry. Especially on January 1, 1998, for the latter, the European Union ordered all Member States to begin opening telecommunications markets to competition[153]. Generally speaking, the United States used a light touch regulation method, mainly promoting the public interest. By contrast the European Union adopted a complicated set of directives[154], promoting both public-interest and the competition in integration market.

3.1. Telecommunications Policy Reform in the United States

The reform of the telecommunications market is first initiated in the United States. What's more, the United States is constantly a unavoidable case to study telecom policy. During the implementation of competition law as long as a century time, the United States has been taking competition as a national policy objective. Additionally, as the conservatory of technological convergence and development, the United Stated is under high pressure to apply liberal regulatory policies in order to protect the innovation. However, another feature of

[152] Crandall, Robert W., and Thomas W. Hazlett. "Telecommunications policy reform in the United States and Canada." *AEI-Brookings Joint Center Working Paper No. 00-09* (2000). pp. 1-2

[153] Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets.

[154] Commission Directive 88/301/EEC of 16 May 1988 on competition in the markets in telecommunications terminal equipment; Council Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC); Commission Directive 94/46/EC of 13 October 1994 amending Directive 88/301/EEC and Directive 90/388/EEC in particular with regard to satellite communications; Commission Directive 95/51/EC of 18 October 1995 amending Directive 90/388/EEC with regard to the abolition of the restrictions on the use of cable television networks for the provision of already liberalized telecommunications services; Commission Directive 96/2/EC of 16 January 1996 amending Directive 90/388/EEC with regard to mobile and personal communications and Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets.

the US telecommunications industry has to be mentioned, which is, unlike most other countries, it has never been nationalized.

3.1.1. The formation of the dominance of AT&T

From 1876 to 1893, during this 17 years, American Telephone and Telegraph Co. (AT&T) had been dominance in the telecommunications industry technology development, because of the technological patents it held[155]. After the original patents had expired, numerous independent operators began to emerge, which served in many larger cities[156]. What' more at that time, there was no particular industrial controls. Many regulator policies were implemented by local administrative body.

In 1899, AT&T reorganized and set up the parent company of the vertically integrated Bell System, providing both local exchange service and long distance service[157]. While in the same year, amounts of small independent firms endeavored to establish a rival long-line-network but failed for lack of capital. Once Bell System had been built up, it began the movements of acquisition of fragmented telecom companies.

In the year of 1910, the Congress approved the Mann-Elkins Act, giving the Interstate Commerce Commission regulatory control of telegraph and telephone services[158]. However, such regulation got little success. Bell system exercised a domineering strategy, refusing to provide interconnection and equipments to other telegraph and telephone companies.

In 1913, forced by the pressure of antitrust enforcement, AT&T agreed to expand its aggressive program. It started to interconnect with independents and to achieve approval from the federal Department of Justice before buying further com-

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[155] Martin I. Hamburg and Stuart N. Brotman, *Communications Law and Practice* (New York: Law Journal Seminars- Press, 1995), p.1-22.

[156] *Ibid.*

[157] *Ibid*. p.1-23

[158] *Ibid*.

petitors. However, this compromise contained an exception that AT&T could not consolidate any independent unless under the purpose of the protection of public service. AT&T utilized this exception, proceeding to is expansion.

From another point of view, AT&T's dominance was supported by most regulators and mainstream economists with the thought of regulated monopoly. They believed that monopolies in such industry would bring the increase in products quality and meanwhile decrease the cost[159]. Such paradigm was confirmed by the Communications Act of 1934, which also created the Federal Communications Commission (FCC). By year of 1934, AT&T's dominant position had been firmly established, with its phone companies generating 94.3% of all local exchange calls[160].

3.1.2. The collapse of Bell's telecommunications empire

In 1969, the FCC approved the application of Microwave Communications Incorporated (MCI), to offer private microwave line service between Chicago and St. Louis[161]. After that, MCI started to confront with AT&T in long distance services. In the meantime, the FCC received numerous application to engage similar business.

In 1974, the United States Department of Justice accuse AT&T, alleging that AT&T engaged in anti-competitive behavior by abusing its dominance over local telephone networks, which restricted competition in long distance offering services. After many pre-trial motions, the case went to trial in 1978 and then was settled in 1982[162]. For several years, the suit languished and the out-of-court agreement reached between AT&T and the Department of Justice, which restructured the United Stated telecommunications market. To end AT&T's conduct of abusing dominance over local networks as a method to gain market shares in long distance services, the

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[159] Martin I. Hamburg and Stuart N. Brotman, *Communications Law and Practice* (New York: Law Journal Seminars- Press, 1995). p.1-25

[160] *Ibid.*

[161] *Ibid*. p.1-27.

[162] Alden, John. "Competition policy in telecommunications: the case of the United States of America." *ITU Workshop On Competition Policy In Telecommunications. Geneva*. 2002. p.4

Government required the business giant to divest its local telephone services, which were provided by the regional Bell operating companies (BOCs). These divested companies were later re-integrated into seven regional companies in different parts of the country[163].

The divestiture of AT&T boosts the competition in long distance services, however, local telephone services were still firmly controlled by the BOCs[164]. The main reason is that state regulatory commissions regulated this field, in which the FCC was limited lacking of authorizing by the Communications Act of 1934.

3.1.3. The Telecommunications Act of 1996

Although the regulators had already initiated to preclude the legal and regulatory restrictions existing in state law from local service competition, concerning the confusion that may arise by State regulators, telecommunications industry pressured Congress to accept national legislation.

The enactment of the Telecommunications Act of 1996 ("Telecom Act") forced-opening the market for local and intrastate telecommunications, establishing a national regulation to encourage competition in telecom industry. As result, Telecomm Act brought dual benefits. All telecommunications markets were liberated to competition, and incumbent local companies were forced to interconnect with competitors by opening the network facilities or unbundled access to the entrants at proper price and conditions without discrimination. In addition, The Telecom Act kept disallowing the BOCs to offer long distance services, at least at the beginning. However, BOCs could be granted permission from that prohibition, only if they could prove they had taken all feasible methods to open the local service markets to competitors.

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[163] Alden, John. "Competition policy in telecommunications: the case of the United States of America." *ITU Workshop On Competition Policy In Telecommunications. Geneva*. 2002. p.4.

[164] *Ibid.*

3.2. The Liberalization of European Telecommunications

Telecommunications industry as an important industry has been a proud field in Europe. Historically, in the area of telecommunications equipments and services, even in technology standards, the impact of the European telecommunications industry is very extensive. With worldwide perspective, in telecommunications companies worldwide annual revenue rankings (2014), European companies occupy four seats in the top ten operators[165].

The EU telecommunications industry had been seen as a natural monopoly industry, which was be regulated as a public utility by property control, before 1980[166]. Either the State or privately owned monopolies occupied and controlled the market. A dramatic shift in public policy happened in the 1980s. Driven by the global economy under the technological revolution, the EU decided to implement a thorough reform of the European telecommunications industry. In general, the EU's telecommunications reform has passed through four stages, which were all approved by the specific directives.

3.2.1. Green Paper: From public monopolies to competitive markets

Symbolized with the implement of Green paper[167], from the year 1987 to 1993, the EU started to break the telecommunications monopoly, and to separate the management and operation of the telecommunications industry, but reserving the monopolies to voice telephony services and network infrastructure. Starting from the late 1970s, the rationality of the monopoly model was challenged by people from all walks, the economists, policy makers and consumers, even the industrialists[168].

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[165] Global 100, Business analysis for telecoms profession, October, 2014. p.16

[166] Lazer, David, and Viktor Mayer-Schonberger. "Governing networks: telecommunication deregulation in Europe and the United States." *Brook. J. Int'l L.* 27 (2001): 819. p.821.

[167] Towards a dynamic European economy - Green Paper on the development of the common market for telecommunications services and equipment, COM(87)290final (30 June 1987).

[168] Geradin, Damien. "Twenty years of liberalization of network industries in the European Union: Where do we go now?." *Available at SSRN 946796* (2006). p.2.

Economists firstly started to argue that, as be mentioned in Section 2 of Chapter I, not all the parts of the network industry have monopoly features[169]. Secondly, because of the poor performance and the high price, consumers and industries organizations started to complain. For consumers, the absence of competition reduced enthusiasm of public monopolies to choose consumer-friendly policies and supply advanced products and services[170]. What's more, the experiences of liberalization in the United States influenced European Government that the liberalization was feasible and was able to provide economic benefits.

In the year of 1987, the European Commission published a Green Paper on the development of the common market for telecommunications services and equipment, leading to the adoption of proposition for directives liberalizing the several network industries. Its main contents include: first, clearly defined boundaries of monopoly and competition in the network infrastructures, narrowing the scope of the monopoly to voice telephony services, and liberating other services; second, clarify the requirements for entrants, in order to introduce competition; open the market of the terminal equipment; implement the separation between government and enterprises in telecommunication industry; increase the scrutiny to cross-subsidization of the leading carriers; establish the European Telecommunications Standards Institute; unify the EU telecommunications technology and service standards to ensure mutual access, etc.

In 1988, Member States started to liberalize telecommunications terminal equipment market, followed by partial liberalization of telecommunications services market. Until the year of 1993, on the occasion of the rise of global information technology, the competition of telecommunications value-added services and data transmission has been taken place in the most of Member States. Taking the natural monopoly characteristics of the fixed network business into account, and ensuring

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[169] Baumol, William J. "Contestable markets: an uprising in the theory of industry structure." *Microtheory: applications and origins* (1986): 40-54.

[170] Geradin, Damien. "Twenty years of liberalization of network industries in the European Union: Where do we go now?." *Available at SSRN 946796* (2006). p.3.

universal service for voice telephony services, the government permits the network infrastructures be controlled by the incumbent, but its behaviors must strictly follow the anti-monopoly law, should not abuse its monopoly position or subside for competitive business.

3.2.2. Europe's way to the Information Society: Liberalization of mobile communications

In the second phase, since 1994 to 1998, EC had modified the Terminal Equipment Directive [171] and the Services Directive [172] to adapt to the satellite, cable, and mobile communications, which expanded the degree of liberalization of the telecommunications market, promoting the competition between different telecommunications services [173]. As the continuous development and improvement of satellite and mobile communications technologies in the US, the EC was stepping up the development of their information technology strategy, while further advanced telecommunications reform.

December 1993, the European Commission published "White Paper on Growth, Competitiveness and Employment"[174]. The Information Society became a key policy area in the EU for the Commission[175]. Following up this document, in June 1994, "Bangemann Report"[176] was submitted by the communications, computing and broadcasting companies to the European Commission, suggesting a general framework for the future European Information highway construction. On this basis,

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[171] Commission Directive 88/301/EEC of 16 May 1988 on competition in the markets in telecommunications terminal equipment.

[172] Commission Directive 90/388/EEC of 28 June 1990 on competition in the markets for telecommunications services.

[173] Commission Directive 94/46/EC of 13 October 1994 amending Directive 88/301/EEC and Directive 90/388/EEC in particular with regard to satellite communications.

[174] Delors, J. "White Paper on Growth, Competitiveness and Employment." *COMMISSION OF THE EUROPEAN COMMUNITIES* (1993).

[175] Shahin, Jamal, and Matthias Finger. "The history of a European information society: Shifts from governments to governance." *Global E-Governance Series* (2009): 62-83.

[176] Report on Europe and the Global Information Society: Recommendations of the High-level Group on the Information Society to the Corfu European Council. Bulletin of the European Union, Supplement No. 2/94.

the European Parliament in July 1994 approved an action plan "Europe's way to the Information Society", putting forward ten application projects including network telecommunications, cables, and satellite.

In the year of 1995, one of the most important initiatives taken by the EU was to achieve the liberalization of mobile communications[177]. This policy required that from January 1, 1996, abolishing all restrictions on mobile communications, implementing the approach of license management, and combining the cordless technology, digital communications and fixed communications to provide a full range of personal communications services.

3.2.3. Agreement on Basic Telecommunications: Fully open the EU telecommunications market

"Agreement on Basic Telecommunications" (short for Agreement) of WTO, which is an annex to the Fourth Protocol to the General Agreement on Trade and Services, was implemented on February 5, 1998. Telecommunications market was further liberated to equipment suppliers, vendors, and service providers by the Agreement, which ensured that all service suppliers will enjoys networks access without discrimination and the use of public basic telecommunications networks and services [178].

Besides the United States, European Union, and other developed countries, many developing countries, such as India, Pakistan, South Korea and Malaysia also participate in the Agreement. They agreed to (1) continue the liberalization and privatization of their national telecommunications networks; (2) open the previously closed, national networks to foreign investment and operator; (3) publish the regulations by which foreign companies must operate in their countries; (4) simplify their

[177] Commission Directive 95/51/EC of 18 October 1995 amending Directive 90/388/EEC with regard to the abolition of the restrictions on the use of cable television networks for the provision of already liberalized telecommunications services, OJ L 256, 26.10.1995, p.49.

[178] Telecommunications Industry Association, "WTO Agreement on Basic Telecommunications Services", http://www.tiaonline.org/trade/world-trade-organization/wto-agreement-basic-telecommunications-services, 20/01/2016.

import/export, construction, operations, and taxation procedures; and (5) not nationalize systems once they were installed and functional [179].

From January 1, 1998, as one of the pioneers of Agreement, the EU fully liberalized telecommunications [180], including the market for voice telephony and all telecommunications infrastructure. Except that the EU set a two-to-five-year transition period for underdeveloped countries who had small networks, such as Spain, Ireland, Greece and Portugal, all the Member States must open the telecommunications market to other EU partners.

Moreover, according to requirements of the agreement, the EU must open its telecommunications market to WTO members who would have the same right to compete with the EU telecommunications company and be provided a full range of essential telecommunications services. January 1st, 1998, in majority of Member States, non-EU carriers were allowed to own 100% of the shares.

At the same time, the European Commission also made provision for universal service: any resident should enjoy certain telecommunications services wherever he or she was, and the price of public services should be affordable. Dominant companies were obliged to provide services to remote regions, and the fund would be raised by the States or jointly by the accessing network operators. At the time of market failure, telecommunication regulators had the right to intervene to ensure the services to remote areas.

3.2.4. Directives after the Agreement: the Further Reform

The further reform started in 1999 following up with a series of directives as the fourth stage of liberalization of the EU telecommunications market. In October

[179] Black, Sharon K. Telecommunications law in the Internet age. Morgan Kaufmann, 2001. p.5

[180] Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets.

1999, Member States were required to implement four new framework directives[181], further promoting the reform of telecommunications regulation. In March, the EC issued a document "The Convergence of Telecommunications, Media and Information Television Sectors and Implications for Regulation"[182], where the principle of convergence[183] had been established.

On 7 March 2002, the European Parliament and the Council of Ministers adopted the new regulatory framework for electronic communications, consisting of four Directives and one Decision. They were respectively Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive); Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive); No.21, "Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive); Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive) and Decision No 676/2002/EC of the Eu-

[181] This framework contains the Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive); Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive), Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive which is based on the current Interconnection Directive and the TV Standards Directive), Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications). See Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions of 10 November 1999. Towards a new framework for Electronic Communications infrastructure and associated services - The 1999 Communications Review [COM(1999) 539 final, 10.11.1999 - Not published in the Official Journal].

[182] The Convergence of the Telecommunications, Media and Information Technology Sectors, and the Implications for Regulation. Results of the Public Consultation on the Green Paper [COM (97) 623]. COM (99) 108 final, 9 March 1999.

[183] This principle can be expressed as "the convergence of technological platforms and network infrastructures was already a reality, and that similar regulatory conditions should therefore apply to all such infrastructures, irrespective of the types of services carried over them." See *ibid*. p.2

ropean Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision).

On February 11, 2003, the EU announced the final part of the telecommunications regulatory framework, reaffirming the spirit of the Directives released in March 2002 and highlighting the promotion of competition and the neutrality of technology and regulation [184]. And at the end of 2007, the Commission passed a telecommunications reform package[185]. In one of directives, the perspective of deregulation was expressed as follows, "The aim is progressively to reduce ex-ante sector specific rules as competition in the markets develops and, ultimately, for electronic communications to be governed by competition law only"[186].

3.2.5. Digital Single Market Strategy: A truly integrated telecom market

Digital Single Market Strategy of is a long-awaited program, which endured twists and turns, but has eventually been finalized. On 11 September 2013, European Commission Vice President and Commissioner for "Digital Agenda", Neelie Kroes announced the most radical reform program since 26 years in the telecommunications industry, "Connected Continent: Building a Telecoms Single Market" [187] aimed at building a connected, competitive continent and enabling sustainable digital jobs and industries. After that, Jean-Claude Juncker, the President of the European Commission in October 2014 promised "ambitious legislative steps towards a connected

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[184] Commission Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, Official Journal of the European Communities, L 114, (2003/311/EC), May 8, 2003.

[185] Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (notified under document number C(2007) 5406) (Text with EEA relevance), OJ L 344, 28.12.2007, p. 65–69.

[186] See Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services.

[187] Connected Continent legislative package, 19/03/2015, See https://ec.europa.eu/digital-agenda/en/connected-continent-legislative-package, 20/01/ 2016.

digital single market"[188]. The Commission started to put this aim into practice by publishing its Digital Single Market Strategy[189] on 6 May 2015.

European Commission *ex* President Jose Manuel Barroso, referring to the change program, said[190]:

> *"We need a thriving digital sector to drive all other parts of our economy, and the internal market for telecoms has to be at the heart of this problem. We must urgently address the underlying shortcomings and create the right environment for investment. There is now a major reform package for the telecoms sector on the table. Let us all make maximum progress on this file by the end of this legislature."*

According to European Added Value Unit of European Parliamentary Research Service has provisionally estimated the potential GDP gain from completion of the digital single market more broadly at 340 billion euros or 2.6 percent of GDP per year[191]. The goal of the strategy is to build up a more integrated market where the free movement of goods, persons, services and capital is guaranteed and where individuals and companies can seamlessly enter[192].

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[188] Juncker, Jean-Claude. "A new start for Europe: My agenda for jobs, growth, fairness and democratic change." *European Commission document, July* 15 (2014).

[189] COM(2015) 192 final, A Digital Single Market Strategy for Europe.

[190] Speech by President Barroso at the European Parliament plenary debate on the European Council, 24-25 October 2013.

[191] Joseph Dunne,, EPRS, Mapping the Cost of Non-Europe, second edition, July 2014

[192] A Digital Single Market Strategy for Europe, Brussels, 6.5.2015 COM(2015) 192 final.

4. The Special Case of China

Telecommunications service is a highly regulated network industry in numerous countries. Although in electronic communications market, the participators are historical State-owned monopoly, many countries or regions have launched liberalization to promote competition there. Around the world, telecom reforms are widely successful as the result. This tendency has also led the reform of Chinese telecommunications. China's telecom liberalization has gained significant success and attracted considerable investment and telecommunications users in short period of time. However, in regulatory framework there are also stubborn problems obstructing the development and innovation in given market. Therefore this section can be divided into two parts. The first part will introduce the current status of Chinese telecom market, discussing its the features rather than its predicament. The second part will gives a glance on the transmutation of regulatory agency. The both parts of this section will provide factual materials for a further discussion in Chapter IV.

4.1. Current Situation of Chinese Telecommunications Market

Generally speaking, in the telecommunications industry, market competition is the most important part which improves service, price, quality, investments, and innovation. An independent regulator and privatization of the operators also have a significant effect. What's more, to promote the competition, it is necessary to implement vertical separation on the State-owned monopoly's functions of generation, transmission and distribution.

In China, telecom network facilities are all owned by the three large State-owned operators: China Telecom, China Mobile, and China Unicom. Private, non-State-owned companies have no right to possess the network facilities, but to utilize them to provide several services, such as Internet access, operation of mobile virtual network, and Internet applications. At last, universal access to telecom services is national wide. Regarding the reform of the telecommunications market, China's approaches have the following characteristics.

4.1.1. Preliminary privatization

In the process of privatization, Chinese fixed broadband retail service is the pioneer. The key reason is that the Internet access service is classified as value-added services which are under relatively light control. Therefore, fixed broadband retail business sector has the opportunity to become the most competitive part of Chinese telecommunications market. Moreover, in 2014, the MIIT issued a notice to the broadband access market to private investment which accelerates broadband competition[193].

In comparison, the privatization of the mobile telephone service started with the publishing of "Notice on Mobile Resale Business Experimental Program"[194] in 2013. As a result, retailers can provide communication services like mobile phone service operators, but can not own infrastructure. It is one of the biggest differences between Chinese telecommunications market and the EU telecommunications market.

However, there is no privatization taking place in Chinese basic telecommunications service. In China, all network facilities are firmly controlled by three State-owned operators, namely China Telecommunications Corporation (China Telecom) and China United Network Communications Group (China Unicom) and China Mobile Communications Corporation (China Mobile). Private operators are only allowed to provide part of the basic services and value-added services, mainly Internet access service.

While China's multi-pronged approach to introducing competition is not an unusual approach to telecom market reform, retaining State-ownership of all the main service providers is unique[195]. There are only three State-owned operators which regulated by a regulator named the Ministry of Industry and Information

[193] Notice on Opening Broadband Access Market to Private Investment, 2014, MIIT

[194] Notice on Mobile Resale Business Experimental Program, 2013, MIIT

[195] Wu, Irene S. "Electricity and Telecom Regulations: China in Context." (2015). p.4.

Technology (MIIT), which was restructured from the Ministry of Information and Industry (MII) in 2008 [196], and initially was the Ministry of Posts and Telecommunications (MPT) before 1998 [197].

4.1.2. Highly regulated

Telecommunication Regulations enacted in 2000, in which there are two main chapters interrelating with market competition, which focus on market access and regulatory obligations. Market entry regulation has been established at two levels, based on service and based on geography. Concerning services, the Ministry of Industry and Information Technology (MIIT) strictly controls the license of telecommunications infrastructures and satellite facilities[198]. So far these services are only granted to the three main state-owned operators. Regarding geography, the province operating licenses are issued by the provincial telecommunications management sector; and interprovincial services need the by the authorization of the MIIT[199]. Until the end of 2014, more than 2000 licenses had been issued by the MIIT[200]. However, most of these licenses can only provide value-added telecom services.

The regulatory approach in Telecom Regulation is asymmetric, giving the dominant operators[201] heavier obligations on accessing, interconnection, information transparency, anti-discrimination and price control. Specifically, the Telecom Regulation requires the quality of access service provided by dominant operators must not be less than that sold to their retail branch or affiliate. What's more, Chinese Telecom

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[196] Chinese National People's Congress, "Decision of the First Session of the Eleventh National People's Congress on the Plan for Restructuring the State Council", 2008.03.15. (in Chinese)

[197] Chinese National People's Congress, "Plan for Restructuring the State Council (1998)" 1998.03.10. (in Chinese)

[198] Telecom Regulation, 2000, State Council of China, Article 11.

[199] *ibid*, Article 14.

[200] The list of basic telecommunications business and trans-regional value-added telecommunications enterprises engaged in telecommunications services approved by the Ministry Industry and Information Technology, 2014, MIIT.

[201] The dominant operators in the Telecom regulation are defined as, who (i) control indispensable basic telecom facilities, (ii) hold more than 50% market shares on the relevant market, and (iii) are able to significantly affect market entry of competitors.

Regulation authorized the regulator, the MIIT, the power of price controls. Retail price is now completely deregulated, but wholesale prices were still regulated[202].

Overall, Chinese competitive telecommunications environment is shaped intentionally by the MIIT using the administrative power. The current market structure is formed after the split of China Telecom. The first division made divestiture which reorganized the mobile service to China Mobile; the second split geographically divided fixed telephone service into North (China Unicom) and South (China Telecom). And this market structure is strict control, only the above-mentioned 6% of the market share dominated by private enterprise. Amount of anti-competition issues, such as tying, margin squeeze, refuses to supply, which should be adjusted by competition law, under the circumstances of Chinese telecom industry, can only be dealt with by administrative power.

4.1.3. Convergence

Convergence in China is also known as "Triple play", which means broadband Internet-based over telecom and cable television infrastructures. There are three main commercial backbone networks in China, respectively China Mobile, China Telecom, and China Unicom. Also, there are several educational and research network backbone providers who are run by Government ministries. At the retail level, there are several Internet service providers, most of them are private. The retail Internet service providers, however, in order to connect to the Internet, have to rely on the three backbone providers, who are also the competitors [203].

For cable television operators to offer broadband Internet service, they must have a digital network. Initially, Chinese central Government pursued a market-led strategy for the digitalization of cable in the year of 2005 [204]. However, home users

[202] Telecom Regulation, 2000, State Council of China, Article 25.

[203] Hu, Henry: The Political Economy of Governing ISP's in China: Perspectives on Net Neutrality and Vertical Integration, 2011, *China Quarterly*. pp. 523-540.

[204] Yan, Zhou. "The positioning and current situation of China's digital TV." *International Journal of Digital Television* 1.1 (2010): 95-104.

were reluctant to pay for the set top boxes and the Government failed to hit the original the target. For this reason that the Government launched a support program to cable operators to purchase set-top boxes which would be given free to households. Cable companies were pushed to invest in digitalizing the network with a risk that they might otherwise lose their incumbent status. 100 cities in China have finished their digital transition since this program launched [205].

4.2. Chinese Telecommunications Regulatory Reform

There is no doubt that an independent regulator in telecommunications market will be the optimal choice for resolving the serious conflict between regulation and competition. In China, the regulator was separated from telecommunications companies but not independent with the State Council as a higher administrative department. Different authorities are responsible for telecommunications under the coordination of State Council.

4.2.1. ***Separating regulator from operator***

Since 1949, the MPT provide all public domestic and international telecom services, mostly through nearly thirty provincial posts and telecommunications administrations, which coordinated the approximately 350 municipal Post and Telecommunications (P&T) enterprises [206]. In the year of 1998, the MPT was divided into two parts according to functions [207]. The one supervising post services was restructured into State Post Bureau. The part regulating telecommunications was combined with the Ministry of Electronics Industry to the MII. As a regulator, the MII would not participate in the operation of the telecommunications industry.

The creation of MII by combining the two ministries which controlled operators was designed to make regulation even more imperious. In the year of 2008, MII

[205] Yan, Zhou. "The positioning and current situation of China's digital TV." *International Journal of Digital Television* 1.1 (2010): 95-104. p.100.

[206] Wu, Yanrui. Growing Through Deregulation: A Study of China's Telecommunications Industry. Department of Economics, University of Western Australia, 2001.

[207] Chinese National People's Congress, “Plan for Restructuring the State Council (1998)” 1998.03.10. (in Chinese).

was reorganized to become a part of the MIIT, which was established according to the "Decision of the First Session of the Eleventh National People's Congress on the Plan for Restructuring the State Council."

4.2.2. State Council

During the 1990's and 2000's, several of telecommunications market reforms in were all implemented by the State Council. On one hand, since all telecommunications operators in China were State-owned undertakings backed by several government agencies, a single ministry such as MIIT may not have the power for undertaking such reforms. On the other hand, the market changes in telecom were not the responsibility of the regulator, whose suggestions were weak.

State Council Leading Groups execute the leadership. The existence of such groups somewhat lessened the importance of those ministries by whom must be guided. For example, in the mid-1990's the State Council Informatization Leading Group Office, played an important role in abolishing MPT and creating MII in 1998. Soon after in the year of 1999, the State Council reestablished a "leading group for national information work". This group played a key advisory role to the State Council leadership in 2002, which decided to split China Telecom into northern and southern companies[208]. In 2014, the Government announced President Xi Jinping lead the new State Council Central Internet Security and Informatization Leading Group. The goal of this group is to coordinate Internet security and promote informatization policy. The creation of the new leading group could be seen as an acknowledgment that the growth of the Internet cannot be left in the hands of the information system, but at least had to be balanced against the need for growth and development.

5. Conclusion

In the telecommunications sector, policy development direction of China is significantly different with that of Europe and the United States. Chinese telecom industry started late and

[208] Wu, Irene. From iron fist to invisible hand: The uneven path of telecommunications reform in China. Stanford University Press, 2008. p.56.

had been under the control of the State. Chinese telecommunications institutional and regulatory reforms happened under the environment of China's social transformation and telecommunications market liberalization. However, in the process of reform, because of the lack of coordination in institutional development, numerous problems were inevitable.

First of all, the lag in telecommunications regulatory. The Chinese telecommunications market and regulatory reform took place under the rapid development of mobile communications and the Internet. The traditional business has been replaced with a new business. Separate operation mode however still exist in the telecommunications market, which gradually lag behind the trend toward integration of technologies and markets. There is a severe imbalance in the price field. With the liberalization of the telecommunications market, the original price controls system exist in name only. But the lack of a clear market-oriented price policy, the price system still followed the monopoly era of cross-subsidization and asymmetric regulation.

Secondly, the opaque of the regulatory mechanisms. The game between the Chinese operators and regulatory agencies lack transparency, particularly in the three following aspects. First, because of the above historical reasons, the behaviors of the telecommunications market participants are bureaucratic. Second, because telecommunications legislation system has not been incomplete, the interaction between operators and regulatory agencies even at the institutional level is a lack of normative foundation. Because of the lack of legal basis for regulatory agencies to make decisions, the only source of power is basically from the administrative agency, which causes an intense policy uncertainty. Third, the rights and obligations of regulators and the regulated undertakings are unequal. Since the independence of regulators is poor, almost all the regulations are promoted through administrative power. In this situation, operators are always in a relatively passive position.

Third, the issues of ownership. It can be found from the EU's reform experience that besides breaking the monopoly, introducing competition and strengthening the independence of regulatory agencies, there is another important sector needed to be improved, which is to transform the ownership structure of the leading telecom operators. Both ownership structure and restraint mechanisms are the primary conditions for the establishment of regulatory sys-

tem and the implementation of independent regulation. Although the separation of Government and enterprises played a significant role in the telecommunications reform, the domestic major telecom operators are State-owned enterprises. Under such ownership structure, the Government as the owner of State assets can make full use of its assets and administration power to regulate the operators, which would conflict with the independent development of the regulatory system.

CHAPTER III

INTRODUCE AND STRENGTHEN: THE APPLICATION OF COMPETITION RULES IN EUROPEAN TELECOMMUNICATIONS SECTOR

As discussed in last chapter, the EU telecommunications sector has been liberalized and applied the competition rules since the publications of the *Guidelines on the Application of EEC Competition Rules in the Telecommunications Sector*[209] in the year of 1991 and the *Notice on the Applications of the Competition Rules to Access Agreements in the Telecommunications Sector*[210] in 1998. In this part, we will further analyze the specific application of the EU competition rules in telecommunications industry, which can provide an accurate instance for expounding how competition law is introduced and strengthen in regulated market.

Generally, the EU competition laws refer to legislation, regulations and the judgments of the court that relate to agreements or concerted practices between undertakings that limit competition; to abuse of dominance by undertakings; to the Member States offering State aids; or to firms merging in the Merger Regulation. Compared with in other countries or regions, the competition laws in EU has two obvious features. Firstly, the source of law is different. The EU competition law is mainly contained in a Treaty, but in other countries the rules are found in the statutes. Therefore, as a part of the Treaty, the EU competition rules have not only its own purpose to enhance the competition in market, but also serve to the object of the internal market interacting with other rules. Secondly, the EU competition law is supranational. The rules can not only be applied to public and private undertakings, but also to the Member States. Under this context, the application of competition in telecommunications sector has particular characteristics, which we will discussed in Section 2, clarifying the basic concepts, and in Section 3, introducing the implementation of specific provisions of the EU competition laws.

From the broader point of view, the EU competition laws are included in competition policy, which means "a set of measures and instruments used by governments that determine the overall conditions of competition that are likely to be met in specific markets"[211]. In fact, the introduction of competition in the telecommunications sector is not confined to the com-

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[209] Guidelines on the application of EEC competition rules in the telecommunications sector (1991/C 233/02), OJ C 233, 6.9.1991, p. 2–26.

[210] Notice on the application of the competition rules to access agreements in the telecommunications sector - framework, relevant markets and principles, OJ C 265, 22.8.1998, p. 2–28.

[211] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p. 107

petition law itself. Regulations and the whole competition policy system also play a vital role in promoting market competition. However, to avoid confusion and duplication, we are going to introduce such legal frameworks only in the following section, and then focus on the EU competition laws in the narrow dimension.

1. Legal Frameworks for the Telecommunications Sector

Essentially, the regulation of telecommunications sector in the EU comes from three sources: national sector-specific regulations, which enacted in significant part by implementation of EU Directives, EU regulations and competition law, including national one and EU competition law. Each one has its own procedural and institutional framework. All three sources apply to the same target group, the service providers in the telecommunications, which may occupy dominant positions or have significant market power. From the perspective of the intervention, these three sources can be divided into two levels: (1) *ex-ante* intervention, which are supported by the EU Telecommunications Regulatory Framework to prevent anti-competitive behaviors and Merger Regulation[212] and national laws that apply to mergers, controlling the market structure; and (2) *ex-post* intervention composed by Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU) and national competition law, to deal with competition issues.

In perspective of rules application, although these frameworks are not in the same level, they can be coordinated to prevent companies of telecoms from behaving anti-competitively. In order to ensure uniform application of European Union Law, Member States are entrusted with the implementation and application of the EU law in the telecommunications sector. Therefore, the discussion of the EU telecommunications legal system can just expand from regulation and competition law at both levels.

1.1. EU Telecommunications Regulatory Framework

The EU regulatory framework of networks and services is fundamental for all the EU Member States to design their national telecommunications laws. One of the main objectives of the regulatory framework is “to align the sectoral regulation of the telecommunications

[212] Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation) (Text with EEA relevance) , OJ L 24, 29.1.2004, p. 1–22

market with general competition principles"[213]. Therefore, the regulatory framework makes boundary that *ex ante* regulation should be applied only when competition is ineffectual.

In 2002, the EU applied the New Regulatory Framework[214] (NRF) in telecommunications, which was introduced to govern the process of liberalization and deregulation across the EU and required National Regulatory Authorities (NRAs) enforce an assessment of market power identified by the European Commission[215]. For possible *ex-ante* regulation, NRAs mainly adopt the following three criteria: (1) the market that has high and non-temporary barriers entrants[216]; (2) there is little possibility of the emergence of effective competition; and (3) the market failure that cannot be fixed by competition law.

Starting with the consistent competition law principles and the list of recommended markets mentioned above, NRAs must identify those markets within their Member State in which competition is ineffective[217]. This requirement involves to determine which undertakings have Significant Market Power (SMP), including both single firm and collective dominance. Then proportionate *ex-ante* regulatory remedies must be introduced into those markets[218].

In 2007, the EU proposed an amount of reforms to the NRF, which had been amended in 2009. These changes include: (1) limiting the ex-ante regulation only to those markets where competition is still ineffective; (2) enhancing the ability of NRAs to use the necessary methods where competition is not adequate; (3) establishing a new coordinating body called

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[213] Olswang, L. L. p. "An Overview of the EU Regulatory Framework." in Global Legal Group (2009), The International Comparative Legal Guide to: Telecommunication Laws and Regulations 2010, Chapter I.

[214] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services.

[215] See the Commission Recommendation on relevant markets 2007/879/EC of 17 December 2007.

[216] Entry barriers will be discussed in Section 2.2.2. of this Chapter.

[217] See the Commission's Guidelines on market analysis 2002/C 165/03.

[218] The list of permissible remedies is set out in the Access Directive and the Universal Service Directive. These are transparency, non-discrimination, separate accounting, mandatory access at a reasonable price, and include obligations of cost-oriented pricing.

the "the Body of European Regulators for Electronic Communications"(BEREC)[219] which would be able to provide consultations to the EC and to help to NRAs in accordance with NRF; (4) strengthening the independence and enforcement powers of national regulators; (5) further enhancing consumer protection and user rights; and (6) improving the security and integrity of Europe's communication networks.

1.2. The Sources of EU Competition Law

EU competition law has its specific set of sources that governs the market behaviors of undertakings and encourages the competition across a common integrate EU market. It focuses on particular agreements and concerted practices which restrict market competition, the conduct which abuse the dominant position, mergers control of proposed mergers, acquisitions and joint ventures and States aids which are given by Member States of the European Union to companies.

The main provisions of EU competition law for undertakings are found in Articles 101 (1) and (2) TFEU prohibiting restrictive agreements and concerted practices, Articles 102 TFEU prohibiting abuse of dominant position, Article 106 TFEU regarding undertakings with exclusive rights, and the Merger Regulations. For Member States, Article 107 TFEU lays down a general rule that the State may not aid or subsidize private parties in distortion of free competition.

Besides the basic provisions and the procedural rules, there are also plenty of individual decisions in particular cases, which is another important source of EU competition law. These regulatory documents consist of decisions taken by the Commission, judgments involving competition matters made by the European Court of Justice and General Court, as well as decisions taken by national courts or national competition authorities[220]. They can be seemed as the EU's case law of Competition.

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[219] Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009 establishing the Body of European Regulators for Electronic Communications (BEREC) and the Office.";

[220] Larouche, Pierre. Competition law and regulation in European telecommunications. Hart Publishing, 2000. p. 113.

1.3. The Relationship Between the Competition Law and Regulation

The pivotal difference between the two frameworks is the periods of applications. Competition law is applied after certain abusive behaviors, except mergers and acquisitions which calls for *ex-ante* analysis. Competition authorities intervene only when the competition of market is distorted or restricted. In contrast, sector specific regulations are applied before any concrete evidence of harmful activities.

The reason that *ex-ante* regulation exists is to formulate a structural system to prevent market failures[221]. Meanwhile, competition law as *ex-post* regulation exists to deal with anti-competitive behavior happened. In this case, the prohibition only relates to the abuse of the dominant position, but not the state of holding such position. Therefore, sectoral regulations are applied first, and then universal competition law, except merger control, is considered as a second step. Competition law might be used to block the crack of the NRF, "as a instrument of interpretation or even possibly to function as an alternative when there is not adequate support for a case under the NRF"[222].

Furthermore, the NRF and its economic rules, markedly, are oriented towards competition law standards[223]. The main domain where the two kinds of regulation interact are in the concepts of SMP, market definition, and access to essential facilities, which will be discussed in next section. Quote a reference to the use of EU competition law in relation to regulated industries: "In applying the general enforcement principles set out in this document, the Commission will take into account the specific facts and circumstances of each case. For example, in cases involving regulated markets, the Commission will take into account the specific regulatory environment in conducting its assessment. The Commission may, therefore, adapt the approach set out below to the extent that this would appear to be reasonable and appropriate in a given case"[224].

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[221] Dunne, Niamh. Competition Law and Economic Regulation. Cambridge University Press, 2015. p.43.

[222] Broumas, Antonios G. "The Necessity of Sector Specific Regulation in Electronic Communications Law." *Journal of International Commercial Law and Technology* 4.3 (2009). p.180

[223] *Ibid*.

[224] Article 8, Guidance on the Commission's Enforcement Priorities in Applying Article 82 EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings, 3 December 2008.

2. Basic Elements of Competition Law in Telecommunications Sector

2.1. Market definition

The definition of markets is crucial to the application of competition policy and law in specific sectors. It is not just a concept existing in the text abstractly, but rather a starting point to judge whether a company holds a dominant market position. An Enterprise can only enjoy the dominant position when it supply particular products or services in a certain market[225]. Although the telecommunications industry had showed stable characteristics possessed by mature markets since 70's, with the development of new information and communication technologies, the electronic communications industry appears more constant instability. In this regard, the new European Union telecommunications regulatory framework appears more elastic than those of countries such as the US, where "traditionally different services, such as fixed, wireless mobile and cable services are regulated separately under various parts of the US Communications Act"[226]. There are three main indexes for the European Commission and the Courts to determine the relevant market, respectively demand substitutability, supply substitutability, and potential competition[227].

2.1.1. Demand Substitutability

Demand substitution is "the most immediate and effective method of the definition of the relevant market in particular to pricing decisions"[228]. If customers of the enterprise or the enterprise group can easily get other alternatives or turn to other local suppliers, the enterprise or the enterprise group can not impact the market significantly on currently conditions such as price. Assessment of demand substitution requires determining the scope of alternative products. And according to the judgments

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[225] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.134

[226] Chairman's Report, International Telecommunications Union, Workshop on Competition Policy in Telecommunications, 20-22 November, 2002. http://www.itu.int/osg/spu/ni/competition/background/chair_report-Nov27%20final.pdf p.2.

[227] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services, 2002/C 165/03, para.38

[228] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.135

in force, the relevant market should consist of all the products or services that are adequately interchangeable or substitutable to consumers, not only depending on their objective characteristics, but also on the circumstance of competition and concerned market [229].

It is one of the ways to determine the product scope that to assume a Small but Significant Non-Transitory Increase in Price, which is well known as SSNIP, then assess the possible reaction of the customer for this price increase. Practically, in the implementation of the definition of market, the price is always staying in the center. More precisely, the attention is paid to the demand substitutability caused by SSNP. This concept can provide a clear indication of evidence defining the relevant market. Conceptually, this approach focuses on specific products or services located in their geographical market. As other products/services and areas will be incorporated into the scope of definition or be excluded, depending on competition from these other products/services and regions whether will affect the price of specific products/services adequately in the short term.

In the considered products and geographic area, assuming a small (in the range of 5%-10%), but lasting price increases, it needs to be observed that whether the customers will turn to substitutes, or turn to other regional suppliers. Since the growth in price will reduce the sales and the quantity of alternative is large enough to make the price increase unprofitable, these options or expanded region should be included in the relevant market.

There are a few specificities that should be considered when the SSNIP test is applied to telecommunications markets. In principle, this test is "relevant only with regard to products or services, the price of which is freely determined with no regula-

[229] ECJ in Case 6/72 *Europemballage and Continental Can v. Commission* [1973] ECR 215, [1973] CMLR 1999, para.32. See also Case 85/76 *Hoffmann La-Roche v. Commission* para.23; Case C-333/94 P *Tetra Pak v. Commission* [1996] ECR I-5951, [1997] 4 CMLR 662, para.13; Case 31/80 L'Oréal [1980] ECR 3775, [1981] 2 CMLR 235, para.25; Case 322/81 *Michelin v. Commission* [1983] ECR 3461, [1985] 1 CMLR 282, para.37; Case C- 62/86 *Akzo Chemie v. Commission* [1991] ECR I-3359, [1993] 5 CMLR 215; Case T-504/93 *Tiercé Ladbroke v. Commission* [1997] ECR II-923, [1997] 5 CMLR 309, para.81; T-65/96 *Kish Glass v. Commission* [2000] ECR II-1885, [2000] 5 CMLR 229, para.62; Case C-475/ 99 *Ambulanz Glöckner v. Landkreis Südwestpfalz* [2001] ECR I-8089, [2002] 4 CMLR 726, para.33.

tion"[230]. The presumption is that prevailing prices are arranged at competitive levels, but in regulated market such as in telecommunications sector, the price is determined under regulation.

However, this objections is not able to be supported, there is no evidence to prove such a price is set at a competition level, further more could be taken as the precondition of the SSNIP test. The objective of setting-price-regulation is not to guarantee the prices are cost-based, but to make sure the implementation of universal service. Therefore, the prices set by telecommunications should not be assumed to be made at a competitive level, nor be applied to the SSNIP test as a starting point.

Especially, it is difficult to use the SSNIP test, which is based on a static picture of the market, into telecommunications and other high-technology industries, which are dynamic by their nature. In telecommunications market, which is filled with high technology products and services, the determination of practicable substitution is sometimes far beyond the ability of non-experts. Additionally, the customers choose high technology products usually based on arcane technical and economic standards, not on their demands, which makes the SSNIP test more complex[231].

2.1.2. Supply Substitutability

If we say demand substitutability pays attention to the characteristics of products or services from the view of buyers, then supply substitutability is another potential substitutability from the supplier's standing point to define the relevant market.

Supply substitution means that all the producers who, if the hypothetical monopolist abuses its power to raise prices, could thrust the market providing new products, balancing the output of the market, and therefore constraining the ability of

[230] European Commission, "Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services", Official Journal C 165, 11/07/2002 p.6-31, para.42

[231] Pleatsikas, Christopher, and David Teece. "The analysis of market definition and market power in the context of rapid innovation." *International Journal of Industrial Organization* 19.5 (2001): 665-693. p.8.

the monopoly to restrain production[232]. In the Commission's guidance, it considers that supplier's side substitutability can be considered as a part of the market definition[233]. The Commission states that where suppliers can switch their line of production or provide the relevant products or services without incurring substantial costs in the market, then the market might be expanded to the products that those suppliers are already providing.

However, only possible supply substitution is not sufficient for market definition[234]. It is difficult to establish a system that can definitely distinguish the suppliers who can certainly switch to provide the relevant products or services. Therefore in practice, supply substitution can be used to inspect the dominance and to analyze the degree of competition in the market, rather than to define the market itself [235].

2.1.3. Potential Competition

There is another competitive constraint on operators' behaviors, namely potential competition. This restriction relates to the probability that companies not presently taking part in the relevant market might determine to enter following the prices increase. Potential competition and supply substitution are both standing the side of supply, but the difference between them is response speed that supply substitution responds expeditiously to a price increase while potential entrants may need more time before starting to enter the market[236]. What's more, the entry costs made by them are different. As to supply substitution, there is scarcely any additional and significant investment, while for potential competitors, it means to enter with a considerable sunk cost.

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[232] Gual, Jordi. "Market definition in the telecoms industry." (2003). p.5

[233] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services. 2002/C 165/03 para 38-41.

[234] See *ibid*. para.52

[235] Notice on the application of the competition rules to access agreements in the telecommunications sector - framework, relevant markets and principles, Official Journal C 265, 22/08/1998, para.41.

[236] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services. 2002/C 165/03. para.38

As the Commission mentioned in reference, “distinguishing between supply-side substitution and potential competition in electronic communications markets may be more complicated than in other markets given the dynamic character of the former”[237].Potential entry can be used as an instrument to analyze both market definition and market power. And “the existence of potential competition should thus be examined for the purpose of assessing whether a market is effectively competitive”[238].

With regard to the definition of the market, practically, supply side substitution and potential competition are considered as subordinate factors comparing with demand substitutability[239]. but this analysis approach may be debatable in electronic communications with the rapid pace of technological change[240]. Indeed, in network industries driven by innovation, potential entrants will exert more pressure on the incumbents, and promote market competition.

2.1.4. Geographic market

The relevant market includes not only products or services market but also a geographical one. Once the relevant product market is determined, the next step is the definition of the geographic market[241]. The relevant geographic market can be defined as an area where the undertakings concerned are involved in the supply and demand of the relevant products or services and where the conditions of competition are sufficiently homogenous[242].

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[237] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services. 2002/C 165/03. footnote 24.

[238] *Ibid*. para.38.

[239] Commission notice on the definition of relevant market for the purposes of Community competition law. para.14.

[240] Gual, Jordi. "Market definition in the telecoms industry." (2003). pp.17-25

[241] Commission notice on the definition of relevant market for the purposes of Community competition law. para.55.

[242] Commission Notice on the definition of relevant market for the purposes of Community competition law, Official Journal C 372 , 09/12/1997 P. 0005 - 0013 para.8

In the telecommunications sector, the geographical dimension of the relevant market can be determined depending on two main standards. First, scope of network can determine the relevant market. Especially when the market access was not fully liberalized, the territory that the network covered was the scope that services can reach. And second, the extent permitted by legal or other regulations. The licenses granted by the Government in a specific area will typically provide the boundary of geographical market.

In some situation, the geographic scope of the telecommunications market can be extended to the whole world. With regard to transport cost, some products and services have been limited in a specific area. However, it is not the issue of telecommunications services because they can be provided without difficulty throughout the EU, even the World[243]. Especially in the absence of exclusive rights granted for a particularize region[244], the relevant geographic market could expand to the whole EU. More than this, the Commission defined the relevant geographic market of operating systems of *Microsoft* as the entire world. It states that,

> *"Generally, a single world-wide license agreement is entered into between the computer manufacturer and the software manufacturer. The computers are then sold on a world-wide scale. Neither import restrictions, transport costs or technical requirements constitute significant limitations. Language-specific demand characteristics regarding the relevant software exist but, in so far as the supply-side is concerned, do not constitute an obstacle for swift supply on a global basis in accordance with language-related preferences. The entire world can therefore be regarded as the relevant geographic market"*[245].

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[243] Case T-201/04, *Microsoft v. Commission*, Judgement of the Court of First Instance (Grand Chamber) 17 September 2007, para.29.

[244] In Case No COMP/M.1650-ACEA / TELEFONICA, the Commission pointed out that since the geographic dimension of the licenses, the geographic market could be defined even as local; para.16.

[245] European Commission, Decision Relating to a Proceeding under Article 82 of the EC Treaty Case COMP/C-3/37.792 Microsoft (March 03, 2004), para.427.

2.2. Market Analysis

Once the relevant market has been defined, next step is to find out whether the firm in question is dominant in identified range. It should be decided whether the undertaking is able to impose the competitive constraints in the relevant market and whether it could "prevent effective competition being maintained on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers"[246].

2.2.1. Market Shares

The European Court of Justice (ECJ) and the General Court (GC) have considered market shares as an essential reference point of market power[247]. Market shares are often used to represent market power. Although a high market share alone is not adequate to determine dominance position, it is unbelievable that a company without a significant proportion of the relevant market would stay a dominant position[248]. They are unquestionably a good start point to ascertain the dominance[249].

In the opinion of the ECJ, high market proportions might, in fact, certify the dominance. In the case of *Hoffmann-La Roche v. Commission*, the Court stated that [250],

> *"Furthermore although the importance of the market shares may vary from one market to another the view may legitimately be taken that very large shares are in themselves, and save in exceptional circumstances, evidence of*

[246] Case 27/76 *United Brands v. Commission*, para.65

[247] Case T-286/09, *Intel Corp. v European Commission*, [2014], *Hoffmann-La Roche v Commission*, para 41; Case T-30/89 *Hilti v Commission* [1991] ECR II-1439, para.91; and Joined Cases T-24/93 to T-26/93 and T-28/93 *Compagnie maritime belge transports and Others v Commission* [1996] ECR II-1201, para. 76

[248] EFTA Surveillance Authority Guidelines on market analysis and the assessment of significant market power under the regulatory framework for electronic communications networks and services referred to in Annex XI of the Agreement on the European Economic Area, 2006/C 101/01, para.76

[249] Commission Notice on the definition of relevant market for the purposes of Community competition law, 97/C 372 /03, para.53.

[250] Case 85/76, *Hoffmann-La Roche v Commission*, para. 41.

the existence of a dominant position. An undertaking which has a very large market share and holds it for some time, by means of the volume of production and the scale of the supply which it stands for — without those having much smaller market shares being able to meet rapidly the demand from those who would like to break away from the undertaking which has the largest market share — is by virtue of that share in a position of strength which makes it an unavoidable trading partner and which, already because of this secures for it, at the very least during relatively long periods, that freedom of action which is the special feature of a dominant position."

The Court support the determination of the Commission that "the market shares which they disclose are so large that they are in themselves evidence of a dominant position"[251].

Although the market shares can be use as an important signal of SMP, market shares are not the only standard to determine whether a firm is in dominant position[252]. Its limitation is evident that it's only a static indicator of the current market without considering the relative efficiencies and the development in the future. Substantially, this restriction is serious in telecommunications and other fast-growing markets. Therefore, it's necessary to take dynamic evidence into account to decide the dominant position in this specific market.

2.2.2. Entry Barriers

Practically, the incumbent in telecommunications who has high market proportions, can enjoys major profits of the whole industry, which is called "winner-takes-all" features. These enormous market shares are under "the inevitable pressure of innovating firms not yet operating on the market but with the capacity to enter"[253]. The

[251] Case 85/76, *Hoffmann-La Roche v Commission*, para.56.

[252] European Commission, European Electronic Communications Regulation and Markets 2004, COM(2004) 759 final, 2 December 2004, Vol. I, Annex I, p.74.

[253] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.151.

existence of entry barriers has become a more important standard for appraising dominance in the tech market.

According to the contestable theory, mentioned in Chapter I, if there are no barriers for entering into the relevant market, the incumbent is not likely to persevere and therefore should not be punished[254]. But the point of view of the ECJ is not identical with the economic theory. In accordance with the court's practice, the concept of "entry barriers" is self-contained, and need not to reaffirm in economics. According to the case law, there are many types of entry barriers, which limit competition in the specialized market. Some of the most common barriers are: (1) Government restrictions, for instance franchises, restrictive licensing practices or foreign investment restrictions; (2) economies of scale[255]; (3) high fixed/capital costs[256]; (4) superior technology[257]; (5) intellectual property rights protection[258]; and (6) entry barriers created by vertical integration. In case of *Hoffmann-La Roche*, the highly developed sales network was seemed as a entry barriers which provided it a commercial advantage over its competitors[259].

As described above, because of the nature of the telecommunications industry, market shares could not be a suitable indicator for assessing market power. Barriers to entry, however, will be a typical evidence of an incumbent in electronic communications markets.

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[254] Baumol, William J. "Contestable markets: an uprising in the theory of industry structure." *Microtheory: applications and origins* (1986): 40-54.

[255] Case 27/76 *United Brands Company and United Brands Continentaal BV v Commission* [1978]

[256] Continental Can Co Inc. OJ [1972] L 7/25, [1972] CMLR D11.

[257] Case 322/81 NV Nederlandsche Banden Industrie Michelin v Commission of the European Communities [1983]; Case 27/76 *United Brands Company and United Brands Continentaal BV v Commission* [1978]; Case 85/76, Hoffmann-La Roche v Commission [1979].

[258] Case 22/78, Hugin Kassaregister AB v. Commission [1979]

[259] Case 85/76, Hoffmann-La Roche v Commission [1979]

2.2.3. Significant Market Power

In competition policy, authorities are generally concerned with the firms that have market power. Without market power, undertakings are simply unable to generate serious problems in the economy or the sector market. And only the ones who have the status of 'dominance' could draw the intervention of competition law.

According to the new European practice[260] and Case Law[261], dominance can be defined as a economic position which enables an undertaking, either individually or conjointly with others, "prevent effective competition existing in the relevant market by affording it the power to behave, to an appreciable extent, independently of its competitors, customers and ultimately consumers"[262]. To be more specific, the factors considered to determine whether a firm enjoys dominance are explained by the European Commission as follows: overall size of the undertaking, control of infrastructure not easily duplicated, technological advantages or superiority, absence of or low countervailing buying power, easy or privileged access to capital markets, products or services diversification, economies of scale or scope, vertical integration, a highly developed distribution and sales network, absence of potential competition, barriers to expansion[263]. In its enforcement, a dominant position can be determined by a composite of the these standards, but a single element may be inconclusive[264].

With respect to the characteristics of the telecommunications market, such as network effect, sunk costs, technological advantages, economies of scale and scope, at the beginning

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[260] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), article 14(2).

[261] See Case 27/76 *United Brands Company and United Brands Continentaal BV v Commission* [1978] ECR, para.65, and Case 85/76 *Hoffmann-La Roche & Co. AG v Commission* [1979] ECR 461, para.38.

[262] Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings (2009/C 45/02), para.10.

[263] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03), para.78.

[264] *Ibid.* para.79.

of the application of competition policy, the operation of the basic legal instruments is consequently different. The application of competition policy begins with the definition of the relevant market. Demand substitution is no longer a decisive factor, however being superseded. Supply dimension and potential competitors are the focuses to determine the relevant market. And the geographic market has been extended to the maximum possible to the worldwide. Once the relevant market has been identified, then it should determine whether the firm interrelated is dominant. In this step, considering the features of communications, market shares are no longer critical criteria. Instead, the control of essential facilities and the access to entry barriers are important elements in the analysis of significant market power.

3. Implementation of EU Competition Law in Telecommunications

The application of competition rules is especially substantial to the protection of the market liberalization[265]. And several types of competition rules are important to maintain an open market. As competition emerges in liberalized markets, Article 101 of the EU Treaty plays a significant role. Actually, after a protracted competitive battles between incumbents and entrants, these existing participants may make a decision to limit the competition through reaching restrictive agreements, such as price-fixing or regional-dividing, which reduce the profits of the opening progress.

But to prevent the abuse behaviors of incumbents who remain dominant, Article 102 has its irreplaceable function, when the liberalization is in progress or has just accomplished. These abuses include but not limit to refusal to deal, refusal to access essential infrastructures, margin squeeze, etc. Another obstruction of competition is at the national level. The Member States might attempt to protect the dominance of their national champions from the competitive pressures of other entrants. The provisions of the EU Treaty are designed to prohibit the Member States using State aids to increase competitiveness artificially. Besides these three categories norms, which contribute to maintaining a fair competitive environment in liberalized industries, the EU Merger Control Regulation also requires all mergers and acquisitions to meet its standards.

Comparing with on other markets, the application of the Article 101 TFEU, which prohibits agreements and concerted practices restricting competition, and Articles 107 to 109 prohibiting the State aids that could distort competition has no differentiation in the telecommunications sector. However, there are considerable cases of the application of Article 102 which prohibits the abuse of dominance on telecom market, such as the refusal to deal, especially in the critical facilities, tying, and margin squeeze. It is also worth mentioning that the particular practices of EU competition authorities in the merger control between telecommunications operators.

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[265] Broumas, Antonios G. "Necessity of Sector Specific Regulation in Electronic Communications Law, the." *J. Int'l Com. L. & Tech.* 4 (2009): 176. p.182

3.1. Refusals to Supply

According to the basic principle of private law, firms have the right to choose the parties with whom they wish to establish contractual relationships. But for the one who dominate the market, such freedom may be restricted.Refusal to deal sometimes be considered as an abusive behavior of dominance if it limits competition in the relevant market, such as dominant undertaking denies the other party the tools needed to compete on the market[266]. In the *Commercial Solvents* Case[267], the Court of Justice confirmed the Commission's decision that *Commercial Solvents* had abused its dominant position by refusing to supply raw material to *Zoja*, who was his downstream producer.

Commission noted that the refusal to supply would lead to the elimination of one of the principal manufacturers of the downstream product. And the ECJ considered that[268]:

> *"An undertaking which has a dominant position in the market in raw materials and which, with the object of reserving such raw material for manufacturing its own derivatives, refuses to supply a customer, which is itself a manufacturer of these derivatives, and therefore risks eliminating all competition on the part of this customer, is abusing its dominant position within the meaning of Article 86 (now 102 TFEU)."*

In line with *Commercial Solvents* the ECJ found an abuse in *United Brands*[269] and *Télémarketing*[270], in the latter case where the competing enterprise searching supply was active in a neighboring rather than downstream market[271]. The application range of refusal to supply the services was expanded by the Court who specified that [272],

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[266] Jones, Alison, and Brenda Sufrin. EU competition law: text, cases, and materials. Oxford University Press (UK), 2014. p.510.

[267] Joined Cases 6 and 7/73 *Commercial Solvents Corp v. Commission*, Judgment of the Court of 6 March 1974

[268] Joined Cases 6 and 7/73 *Commercial Solvents Corp v. Commission*, Judgment of the Court of 6 March 1974, para.25.

[269] Case 27/76 *United Brands Company and United Brands Continentaal BV v Commission of the European Communities* [1978]

[270] Case 311/84 *CBEM v. CLT and IPB* [1985]

[271] Prof. C. Bovet, Refusal to Supply Customers under Article 82 EC, Années Académiques 2006-2008, para.22.

[272] Case 311/84 *CBEM v. CLT and IPB* [1985], para.27.

> *"... an abuse within the meaning of Article 86 (now Article 102 TFEU) is committed where, without any objective necessity, an undertaking holding a dominant position on a particular market reserves to itself or to an undertaking belonging to the same group of ancillary activity which might be carried out by another undertaking as part of its activities upon a neighboring but a separate market, with the possibility of eliminating all competition from such undertaking."*

Besides the categories of refusal to supply materials, products and services mentioned above, in telecommunications industry which is a specific technical sector, there are other types of abuses. According to judgments of the Community Courts, the refusal to provide exclusive property[273], and the refusal to authorize the intellectual property rights[274], were determined to abuses of the dominant position under Article 102 TFEU.

Additionally, the essential facilities doctrine (EFD) plays a major role in telecommunications and other network-based utilities. In telecommunications, the Commission relied on the essential facilities doctrine as a general basis for applying EU competition law. The EFD figures in the part where the Commission details the instances where a refusal to grant access to telecommunications facilities might trigger the application of Article 102 TFEU (ex 82).

The concept of essential facilities has been developed by some regulators and multilateral agencies. The standard definition of essential facilities included in the WTO Regulation Reference Paper on Basic Telecommunications, states that "essential facilities mean facilities of a public telecommunications transport network or service that, (a) are exclusively or predominantly provided by a single or limited number of suppliers, and (b) cannot feasibly be economically or technically substituted in order to provide a service"[275].

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[273] OJ L 43, 15.2.1989, Commission Decision of 21 December 1988 relating to a proceeding under Articles 85 and 86 of the EEC Treaty (IV/30.979 and 31.394, Decca Navigator System)

[274] Case T-69/89 *Radio Telefis Eireann v. Commission v. Commission* [1991] ECR II-485, [1991] 4 CMLR 586; Case T-70/89 *BBC Enterprises Ltd v. Commission* [1991] ECR II-535, [1991] 4 CMLR 669; Case T-76/89 *Independent Television Publications v. Commission* [1991] ECR II- 575, [1991] 4 CMLR 745; Joined Cases C-241/91 P and C-242/91 P *RTE and ITP v. Commission* (Magill) [1995] ECR I-743; Case C-481/01 *IMS Health GmbH & Co v. NDC Health GmbH & Co KG* [2004]; Case COMP/C-3/37.792 *Microsoft*; Case T-201/04 *Microsoft Corp v. Commission of the European Communities* [2007].

[275] World Trade Organization Reference Paper on Basic Telecommunications in Blackman, Colin, and Lara Srivastava. "Telecommunications Regulation Handbook." (2011). p.229.

The essential facilities doctrine have its origin in US antitrust[276]. In the EU, there are several cases of the ECJ subsumed under it[277]. In the regard to the Commission, the concept of "essential facility" was first be mentioned in *Sea Containers v. Stena Sealink*, defining the harbor infrastructure as essential facility, "a facility or infrastructure, without access to which competitors cannot provide services to their customers"[278]. And broadly there are three relevant scenarios: (1) a refusal to grant access for the purposes of a service where another operator has been given access by the access provider to operate on that services market; (2) a refusal to grant access for the purposes of a service where no other operator has been given access by the access provider to operate on that services market; (3) a withdrawal of access from an existing customer [279].

The resources or facilities which have following properties can be seen as essential facilities. Firstly, they are important materials to retail market. When essential facilities are located at the wholesale market of the production chain, they are crucial inputs in producing or providing the retail product or service. Second, essential facilities may be totally owned or controlled by vertically integrated incumbent. The owner of relevant facilities takes part in both retail and wholesale markets. Thirdly, essential facilities owner sometimes is a monopoly. The last, it is not workable, either in economy or in technology, for retail competitors to replicate the essential facility or develop a alternative one[280].

Typical examples of essential facilities are network access lines (local loop) and local exchange switching. An incumbent operator who has control over essential facilities has regu-

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[276] The term appears to be first defined in the published judicial opinion is in *Hecht v. Pro-FootballI, Inc*., 570 F. 2d 982,992 (D.C.Cir.1977), *cert. denied* 436 U.S.956 (1978).

[277] *Istituto Chemioterapico Italiano S.p.A. and Commercial Solvents Corporation v Commission of the European Communities*, Cases 6-7/73 [1974]; *United Brands Company and United Brands Continentaal BV v Commission of the European Communities* Case 27/76 [1978]; *Benzine en Petroleum Handelsmaatschappij BV and others v Commission of the European Communities*, Case 77/77, [1978]; *Consorzio Italiano Della Componentistica Di Ricambio Per Autoveicoli v. Régie Nationale Des Usines Renault*, Case 53/87, [1988]; *Radio Telefis Eireann v. Commission*, Case T-69/89, [1991]; *The British Broadcasting Corporation and BBC Enterprises Ltd. v. Commission*, Case T-70/89, [1991]; *Independent Television Publications Ltd. v. Commission*, Case T-76/89, [1991]; *Hilti AG v. Commission*, Case T-30/89, [1991].

[278] *Containers v. Stena Sealink*, OJ [1994] L 15/8, [1995] 4 CMLR 84, at para.41

[279] Commission Notice on the application of the competition rules to access agreements in the telecommunications sector, OJ C 265/3, 22 August 1998, para.84.

[280] Blackman, Colin, and Lara Srivastava. "Telecommunications Regulation Handbook." (2011). p.38

larly both the incentive as well as the means to limit access to the facilities by competitors. It becomes a matter of pubic interest to ensure that essential facilities are made available to the competitors for effective competition in the markets.

Pursuant to the provisions of Article 102 TFEU, it can be drawn as a refusal to deal principle: in the relevant market, if a company holding a dominant position can not put forward reasonable grounds for refusing to other operators to provide the necessary facilities, then the its behavior of the refusal to supply is unprotected.

3.2. Tying

Generally speaking, tying is an illegal monopolistic behavior on the telecommunications market by most operators to seek to maximize the economic benefits. Taking the telecommunications service packages for example, telecom operators to determine the "telecommunications service packages" often include Internet access, calls, text messages, and many other business content, and consumers have no choice of a package, which means they must buy all services completely and have no chance to select the services according to their will. Essentially, tying is the abusive behavior that monopoly exploit the dominance, which severely damaged the telecom consumers freedom of choice and property rights.

3.2.1. Tying in Telecommunications Industry

Tying as an abuse of dominant market position should be emphasized in telecommunications market. There are at least three the following reasons. First of all, products/services on telecommunications market are exceedingly various and normally can be comparably easy to package sales according to their features. Secondly, expectations of consumers to these products/services can not be predicted. Therefore, the producers are eager to supply costumers as much diversification of products/services as possible, in order to attract more trading opportunities. And third, because of the network effects of telecommunications market, tying could be an appropriate method for those who already have significant power in one market attempting to conquer another.

Typically, abuses in Article 102 TFEU can only be committed in the market where the dominance exists. But under special circumstance, an incumbent may be condemned by having abusive behaviors in markets different from the one where it has the position of dominance[281]. Because participants usually operate in multilateral markets in the telecommunications industry, they can deliver the stronger market power to the area where they are not dominant. Therefore, the Access Notice emphasizes that the concept of leveraging market power[282] could be important in the communications sector, mentioning "it is important to bear in mind existing case law and Commission decisional practice on, for example, leveraging market power, discrimination and bundling"[283].

3.2.2 The Elements of Tying

According to the decision of the European Commission and the Court of Justice in *Microsoft* Case[284], an analysis of identifying abusive tying behaviors includes a five-pronged test: (1) dominance of the seller in the market for the tying product; (2) existence of a tied product that is separate from the tying product; (3) coercion, i.e. conduct forcing customers to buy the tied product together with the tying product; (4) a restrictive effect on competition for the tied product; and (5) absence of an objective and proportionate justification for the coercion[285].

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[281] Case T-83/91, *Tetra Pak International SA, v. Commission*,[1994] ECR II-755.

[282] Leverage of market power means that "where an undertaking has significant market power on a specific market, it may also be deemed to have significant market power on a closely related market, where the links between the two markets are such as to allow the market power held in one market to be leveraged into the other market, thereby strengthening the market power of the undertaking. See Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services, Official Journal C 165 , 11/07/2002 P. 0006 - 0031, para.83-85.

[283] Notice on the application of the competition rules to access agreements in the telecommunications sector, para.82.

[284] Commission Decision of 24 May 2004 relating to a proceeding pursuant to Article 82 of the EC Treaty and Article 54 of the EEA Agreement against Microsoft Corporation (Case COMP/C-3/37.792 — Microsoft) (notified under document number C(2004) 900) (Text with EEA relevance), OJ L 32, 6.2.2007, p.23–28

[285] Dolmans, Maurits, and Thomas Graf. "Analysis of Tying Under Article 82 EC: The European Commission's Microsoft Decision in Perspective." *World Competition* 27 (2004): 225-244.

a. Dominance of the seller in the market for the tying product

As the applicable prerequisite of Article 102 TFEU, dominance is an essential element. The seller must be found holding dominance in the relevant market of the tying product[286]. The tying product of dominance may make a tie liable which distorts the competition in the tied product market. Customers that purchase the tying product are forced to pay for the tied product regardless of its merits. This commercial activity might disorder the competition. And what's more, if there is effective competition in the tying product market, customers will regularly have realistic substitution to the tied offer, and no concerns should arise[287]. Taking the *Hilti* this classic tying case for example, as a famous manufacturer of nail guns, *Hilti* tried to use its market power on the given markets to prevent or limit the entry of independent producers of Hilti-compatible consumables into these markets[288]. Typically, incumbents utilize tying to transfer the significant power in relevant market to another market where it is relatively vulnerable to the new challenges, in order to obtain a dominant position there.

b. The independent between tying and the tied products

It is necessary to demonstrate that the tied products are distinct products before the claim of tying as an abuse of Article 102 TFEU. The way to identify tied products can be found on the buyers' side. From the perspective of consumers, the test is to verify whether there is potential customers demand the tied product independent from the tying product[289].

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[286] In the Commission's decision in Hilti case, "the ability to carry out its illegal policies stems from its power on the market for Hilti-compatible cartridge strips and nail guns (where its market position is strongest and the barriers to entry are highest) and aims at reinforcing its dominance on the Hilti-compatible nail market (where it is potentially more vulnerable to competition)". IV/30.787 and 31.488, *Eurofix-Bauco v. Hilti,* [1987], para.74.

[287] Dolmans, Maurits, and Thomas Graf. "Analysis of Tying Under Article 82 EC: The European Commission's Microsoft Decision in Perspective." *World Competition* 27 (2004): 225-244.

[288] *Eurofix-Bauco v. Hilti.* [1987] V/30.787 and 31.488, para.74.

[289] Commission notice, Guidelines on Vertical Restraints, SEC(2010) 411 final, para.215

If buyers do not demand the given products separately from different producers, there is no abusive behaviors or competitive issue. In *Hilti* case, where the issue was the tying of *Hilti* nail-gun cartridges with compatible nails, the Court pointed that[290]:

> *"... it is common ground that since the 1960s there have been independent producers including the interveners, making nails intended for use in nail guns. Some of those producers are specialized and produce only nails, and indeed, some make only nails specifically designed for Hilti tools. That fact in itself is sound evidence that there is a specific market for Hilti compatible nails."*

However, this inspection method is not always easy in practice, especially taking into account the new products. If it comes to the new products, there is no commercial usage to exercise them. Therefore, the focus of the analysis turns from to consider whether the binding products are functional independent, to argue whether there is justification to provide them together[291]. In the case of *Microsoft*, the Court agreed that the operator system was separated from the media players[292]. And noted that "IT and communications industry is in constant and rapid evolution, so that what initially appear to be separate products may subsequently be regarded as forming a single product"[293].

c. Coercion

Coercion is the essential segment of tying issues. Without it, the behaviors of tying could not have distorted competition, and even a dominant undertaking could sell two products or services together legally. Coercion means the dominant under-

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[290] Case T-30/89, *Hilti. v. Commission* [1991], para.67.

[291] Burri, Mira. "European Community Communications Law: An Introduction." *SSRN Working Paper Series* (2010). p.40.

[292] Case T-201/04, *Microsoft Corp.v Commission* [2007] ECR II-3601, paras 912-944.

[293] *Ibid.* para.913

taking forces customers to buy the tied product in conjunction with the tying, and the consumers have no choice under the pressure of the market power.

Coercion occurs if the dominant undertaking leaves customers with "no realistic choice of buying the tying product without the tied product"[294]. And only if the consumers are constrained to obtain both tying and tied products, then the behaviors of tying appertain by the Article 102 TFEU. Practically, the forms of coercion could manifest themselves in variety. It may consist of a contractual clause[295], a *de facto* refusal to supply the tying product individually[296], pricing incentives[297], technical commingling, financial guarantees, or combinations of those. Such as the case of Microsoft, the dominant company did not provide the customers any choice to acquire Windows operating system without the Windows Media Player (WMP) or to delete it, which can be seen as the coercion in contractual clause and technical bundling.

d. Restrictive effect on competition

To arise to an abuse of a dominance, "the tying should have, or be able to have, an anti-competitive foreclosure effect"[298]. There should be an actual or potential adverse effect on competition when Article 102 TFEU applies on the tying practice.

Tying by a dominant undertaking may restrict competition if the company depends on the market power in its tying product to boost sales of tied products, rather than to compete. The special concern is that[299]:

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[294] *Eurofix-Bauco v. Hilti.* [1987] V/30.787 and 31.488, para.75.

[295] Case T-83/91, *Tetra Pak International SA, v. Commission*, [1994], ECR II-755.

[296] Case T-30/89 *Hilti AG v. Commission* [1991]

[297] *Ibid.*

[298] Whish, Richard, and David Bailey. *Competition law*. Oxford University Press, 2012. p.694.

[299] Case T-83/91, *Tetra Pak International SA, v. Commission*, Judgment of the Court of First Instance of the European Communities. para.137.

> *"... where an undertaking in a dominant position directly or indirectly ties its customers by an exclusive supply obligation, that constitutes an abuse since it deprives the customer of the ability to choose his sources of supply and denies other producers access to the market."*

Especially, tying could have more considerable impacts on telecommunications market which is characterized by network externalities. As discussed in Chapter I, in network markets, the amount of users will affect the demand of the product in future. A tie will have an influence beyond the tied side "because the increased distribution share resulting from the tie will also impact on future demand for the tied product"[300].

Finally, the assessment of the impact of tying on competition should not be limited to static analysis, as to telecommunications industry which is evident technological, but also should consider the impact on the market innovation. This opinion held by the Commission in the Microsoft decision, "that Microsoft has not put forward any technical efficiency for which 'integration' of WMP would prove to be a precondition"[301]. The tying prevented other more powerful media players from joining into the competition, which reduced market efficiency and innovation.

e. Absence of objective justification

The last requirement of tying is that there is no acceptable rationale or proper objective to support the coercing practices. As for sufficient reason, improvement of use efficiency or assurance of product quality is usually adopted as justification for tying. Dominant companies sometimes could successfully advocate that their tying practices are objectively justified or conducive to improved efficiency, which "the dominant undertaking will have the burden to prove whether the tying is indeed objectively justified"[302]. In *Hilti* case, Commission considers that tying would prevent

[300] Dolmans, Maurits, and Thomas Graf. "Analysis of Tying Under Article 82 EC: The European Commission's Microsoft Decision in Perspective." *World Competition* 27 (2004): 225-244. p.234.

[301] Case COMP/C-3/37.792, Microsof, 2007/53/EC, para.29.

[302] Whish, Richard, and David Bailey. *Competition law*. Oxford University Press, 2012. p.696.

producers of nails from supplying users of nail guns. *Hilti*, however, argued that their commercial actions had objective justification, which was the necessity to keep the safety standards. This opinion was rejected by Commission, who pointed that the primary concern of given undertaking was the protection of its dominance position rather than the security of the users of its products.

In the case of *Tetra Pak*, the Court has supported that[303]:

> *"Consequently, even where tied sales of two products are in accordance with commercial usage or there is a natural link between the two products in question, such sales may still constitute abuse within the meaning of Article 86 unless they are objectively justified."*

And in another case, *Microsoft v. Commission*, the General Court concluded that "Microsoft has not demonstrated the existence of any objective justification for the abusive bundling of Windows Media Player with the Windows client PC operating system"[304].

3.3. Margin Squeeze

A margin squeeze commonly occurs when a firm is dominant in an upstream market and supplies an essential product to the competitors in the downstream market, where the price that the incumbent offered to the competitors is insufficient to allow for effective competition[305]. This concept was recognized by the General Court in *Industrie des Poudres Spheriques*[306].And in the practice of the Court of Justice, margin squeeze is seen as the es-

[303] Case C-333/94 P Tetra Pak v. Commission, para.37.

[304] Case COMP/C-3/37.792, Microsof, 2007/53/EC, para.1167.

[305] Whish, Richard, and David Bailey. *Competition law*. Oxford University Press, USA, 2015. p.796.

[306] Judgment of the Court of First Instance (Fifth Chamber, extended composition) of 30 November 2000. - *Industrie des poudres sphériques SA v Commission of the European Communities*. - Competition - Action for annulment - Rejection of a complaint - Article 86 of the EC Treaty (now Article 82 EC) - Misuse of the anti-dumping procedure - Statement of reasons - Rights of the defence. - Case T-5/97. para.178. "Price squeezing may be said to take place when an undertaking which is in a dominant position on the market for an unprocessed product and itself uses part of its production for the manufacture of a more processed product, while at the same time selling off surplus unprocessed product on the market, sets the price at which it sells the unprocessed product at such a level that those who purchase it do not have a sufficient profit margin on the processing to remain competitive on the market for the processed product."

sence of the infringement which is an abuse under Article 102 TFEU. The Court stated in *TeliaSonera* judgment[307],

> *"A margin squeeze, in view of the exclusionary effect which it may create for competitors who are at least as efficient as the dominant undertaking, in the absence of any objective justification, is in itself capable of constituting an abuse within the meaning of Article 102 TFEU."*

A margin squeeze abuse requires several essential conditions to be constituted. First of all, margin squeeze merely exists in vertically integrated market. An incumbent is active on both upstream and downstream market, and the rivals in latter market are both clients and competitors. Secondly, the products that the dominant company supplies must be crucial for competition. If the products are not indispensable, the buyers in downstream can avoid purchasing it, or have the bargaining power. Third, the price that the incumbent charges on the upstream market, on the downstream market, or on both sides causes the downstream rival uneconomic. In Telecommunications Access Notice, the Commission suggests a test that "the price…in the downstream market is insufficient to allow a reasonably efficient service provider in the downstream market to obtain a normal profit"[308]. The fourth and the last one, there is no justification for the dominant firm setting prices below its costs. There are many legitimate explanations to support the activities of the upstream incumbent. For instance, the company may be under adverse market conditions; it may have initiated new products and presently have lower output which is expected to increase; the market may be degenerating, but some competitors are anticipated to exit; the dominant firm may have entered the market with excessive capacity for the wrong business decision; other competitors may be charging "unsustainable and unreasonable" prices, but will plausibly quit the market or reorganize its strategy; and so on[309].

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[307] Judgment of the Court (First Chamber) of 17 February 2011. *Konkurrensverket v TeliaSonera Sverige AB*. Reference for a preliminary ruling: Stockholms tingsrätt - Sweden. Preliminary ruling - Article 102 TFEU - Abuse of dominant position - Prices applied by telecommunications operator - ADSL input services - Broadband connection services to end users - Margin squeeze on competitors. Case C-52/09. para.31.

[308] Notice on the application of the competition rules to access agreements in the telecommunications sector - framework, relevant markets and principles, OJ C 265, 22.8.1998.

[309] Geradin, Damien, and Robert O'Donoghue. "The Concurrent Application of Competition Law and Regulation: The Case of Margin Squeeze Abuses in the Telecommunications Sector." *SSRN Working Paper Series* (2005). p.8.

In the telecommunications sector, the *Deutsche Telekom* (DT) was the first case which was applied margin squeeze rules on using Competition Law. The Commission imposed a fine of €12.6 million on DT for carrying out a margin squeeze to its local network[310]. The specific conduct was found that the DT's competitors were charged for unbundled broadband access for wholesale price, but which was more than the price it charged its own subscribers. As the Commission stated, "the spread between DT's retail and wholesale prices is either negative or at least insufficient to cover DT's own downstream costs"[311]. The decision was upheld by the General Court[312] and the Court of Justice[313].

3.4. Merger Control

Although *ex ante* approaches are mainly applied through sector-specific regulation, such approaches may also be taken in competition rules, such as the clearance of a merger between telecommunications operators. The objective of merger control is to entitle competition authorities "to regulate changes in market structure by deciding whether two or more commercial companies may merge, combine, or consolidate their business into one"[314]. The current merger control regulation, Regulation 139/2004[315], was adopted in the Official Journal on 20

[310] Commission Decision of 21 May 2003 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/C-1/37.451, 37.578, 37.579 — Deutsche Telekom AG), OJ L 263, 14.10.2003.

[311] Commission Decision of 21 May 2003 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/C-1/37.451, 37.578, 37.579 — Deutsche Telekom AG), OJ L 263, 14.10.2003. para.140.

[312] Case T-271/03 *Deutsche Telekom AG v European Commission.*

[313] Case C-280/08 P *Deutsche Telekom AG v European Commission.*

[314] Jones, Alison, and Brenda Sufrin. EU competition law: text, cases, and materials. Oxford University Press (UK), 2014. p.1129.

[315] Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation), Official Journal L 24, 29.01.2004, p.1-22

January 2004. This regulation is supplemented by an implementing regulation[316] and a series of Commission Notices[317], which provide guidance and interpretation of provisions.

In the telecommunications sector, the merger control has often been used as a regulatory tool by the Commission. For example, in the case of *Telia/Telenor*[318] which was between the public telecommunications operators respectively in Sweden and Norway, the Commission granted them conditional clearance that they have to agree to divest any overlapping telecoms interests, as well as their cable TV interests in relevant countries. Such divestiture was a remedy going further than the sector-specific regulation[319] at the time, which only required that the operator who owned both telecommunications networks and cable TV networks split up into different legal entities[320]. As a result, both the Swedish and Norwegian governments made a commitment to introducing local loop unbundling. Such commitment was more than a year before Regulation 2887/2000, which demands local loop unbundling to the fifteen Member States[321]. Similarly, in the case *Atlas[322],* the Commission granted a five-year exemption that provided France and Germany liberalized substitute infrastructures. However, such compulsions was not imposed by telecommunications regulations then. Thus, in terms of a certain extent, merger control plays a role of *ex ante* regulation.

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316 Commission Regulation (EC) No 802/2004 of 21 April 2004 implementing Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings, Official Journal L 133, 30.4.2004.

317 Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings; Commission Notice on a simplified procedure for treatment of certain concentrations under Council Regulation (EC) No 139/2004; Commission notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004; Commission Notice on restrictions directly related and necessary to concentrations (2005/C 56/03); Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings and Commission Notice on Case Referral in respect of concentrations.

318 Case No. M. 1439, Telia/Telenor (1999) O.J. 2001, L 40/1.

319 Commission Directive 1999/64/EC of 23 June 1999 amending Directive 90/388/EEC in order to ensure that telecommunications networks and cable TV networks owned by a single operator are separate legal entities.

320 Popović, Dušan. "Merger remedies and regulatory measures in the EU electronic communications sector: A critical assessment." *European Business Organization Law Review* 10.04 (2009): 575-594. p.589.

321 Geradin, Damien, and J. Gregory Sidak. "European and American Approaches to Antitrust Remedies and the Institutional Design of Regulation in Telecommunications." *SSRN Working Paper Series* (2009). p.18.

322 Case No. 35.337, Atlas (1996) O.J. 1996, L 239/23.

4. Conclusion

With regard to the distinctive features of telecommunications market, such as the obvious network effects, reliance on high technology and the high degree of vertical integration, when competition rules are applied, it is necessary to take an overall analysis of the economic characteristics in the relevant market, rather than to pay much attention to the market share. In a broader circumstance, any decision for competitive intervention will substantially include "a trade-off between short-term and long-term competition, and so should be handled very carefully"[323].

In this Chapter, we have provided an overview of several basic concepts and principles of the EU competition law. Focusing on the implementation of EU competition law, issues related to the telecommunications market have also been discussed. In the specific context of EU law, it can be concluded that, like the one of the regulatory tools, paralleling with regulations, the EU competition rules can be a sophisticated and efficient instrument, which can maintain a competitive market and respond to the various environments as well as new issues in the telecommunications market.

[323] Faull J, Nikpay A. The EC law of competition. 2007. See Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. P185.

CHAPTER IV

CONFLICT AND COOPERATION: THE COMPLEMENTARITY BETWEEN COMPETITION LAW AND REGULATION IN TELECOMMUNICATIONS

Since 1980s when telecom liberalization was set and the deregulation started, both of their enforcement are designed to coexist. In terms of time, competition law was applied long before the advent of deregulation[324]. Deregulation occurred only in those areas which have been subject to regulation. Because of the technology advances, those industries lost their "natural monopoly characteristics", which means the real market should take over in, rather than the market simulated regulatory policy which attempts to give benefits similar to a competitive market[325]. But as we discussed in the first chapter, in the field of telecommunications, there are still several characteristics different from other market. The full application of traditional competition rules in the telecommunications and other emerging markets still reveals certain deficiencies and limitations, and we will introduce in the first part of this chapter.

As an instrument to prevent the abuses of dominant position, most importantly, competition rules overlapped with asymmetric regulation. Alternative formulations have seen competition law as a beneficial supplement even if it is not a full substitute for regulation[326], and turning to regulation, it is seen as "a surrogate for competition"[327]. Consequently, deregulation and liberalization generate a special environment in which telecommunications operators have to obey both competition law and SSR. Inevitably, when the authorities exercise their respective powers to enforcement relevant rules, institutional conflicts will occur. These conflicts we will discuss in the second part.

However, deregulation does not mean no regulation. It is common to visualize that SSR would continue to exist after the monopoly was ended and have to be necessary to simulate competition[328]. In order to promote competition, concurrent SSR is based on asymmetric reg-

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[324] In the United States, Sherman Antitrust Act was passed in the year of 1890 far before the deregulation which began in the 1980s symbolized with the divestiture of AT&T.

[325] Department of Trade and Industry (DTI) (2006) Concurrent Competition Powers in Sectoral Regulation. A Report by the Department of Trade and Industry and HM Treasury, published May 2006, URN 06/1244. p.13

[326] Shelanski, Howard A. "The Case for Rebalancing Antitrust and Regulation." *Michigan Law Review* (2011): 683-732. p.719

[327] Department of Trade and Industry (DTI) (2006) Concurrent Competition Powers in Sectoral Regulation. A Report by the Department of Trade and Industry and HM Treasury, published May 2006, URN 06/1244. p.13

[328] Dunne, Niamh. *Competition Law and Economic Regulation.* Cambridge University Press, 2015. p.187

ulation which sets regulatory constraint only on the companies in dominant position, which we will discuss in Section 3.

In the final part of the chapter, we are going to discuss the conflicts between competition rules and regulatory policy in particular China telecom market environment and find the way they cooperate. This conflict is not an abstract sense, on the contrary, it does exist in practice. In this part, we will primarily study the case that adequately demonstrated this intense conflict, from the rules to the regulatory agencies. In China, specific problems of the relationship between competition rules and regulatory policy are not focused on the level of concept, but on the normative level and practical level. As described in the second chapter, Chinese telecommunications market has not yet fully reached a certain degree of liberalization, which makes the function of competition law is restricted. To resolve this contradiction, we were borrowed the specific approaches and experiences of cooperating the competition rules and regulation for the telecommunications market from the Europe Union and the United States.

1. The Limitations of Competition Law in Telecommunications

In spite of many of the goals of telecommunications regulation, competition law is not expected to address them all. But as an instrument of economic regulation, the core question is that whether competition law could properly address all the economic goals and the goals directly or indirectly affected by the economic ones.

1.1. Issues in Subscriber Networks

Competition in the newly liberalized telecommunications sector can generally take two forms: short-term and long-term strategy. In short-term strategy, the competitors focus on arbitrage between the wholesale and retail tariffs or on offering value-added services basing on a larger firm. When the arbitraging margins incline to vanish, and the new added value is also taken by the more major competitor, the gain can be used to invest infrastructure and adjust to next stage.

For the strategy taking aim at the longer term, the competitors extensively invest into their infrastructure, to lessen their reliance on the network of the incumbent. These players are entirely controlled by costs and benefits, which will make sure that themselves participate in the competition. But in this strategy, the early loss is obvious.

The choice of these two strategies will lead to different market structures. If enterprises choose the first strategy, then the market structure will tend to "service-based competition". Numbers of players will compete on the services they offer, over the network provided by few operators, even only one. Oppositely, if most companies tend to choose a long-term strategy, then the market will show "infrastructure-based competition", in which the services they offer base on their network[329].

Following the deregulation and liberalization, the dominant operator controls the entire subscriber network, which links with individual end-user. If the market works for itself, initially the incumbent will have little incentive to make potential competitors access to the net-

[329] Larouche, Pierre. Competition law and regulation in European telecommunications. Hart Publishing, 2000. p. 323.

work; in this situation, there will be petite competition. Therefore, the EU telecommunications directive contains provisions on access and other forms of interconnection, that the current more or less forced to open its network of direct competitors[330]. Given sufficient interconnection network, it is distinctly possible that market structure will develop between the subscriber and the trunk networks: at the local loop level, the competition will tend to focus initially on services, while at the trunk level, such as long-distance service, the competition tend to base on both service and infrastructure. As the result, the telecommunications sector will be relatively competitive. The incumbent still controls the market power of a considerable number of users of the network, which makes the market face the risk of insufficient competition. To alleviate such paradox, the regulatory options can start market structure.

Market structure option is either to distinguish subscriber networks and trunk networks firms or to restrain market power in the subscriber network. The former method starts directly from the market structure but very is aggressive. It can be described as that the company will be split into separate businesses strictly, which are then prevented from entering each other's service, in order to minimize the effects of the market power at the subscriber level to the trunk level. As the result from the Modified Final Judgment of 1984 before the Telecommunications Act of 1996, the old Bell system was broken up into AT&T (long-distance market) and seven RBOCs (regional Bell operating companies, on the local market), with line of business restrictions ensuring the separation between the two markets[331]. The main disadvantage of this option is that authorities replace the competition to strengthened regulation, conceding the monopoly status that the incumbents have. The second option that adjusts market structure is to restrain market power in the subscriber network. This method is less racial than previous one, but can be used to minimize the potential restricting competition. In the beginning, the interconnection price should be set at the lowest level, without causing losses to the incumbent. And next measure is to create a level-playing field for services to the trunk network. It is possible to force the incumbent to give its subscribers more options to another trunk network

[330] See Access Directive, 2002, para.19

[331] Larouche, Pierre. Competition law and regulation in European telecommunications. Hart Publishing, 2000. p. 325.

operator for their long-distance calls. Such potential options will bring significant pressure to the incumbent and more opportunities to other players.

Such two options were based on static market structure, but telecommunications market is dynamic, which makes the situation more complicated. In this market, innovation is also an important feature to be considered. The paradox between the trunk network and subscriber is the imbalance in innovation. Trunk systems are being upgraded very quickly. However, the development of subscriber network has remained very slow. Subscriber network is the short board of the network communication speeds. In this way, it is a vital part of the field of telecommunications to promote innovation and investment in given sector. Back to the options that have been offered, the first one provides excellent protection for upgrading the whole system, but less incentive. The second way in comparison is preferable in promoting innovation and competition, and will not cause irreversible damage.

In conclusion, competition law can be used to support both of the options described above in legal level but cannot alone determine the appropriate mix of incentives that might achieve the balance between innovation and competitiveness.

1.2. Neglected Consumer Welfare

Consumer welfare in competition law is placed in a very critical position. As Robert Bork said, the antitrust law has only one objective that is to protect the welfare of consumers[332]. In general, the goal of consumer welfare in typical telecommunications market environment is achieved through effective competition. But considering the specific characteristics of the electronic communications industry, competition law in reaching this goal on consumer welfare generated substantial difficulties, and even that could jeopardize the achievement of that objective. Application of the EU competition rules in the practice of the process, sometimes the goal of protecting consumer welfare is replaced by reducing the harm to competitors. In this situation, tying and refusal to supply will provide a good example. In the *Commercial Solvents* judgment, the Court maintained the decision of Commission that an undertaking who enjoys the dominant position on raw materials market refuses to supply its

[332] Bork R H., The Antitrust Paradox: A Policy at War with Itself, New York: The Free Press, 1993, p.405

customer and causes the customer cannot participate in the competition, which can be seen as a violation of Article 102 TFEU, even if the undertaking reserves such materials for manufacturing the same products with its customer[333].

1.3. No Guarantee of Innovation

It can be seen as another target electronic communications policy that to ensure innovation is not impaired. On the one hand, innovation can be very effective in promoting the development of the telecommunications industry. On the other hand, according to the Digital Single Market Strategy published in 2015, as well as the Lisbon strategy, innovation has been seen as a key factor in ensuring economic growth and protecting employment. Therefore, at this level, to protect innovation is also an important goal of antimonopoly as one of the means of economic regulation. However, in practice, the choice of competition law is not as it should be.

In telecommunications market, the most notable feature is that the historical monopoly status and the significant network effect. As we discussed in the first chapter of the characteristics of the telecommunications market, the expectation for consumer adopting of new technologies impacts on the innovation process, while the uncertainty of this expectation also leads to considerable risks of innovation. Therefore, the choice of facility-based or services based on a competitive strategy for operators is always indecisive.

On the other hand, network effects and the position of natural monopoly promote winner-take-all or residual monopoly status. Clearly, under this situation, it is hard to overcome the incumbent's first-mover advantage even with better technology. Further, this inhibits the incentives for innovation. Coupled with the presence of institutional inertia, a former incumbent still enjoys the institutional dividend, which undoubtedly discourage new entrants and innovative initiative. Although competition law can play a significant role in promoting free competition on the market, but on further in promoting innovation, it still stays on the level of the objective.

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[333] *Istituto Chemioterapico Italiano S.p.A. and Commercial Solvents Corporation v Commission of the European Communities*. Judgment of the Court of 6 March 1974, Joined cases 6 and 7-73. para.25.

In comparison, the regulation of specific sectors could be a very useful policy instrument, which can create a fair competitive environment for sustainable development, temporarily implemented asymmetric regulatory measures. Asymmetrical regulatory norms as further attract entrants and promised to establish a healthy competitive environment before the cancellation, in order to stimulate business in addition to the incumbent's innovation. Indeed, the use of such instrument is not always an adequate remedy. In emerging markets, such as telecommunications, the incumbent does not have a distinct advantage to installing infrastructure. It is not necessary to apply asymmetric regulatory measures. The *ex post* mechanism provided by competition law is expected to issue better innovation incentives, at least to incumbent firms. As new entrants, their innovative incentives may be more depend on asymmetric regulation. Therefore, there might be "a social trade-off between innovation by incumbents and innovation by new entrants"[334].

Another factor affecting the innovation is whether consumers are willing to adopt new technologies, which however is largely unknown and unpredictable. This uncertainty could lead to drastic standards battle, and ultimately do not benefit consumers. Standardization can reduce such uncertainty, and accelerate the spread of new technologies, although it reduces the freedom of choice. Therefore, logically a robust standardization will promote interoperability, which in communications field is crucial policy tool.

In EU electronic communication mechanisms, although already pointed out, "standardization should remain primarily a market-driven process"[335], which means under the situation where standard is apposite, the application of it should ensure interoperability and avoid prejudice, following a wide public consultation. And when such such standards are inevitable but absent, Member States shall encourage the implementation of international ones[336]. This in-

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[334] Bourreau, Marc, and Pinar Doğan. "Regulation and innovation in the telecommunications industry." *Telecommunications Policy* 25.3 (2001): 167-184. p.173.

[335] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002, at Recital 30.

[336] Directive 2009/140/EC of the European Parliament and of the Council of of 25 November 2009, at Article 19(b).

tervention is far beyond the ability of competition law, whose initial goal was to provide rivalry rather than cooperation[337].

[337] Nenova, Mira Burri. EC electronic communications and competition law. Cameron May, 2007. p.318.

2. The Conflict Between Telecommunications Regulation and Competition Law

There are distinct differences between competition rules and regulation. On the one hand, the former exist as a general legal norm, whose purpose is to adjust the behaviors that restrict competition or have the possibility to restrict in all kind of market, while the latter is the guiding norm for a particular market. The purpose of regulation is usually to address identified and discrete failures within specific markets[338]. On the other hand, the application of regulation and law at a different time. Typically, telecommunications regulation is imposed *ex ante*. Regulation creates a normative framework intended to imitate market power and to prevent market failures. As the corresponding term, competition law has lagging effect, which is performed *ex post* when anticompetitive behavior is identified, except the problem of merger control[339]. Even so, when it comes to the telecommunications market, there are still conflicts between competition rules and regulation. One of them is about overlapping jurisdiction. Another one is concerning the conflict of law.

Contradictory in authorities mainly arises when there is a restriction of competition in the telecommunications market, and it should be governed by the sector-specific regulatory agency or by the competition authorities. If it should be regulated by regulator considering its specialized field, whether the competition authority can make a further adjustment when the restrict competition has not been eliminated in its view? Taking into account the specialized-sector agencies are more easily be captured by regulated entities[340], the issue is more complex.

When faced to the conflict of rule, this incompatibility is more intense. Even the jurisdiction is determined, it is a thorny issue to apply which rules, especially in the case of conflict. According to the principle that priority of law at the higher level over that at the lower

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[338] Larouche, Pierre (2000) Competition and Regulation in European Telecommunications. Oxford, UK: Hart Publishing. p.401.

[339] Hellwig, Martin F. "Competition policy and sector-specific regulation for network industries." *MPI Collective Goods Preprint* 2008/29 (2008). p.11.

[340] Ayres, Ian, and John Braithwaite. Responsive regulation: Transcending the deregulation debate. Oxford University Press, 1992. p.54-55.

level, it is a corollary that the effectiveness of competition law is higher than the regulation. When the result of the application or the regulation itself is clearly contrary to competition law, competition law should apply. But in the actual operation, according to previous discussion, the formulation of regulatory policies is generally constructed after competition law and according to the particular market circumstance. The results of the regulatory policies application may be more suitable for the development of specialized markets.

2.1. Institutional Issues

Sector-specific regulators are the important part of electronic communications regulation, which played a critical role in the healthy development of the industry. They play the role to supervise the telecommunications market and to enforce regulation on existing specific sectors, focusing on electronic communications technologies in social and economic dimensions. In practice, the national regulatory authorities (NRAs) are responsible for monitoring the electronic communications market and related competition issues. However, in dealing with competition matters, NRAs and national competition authorities (NCAs) who are in charge of all the competitive issues, have been overlapped in authorities. If not be well resolved, such predicament will lessen the supervision and damage the health of industry. But this issue should be addressed separately, countries or regions have different solutions.

In the United States, there are three departments sharing the jurisdiction in the competition of telecom munitions market: the Department of Justice (DoJ), the Federal Communications Commission (FCC), and the Federal Trade Commission (FTC). The function of the FCC is to apply Communications Act (1934) specified in the *ex ante* competition rules while the DoJ and the FTC are responsible for the implementation of antitrust laws, Sherman Antitrust Act, Clayton Act and the Robinson-Patman Act.

The existence of overlapping powers between the FCC, applying *ex ante* regulations, and DOJ and FTC applying *ex post* law is concerning the mergers of radio license transfer or common carriers, as well as the cases of violation both the specific sectors regulation and the antitrust rules. Although there will be some overlap dealing with merger control, these two

agencies allocate the power of review by their individual expertise. The merger investigation in telecommunications industry is initiated by DOJ[341].

After the Telecommunications Act of 1996, the target of telecommunications regulatory policies is set to promote deregulation and competition, which dramatically increased the power of the FCC to monitor the competitive behavior of the telecommunications companies. Meanwhile, Article 601 of the Telecommunications Act of 1996 sets the "antitrust savings clause", which restricted the regulatory framework to modify, limit or replace the applicability of any of the antitrust laws in the telecommunications market.

Actually, the US approach provides a vigorous and predictable dynamic institutional environment for the new entrants. It allows FCC to develop policies to break the previous regulations to adapt to market development. FCC's intervention impact the development of the telecommunications market in the United States significantly, which led the local telecommunications market to a national telecom duopoly competition and promoted the deregulation of broadband access.

In the EU, the European Commission (EC), NCAs and NRAs shared supervision of telecommunications competition. There is no regulatory authority in the community dimension. Therefore, the EC has jurisdiction only in matters related to competition within the Community. In the dimension of Member States, NCAs and NRAs shared the power, which means collaboration is essential. The division of jurisdiction of NRAs and NCAs indicates the relationship between telecommunications regulation and competition law. Indeed, the establishment of NRAs mostly depends on the demand for sector regulation, which has the same economic goals with competition law. Theoretically, NCAs are more suited to address competition issues in the field of telecommunications.

However, in practice, NRAs have more professional and more efficient mechanism to deal with competition issues in complicated environments. Furthermore, NRAs have been not only given the task to deal with the regulatory matters involving specific sectors of the economy but also have the obligation to deal with issues related to society and technology. Thus,

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[341] Weiss, James R., and Martin L. Stern. "Serving two masters: The dual jurisdiction of the FCC and the Justice Department over telecommunications transactions." *CommLaw Conspectus* 6 (1998): 195. p.195.

in the telecommunications market at the national level, there is no reason to rely entirely on NCAs to implement telecommunications regulation, but to abolish the NRAs.

2.2. The Conflict of Rules

Early when the liberalization of the telecommunications industry just began, the relationship between Special-Sector Regulations (SSRs) and market mechanisms had been widespread concerned. Under the ongoing efforts of scholars, there are two main theory established, public interest theory supporting regulations and capture theory exposing its limitations[342], which we have already discussed in detail in the first chapter. In a nutshell, scholars recognize the need for regulation, but at the same time, propose its scope of application, namely to deregulate after the establishment of suitable competitive environment.

However, elimination of contradiction in theory does not mean that the conflict between competition law and sector-specific norms is resolved. This conflict actually occurred in the country which has just been undertaking telecommunications liberalization. When the telecommunications market was regulated, the competition there was weak, so there was no space to apply competition law. For the socialist countries, such as China, the market mechanism is not an option before the economic reform.[343] Once the competition is introduced into regulated industries, due to the absence of the legislative resolution, the conflict between competition rules and SSRs will stand out. In fact, both in the European Union and the United States, there is an inevitable inconsistency between SSRs and competition rules. However, the two jurisdictions have their own approaches to reconciling.

2.2.1. EU approach: legal hierarchy

The latest EU telecommunications regulatory framework entered into force in 2003 and amended in 2009. The regulatory framework is an asymmetric regulation system which only aims at the telecom operators who have significant market pow-

[342] Posner R A. "Theories of Economic Regulation", Bell Journal of Economics, 1974, 5(2): 335-358. p.335.

[343] Brandt, Loren, and Thomas G. Rawski, eds. *China's great economic transformation*. Cambridge University Press, 2008. p.14.

er[344]. And competition law in the EU is a product of the EU Treaty[345]. Though the telecommunications regulation was constructed on the principles and methodology of EU competition law[346], there is still inherent contradiction between two kinds of rules. EU competition law might challenge the operators who fulfilled obligations on telecommunications regulation. So far, this conflict is not solved at the legislative level.

The conflict became obvious when the EU actively utilize its antimonopoly powers to intervene several telecommunication cases after the year of 2003. The most typical cases are undoubtedly *Deutsche Telekom Case*[347] that began in the year of 2003 and *Wanadoo Espana vs. Telefonica*[348] in the year of 2008. The EC prosecuted Deutsche Telekom as the incumbent in the German telecommunications market, and Telefonica, the Spanish one for applying the price squeeze behavior. However, paradoxically the alleged prices of the two operators were all set by the national regulators[349].

The support for competition of the European Court of Justice (ECJ) provided a solution to this conflict. According to the judgment of the Case *Deutsche Telekom vs. Commission*, undertakings can not be exempted from the competition rules even if they can get permission or acquiescence from national law to engage anti-competitive behaviors[350].

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[344] De Streel, Alexandre. "The integration of competition law principles in the new European regulatory framework for electronic communications." *World Competition: Law and Economics Review* 26.3 (2003). p.491-p.492

[345] Ginsburg, Douglas H. and Haar, Daniel E., Resolving Conflicts between Competition and Other Values: The Roles of Courts and Other Institutions in the U.S. and the E.U. (January 17, 2014). European Competition Law Annual 2012: Competition, Regulation and Public Policies 417 (Philip Lowe & Mel Marquis eds., Hart Publishing 2014); George Mason Law & Economics Research Paper No. 14-01. p.18.

[346] Stoyanova, Milena. Competition problems in liberalized telecommunications: regulatory solutions to promote effective competition. Vol. 35. Kluwer Law International, 2008. p.1-2.

[347] Joint Cases COMP/C-1/37.451, 37.578, 37.579, *Deutsche Telekom*, O.J. 2003, L 263/9.

[348] Case COMP/38.784, *Wanadoo Espana vs. Telefonica*, O.J. 2008, C 83/6.

[349] *ibid*, para.302-303 and Case T-271/03 *Deutsche Telekom vs. Commission* [2008] ECR II-477.

[350] Case C-280/08 P, *Deutsche Telekom v Commission*, [2010] ECR I-9555, para 82

Actually, competition law is seen as one of fundamental of the EU law and takes a remarkable place[351]. Therefore, the ECJ has never allowed any industry including telecommunications to claim a complete exception from EU competition la[352]. In contrast, the EU telecommunications regulation is merely secondary EU law that develops the TFEU. According to the principle of hierarchy of norms, the application of secondary norms should not replace or displace the TFEU. In conclusion, the EU has established such the principle that the participants in the telecommunications market who even fulfill the regulatory obligations, should comply with EU competition law.

2.2.2. US approach: utilitarian explanation

The approaches taken by the US to reconcile the conflict between competition rules and sector-specific regulation are dissimilar to those taken by the EU. In the US, the conflict takes place between rules at the same level. The principal antitrust law of the US, namely the Sherman Antitrust Act, which passed in the year of 1890 [353], has not Constitutional nature. It does not have priority over the Communications Act 1934 and the Telecommunications Act 1996. On the contrary, the US court dealing with the conflict between rules have to consider whether the later statute expressly or implicitly repealed the earlier law. If the new regulations do not exempt the effectiveness of the old one, a new method should be introduced to resolve this contradiction.

The US courts reconcile the conflicts between antitrust laws and the Telecommunications Act basing on whether the former one is excluded by the latter in the legislative texts. Since the Telecommunications Act 1996 does not expressly exclude the antitrust rules, a further interpretation is indispensable. In the case *Verizon Com-*

[351] Larouche, Pierre, Contrasting Legal Solutions and the Comparability of EU and U.S. Experiences (November 2006). TILEC Discussion Paper No. 2006-028. p.10.

[352] *Ibid.*

[353] Ginsburg, Douglas H. and Haar, Daniel E., Resolving Conflicts between Competition and Other Values: The Roles of Courts and Other Institutions in the U.S. and the E.U. (January 17, 2014). European Competition Law Annual 2012: Competition, Regulation and Public Policies 417 (Philip Lowe & Mel Marquis eds., Hart Publishing 2014); George Mason Law & Economics Research Paper No. 14-01. p.7.

munications Inc. v. Law Offices of Curtis V. Trinko, LLP [354], the US Supreme Court clarified its opinion. *Verizon* was indicted for abusing its dominant position on broadband wholesale market to take control of the retail market. But actually *Verzion* was just fulfilling its obligations under 1996 Act, and in early 2000, it had been handled by the FCC [355].

The Supreme Court considered that the Telecommunications Act 1996 had been adequately protecting competition in the telecommunications market and "significantly diminishes the likelihood of major antitrust harm" [356]. It further cited the *Town of Concord* principle [357]: "Antitrust analysis must sensitively recognize and reflect the distinctive economic and legal setting of the regulated industry to which it applies." And it pointed out that if there is a regulatory framework which is aimed to "deter and remedy anticompetitive harm", the antitrust enforcement seems not necessary, because it will not bring extra benefits or consider such institutional arrangement [358].

As can be seen from the results of the decision, when the US Supreme Court reconciled the conflict between competition law and regulatory rules, it defected to the method of economic analysis. As the existing regulatory rules have been able to bring the incremental benefit, and the application of antitrust law will also bring the risks of false positives, so in the conflict rules of competition law and regulation [359], the US Supreme Court chose to apply the latter and confirmed the restrictive attitude of US law towards the use of competition law to impose duties to deal with dominant firms [360].

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[354] *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko*, LLP, 540 U.S. 398 [2004].

[355] *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP,* 540 U.S. 398 [2004].

[356] *Town of Concord Massachusetts v. Boston Edison Company,* 915 F.2d 17, (1st Cir. 1990), para.33.

[357] *Ibid.* para.18

[358] *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko*, LLP, 540 U.S. 398 [2004].

[359] Ginsburg, Douglas H., and Daniel E. Haar. "Resolving Conflicts between Competition and Other Values: The Roles of Courts and Other Institutions in the US and the EU." *European Competition Law Annual* (2012). p.26.

[360] Larouche, Pierre. "Contrasting legal solutions and the comparability of EU and US experiences." (2006). p.4.

2.2.3. Analysis of the Different Approaches

Apparently, The US approach tends to foster legal certainty [361], while the EC approach might be more conducive to maintain the integrity of the legal hierarchy. However, each approach has its advantage as well as its imperfection.

The US approach heavily dependent on the court. Its approach requires a court be provided with higher economic analysis capabilities, which will increased risk that the lower courts are likely to eliminate the application of antitrust laws. This approach will further reduce the benefits bringing by deregulation, and also increase the cost of judicial errors [362].

European seems to discover a method fitting all size, however, which actually improves the cost of judicial error. Since the constitutional value of competition law, the courts can not make legislative oversight in the case involving competition. To decrease such risk, the Commission utilizes Article 101(3) to reconcile the *ex ante* conflicts [363]. This approach in fact improves the predictability of the law in the civil law system without case-by-case review.

2.3. Territory Division of Regulation and Competition Law

According to the European regulatory framework, the telecommunications market is competitive and is priority regulated by competition law. In this market, the regulation should be as less as possible [364]. But it does not mean the telecommunications market does not need regulation. According to the Commission Recommendation of 2014, *ex ante* regulations should only apply: (1) in the non-competitive market where there is high and non-transitory entry barriers; (2) when competition law alone would not adequately address the market fail-

[361] Larouche, Pierre. "Contrasting legal solutions and the comparability of EU and US experiences." (2006). p.4.

[362] Ginsburg, Douglas H., and Daniel E. Haar. "Resolving Conflicts between Competition and Other Values: The Roles of Courts and Other Institutions in the US and the EU." European Competition Law Annual (2012). p.27.

[363] *Ibid.*p.28

[364] Paz, José Carlos Laguna de. "What to keep and what to change in European electronic communications policy?." *Common Market Law Review* 49.6 (2012): 1951-1975. p.1954.

ure [365]; and (3) to markets where there are one or more undertakings with significant market power [366].

At the beginning of liberalization, it was inevitable to cultivate competition and balance the market structure through asymmetric regulation which gives benefit to new entrants and imposes restrictions on incumbent. According to the Commission Recommendations of 2014, the markets listed in the Commission Recommendations of 2003 except the one listed in Recommendations of 2007 are still suitable for *ex ante* regulation [367]. Although it is the trend to deregulate in the EU telecommunications market, *ex ante* regulation is still applied. Mandatory access to the incumbent's network at cost-oriented prices is the main regulatory remedy still applied [368].

From the EU's practice, it is very clear the regulation and competition rules have their each own functions in the field of telecommunications. The rules of competition exists as a general principle which is the default state of the market, and telecom regulation controls the access to the telecommunications market as well as implement the asymmetric regulation on incumbents.

2.3.1. The Subdivided Functions of Sector-specific Regulation

(a) Asymmetric regulation

Asymmetric regulation means the telecommunications regulator treats operators in different market conditions differently. This distinction is applied through the development of preferential policies and regulations for new communications operators. In a particular period, these policies and regulations restrict the dominant telecommunications operator, and releases the constraints of the new communica-

[365] Commission Recommendation of 9 October 2014, on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (2014/710/EU), para.11.

[366] *Ibid.* para.6.

[367] *Ibid.* para.22.

[368] Paz, José Carlos Laguna de. "What to keep and what to change in European electronic communications policy?." *Common Market Law Review* 49.6 (2012): 1951-1975. p.1955.

tions carrier or the non-dominant telecommunications operators, in order to promote fair competition and the entrance of the telecommunications market.

The essence of asymmetric regulation is to change the situation of unequal competition as soon as possible, to give the incumbent more rigorous controls than the new competitors, and in basic and important business, new entrants have more favorable treatment than incumbent operators. The asymmetric approach aims at substantial fair and the restructure of the market so that the new arrivals for a period can be rapid development.

Asymmetric regulation on microeconomic policy is applied to the aspects as follow: tariffs of communication incumbent, universal service obligations, cost settlement, frequency fees, number portability, market share and so on. For example, in the tariff, the dominant operator has to declare its standard tariff, but other competitors, they have a relatively large decision-making power. In terms of universal service obligations, dominant operators must take this duty, which can be exempt for non-dominant carriers. In fee settlement sections, non-dominant carriers can not bear settlement or less cost; in charges frequencies, the dominant carrier has to pay all the costs according to the standard price, but other players can get discount; in terms of number portability, in the limited time, it is allowed that the users can transfer to non-dominant carriers from the incumbent, but the reverse operation is not allowed; in terms of market share, the legislation does not permit the incumbent holds more than 50% market share, and so on [369].

It should be noted that asymmetric regulation is an option before the establishment of the effective competitive market, but can not be abused. If asymmetric regulation being abused, it will not only cause damage to market competition rules but also cause non-dominant operators heavily dependent on regulatory policy, eventually leading to the principle of asymmetric regulation become reverse incentives to non-dominant carriers, which further hurts the competitive enterprises. Therefore, the

[369] To prevent monopoly, Korea Telecom administrations provisions, the three telecom operators, namely SK Telecom, KTF and LGT, the user-occupancy ratio must be maintained at a fixed ratio, generally 5:3:2.

application of asymmetric regulation can not be unprincipled, excessive and last for long-term.

In the US telecommunications industry regulation, asymmetric regulation is an important part of it. Its core content is to try to narrow the gap between competitors in the actual operation of the market. The goal is to make all participants in the market economy be able to participate on equal terms in free competition. Ultimately, it is another aspect of fostering competition mechanism. Once the market competition mechanism is established, the policy will be no longer necessary. The asymmetric regulation requires that there is a huge gap of competition power between competitors. If there is no competitor, the asymmetric regulation will lose the basis for implementation. Thus, the precondition of asymmetrical regulation is network access.

(b) Entry regulation

Another important function of Sector-specific regulation is to control the entrance at the telecommunications market. Entry regulation closely related to the market structure regulation. Regulation of market structure uses policy measures in the short term, through more substantial restructuring or adjustment of the existing market structure, in order to promote an effectively competitive market framework. However, to maintain effective dynamic competition, it must depend on entry regulation.

Competition mechanism can break the monopoly of the product and information, which can stimulate enterprises to reduce costs, and to carry out technological innovation actively so that consumers can enjoy lower prices. At the same time, government regulators can get more regulatory information from the competitive market, which will help to improve control efficiency. Therefore, generally speaking, liberal policy should be taken as far as possible. The relaxation of the entry regulation will lead the problem that the existing dominant companies or vertical integration enterprises discourage new companies to enter the market. Facing such anti-competitive behaviors, it requires not only the competition authorities to monitor the behavior of

dominant firms, but also to help new businesses establish their communications network to compete with the dominant firm.

The gradual approach taken by the United Kingdom is worth learning. The British Government promulgated the "Telecommunications Act" in 1981, taking some policy measures of deregulation. According to this law, British Telecommunications separated from the British Post Office and became an independent enterprise. What's more, this act also abolished the legal monopoly status of the British Telecommunications in operating communication network, providing most communications equipment and other aspects. In November 1983, the UK implemented the "duopoly policy" in the wired communications business, which was valid for seven years. This policy granted the British Telecommunications and Mercury Communications to operate nationwide wired telecommunications networks jointly. Meanwhile, in the mobile communications business, the British government had also implemented a "duopoly policy", granting the qualification to operate a mobile network for Cellnet and Vodafone.

After seven years, in November 1990, "duopoly policy" had expired. The British Government made an assessment and adjustment to this policy. The results are reflected in White Paper, name "*Competition and Choice: Telecommunications Policy for the 1990s*", which took measures to promote the telecommunications industry. One of those measures is to end "duopoly policy" which restricted competition in telecom network. According this document, the Government would have to provide the license of domestic communications services for the qualified applicants.except international communications which were still operated by the original two companies in the short term.

According to the new policy, cable companies do not need to cooperate with British Telecom or Mercury Communications to provide direct communication services using its own cable network. But it does not allow any telecommunications company to provide television service through the communications network in 10 years. This regulatory policy is the above-mentioned asymmetric regulation. In other

words, cable companies were permitted to provide both TV and telecommunication services, but British Telecom and Mercury Communications were limited in telecom market. The rationale of such policy is that the Government on one hand desired to open the telecom market, on the other hand, to maintain the competitive status of existing television market. If British telecom enterprises were allowed to provide TV service, utilizing their large and comprehensive telecommunication network, then there was no cable television company could compete with them.

Since the new entry policy implemented, communication services provided by cable companies had developed rapidly. It has become an important competitive force against BT. The British Government had issued telecommunications services licenses to more than 150 companies through the above series of measures promoted by regulatory policies in that five years. This entry regulation makes the market competition mechanisms play a major role in varying degrees in all business areas of the telecommunications industry.

2.3.2. Competition Law as Supplement

Competition law is providing the function of filling the lacunae in regulated markets [370]. In these markets, there are structural market failures, such as a natural monopoly. Such problems cannot be addressed effectively through the implementation of competition law. Therefore, the sector-specific regulation is necessary. However, before such regulation has been established, the antimonopoly law is a second-best solution providing a legal framework.

When competition law overlaps with regulation, competition law may provide an alternate mechanism to remedy market defects. Once enacted, unless expressly or impliedly exclude, competition law will be applied to any market[371]. Compared with the regulation that has to be applied in a particular market, competition law has uni-

[370] Hovenkamp, Herbert. The antitrust enterprise: principle and execution. Harvard University Press, 2009. p.10.

[371] Dunne, Niamh. Competition Law and Economic Regulation. Cambridge University Press, 2015. p.71.

versality, which can be used as *ex post* enforcement in any market, including the market has been regulated.

In the EU, competition law is applied to regulated industries unless the industry is exempted by law, which is support by the Court of Justice. In the telecommunications industry, there is no such exemption so that competition law will be applied to this sector [372]. In the case of *Deutsche Telekom*, the Court of Justice held that [373]:

> *"It is only if anticompetitive conduct is required of undertakings by national legislation, or if the latter creates a legal framework which itself eliminates any possibility of competitive activity on their part, that Articles 101 and 102 (TFEU) do not apply. "*

Competition law here is seen as a complement to regulation. It was clearly pointed that "the competition rules laid down by the TFEU supplement in that regard, by an *ex post* review, the legislative framework adopted by the Union legislature for *ex ante* regulation of the telecommunications markets"[374]. And when the behaviors of abuse dominance are investigated, the regulation has to be taken account in place by the competition authority.

In the US, the regulation seems like a substitute for antitrust law. In the case of *Trinko*, the Supreme Court refused to condemn a telecoms incumbent for refusing to give access to its network to its competitor AT&T, since the incumbent had already been condemned by the federal and the State telecom regulators[375].

The telecommunications industry has created an unprecedented potential for innovation and economic growth. The characteristics of it are highly innovative, technological properties and convergence. Such market environment needs more for a flexible regulatory mechanism

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372 Case 41/83 Italy v. Commission [1984] ECR 873.

373 Case C-280/08 P Deutsche Telekom AG v Commission [2010] ECR I-9555, para.80.

374 *Ibid.* para.92.

375 De Streel, Alexandre. "The Antitrust Activism of the European Commission in the Telecommunications Sector." European Competition Law Annual (2012): 189-208. p.197.

to avoid extinguishing the spark of innovation and eliminating the potential technology. Therefore, deregulation is desired in heavily controlled high-tech market, and the main role of regulation is to foster the market, to create a more pro-competitive market structures.

Since the telecom market grows mature, competition law seems to be an ideal regulatory instrument. On one hand, as market mechanism has been established, it needs the protection provided by competition law. On the other hand, *ex post* nature of competition rules will create the maximum economic benefit. Most of competition rules will be in effect only after anti-competitive behavior takes place. In the rest time, it depends on the market's self-regulation to optimize resource allocation. As the result of economic liberalization, competition law established economic freedom as an individual right, which can not be restricted unless in violation of the *ex post* general competition rules[376]. This principle abstracted and generalized economic rules implementing specific economic sectors.

Due to the nature as *ex post* rule, at the beginning of the market development, competition law does not solve the problem of lack of competition in the market. In other words, only in a mature market, competition law can effectively play its role. Therefore, the task of fostering competition in the market and the establishing of market competition structure, competition law is not able to accomplish. The main purpose of competition law is to establish fair and effective competition market, to prevent anti-competitive behaviors which may lead to market failure, and as the results to benefit consumers, achieving economic growth. The fundamental objective of competition law is economic, but not with the social objectives which belong to sector-specific regulation.

[376] Broumas, Antonios G. "The Necessity of Sector Specific Regulation in Electronic Communications Law." *Journal of International Commercial Law and Technology* 4.3 (2009).

3. Challenges for Chinese Telecommunications Market Reform

For a long time, China rigidly abide by the socialist system, excluding competition. The economy was controlled by the State-owned enterprises, supplemented with limited private economic sectors. This situation continued until the introduction of the policy "reform and open" in the year of 1978. The Chinese Government began to introduce market mechanisms deliberately. Therefore under such policy, socialism is being maintained. However, the market economy strengthens continuously. Globally, in recent decades, the telecommunications reform has undertaken in most countries. As the element of the national economy and the political system, however, telecommunications reform can not be implemented without the macro reform. Therefore, China's reform in the field of telecommunications, on the one hand, is in line with the international trend. And on the other hand, it is the demand for their own economic environment.

Despite the demand for changes, the introduction of reformation and the legal system of China Telecom system far failed to meet the actual demand. The Chinese Government in order to avoid the economic and political risk, takes the cautious policy. Comprehensive reform in China does not depend on issuing new laws and administrative regulations to achieve complete restructuring. A new system usually follows some experimental methods with limited impact but necessary modifications. Once the new system has been confirmed, accompanied the publication of state directives and the legislation, comprehensive reform could be carried out substantially. While telecom market changes along with the development of technology, "act after trials" approach is apparently lagging and can not meet the requirements of the current situation.

3.1. Intervention of Competition Law on Regulated Telecom Industry

Generally speaking, in the process of China's telecom industry liberalization, there is development but also compromise. Indeed, a considerable part of the private operators have participated into the telecommunications market, but a thorough liberalization does not take

place in mainland China so far. The first category of basic services[377] and telecommunications network are still provided and controlled by state-owned enterprises. As for private companies, they can only provide the basic services on the second category[378] and value-added services, including Internet access[379].

In the competition, the biggest obstacle to Chinese telecommunications sector is that all of the retail markets are firmly controlled by three State-owned enterprises. Except those other operators in the broadband market accounted for only 6% of total market share, in the mobile communications market, there is even no space to alternate the players. In the other words, there is only insignificant room for the application of competition rules on Chinese telecommunications market.

Chinese Anti-monopoly Law is similar as it in other jurisdictions. It also prohibits anti-competitive agreement, the abuse of dominant position and anti-competitive mergers. The differences are that, first of all, Chinese Anti-monopoly Law came out late. Chinese anti-monopoly law was enacted in 2007 and came into force in 2008, much later than Telecom Regulation. Secondly, regarding content, Chinese Anti-monopoly Law uses the whole chapter to prohibit the Government from restricting competition uniquely [380].

In the relationship between Chinese Telecommunications Regulation and Chinese Anti-monopoly Law, on one hand, the former one does not exempt the application of Anti-Monopoly Law, which is also impossible in logic, because Telecommunications Regulation was enacted in the year of 2000, much earlier than Chinese Anti-Monopoly. On the other hand, further more, Chinese Anti-Monopoly Law does not explicitly exempt its application in regulated industries. The Article 7 of Anti-Monopoly Law provides that "with respect to the indus-

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[377] According to the classification of the Ministry of Industry and Information Technology (MIIT), the first category of basic telecommunications services include fixed telephone, mobile telephone, satellite communications and international leased lines, data transmission and international data transit.

[378] The second category includes Cluster communications, Paging, Satellite facilities ,VSAT services, Intranet data transmission and wireless data transmission, Wireless access, Customer premises network, and Telecom facilities Collocation.

[379] Telecom Services Categories, 2013, MIIT

[380] Anti-Monopoly Law of the People's Republic of China, Standing Committee of the National People's Congress, Order of the President of the People's Republic of China(No.68), 30/08/2007. Chapter V, Abuse of Administrative Power to Eliminate or Restrict Competition.

tries controlled by the State-owned economy and concerning the lifeline of national economy and national security or the industries lawfully enjoying exclusive production and sales, the State shall protect these lawful business operations conducted by the business operators therein, and shall supervise and control these business operations and the prices of these commodities and services provided by these business operators, so as to protect the consumer interests and facilitate technological advancements." Article 7 provides the protection for legitimate business, and more importantly, it establishes that it's necessary to use regulations, antimonopoly enforcement, and other a variety of methods to regulate the industries controlled by the State-owned economy, in order to safeguard the interests of consumers[381]. Therefore, the Chinese government's prerogative companies are still subject to Anti-monopoly Law.

The enforcement power of Chinese Anti-monopoly Law was shared by the three departments, namely the State Administration for Industry and Commerce (SAIC), the Ministry of Commerce (MOFCOM) and the National Development and Reform Commission (NDRC)[382]. Wherein the MOFCOM enjoys an exclusive authority to deal with the merger transaction while the other two institutions share the power to deal with anti-competitive behaviors. NDRC handles the matters relating to prices, and SAIC is in charge of the other non-price anti-competitive behaviors. Although the Anti-monopoly Law has been dormant after the implementation, in recent years the Chinese Anti-monopoly law enforcement agencies began to implement it widely.

Till now there are more than 50 cases of private antitrust litigation, of which there are two cases related to telecommunications industries[383]. Wherein, the case of China Unicom and China Telecom is closely related to this article to explore the conflict between antitrust law and telecommunications regulation.

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[381] Jiebin, Zhang. "On the Application of Antitrust Law in Particular Industries——Review on the Article 7 of Antitrust Law of People's Republic of China." *Journal of Beijing University of Chemical Technology (Social Sciences Edition)* 4 (2007): 006. p.25

[382] Anti-Monopoly Law of the People's Republic of China, Standing Committee of the National People's Congress, Order of the President of the People's Republic of China(No.68), 08/30/2007. Article 10.

[383] Hou, Liyang. "When Competition Law Meets Telecom Regulation: The Chinese Context." *Available at SSRN 2562380* (2015). p.8

3.1.1. Investigation

As introduced in Chapter II, the fixed telephone service and mobile service in China are firmly controlled in the hands of the three major state-owned operators. Only in the broadband services market, there is space for private competitors. And that is the reason why in this market, there is the first case that the anti-monopoly law enforcement agencies to exercise the administrative power to State-owned enterprises under the supervision of sector-specific regulation.

The case was exposed in the year of 2012. In order to make their customers be able to connect to the servers abroad, Chinese private broadband operators have to purchase the international data transit service from the three State-owned operators. Such service falls to the core telecommunication services which are monopolized by three players [384]. As a service being regulated, the price is fixed by the Ministry of Industry and Information Technology (MIIT)[385], which was 1000 yuan (RMB) per month per megabyte[386].

In fact, there is another way to make their own users connect to foreign servers bypassing the international data transit service, namely data penetration. Operators can connect to the foreign servers as long as purchase the internet access service from other operators who have already brought the international data transit service. The price for the internet access service, which falls into value-added services that can be provided by private operators, is 200-300 yuan (RMB) per month per megabyte[387]. Because of the nature of profit-driven, in front of the large price gap, private operators began to stop buying or buy less international data transit service, and instead to buy access network services from the end-users of state-owned operators.

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[384] The Ministry of Industry and Information Technology, “The List of Companies of Basic Telecommunications Services and Companies of Value- Added Telecommunications Services” (2015) (In Chinese).

[385] Regulation on Telecommunications of the People's Republic of China, (2000) No. 291, Article 43.

[386] Measures for the Settlement between the Internet Exchange Center Networks, (2007) No. 557 (In Chinese).

[387] Xilaoye, Wang. "Rethinking the case of China Telecom, China Unicom alleged monopoly”, SJTU Law Review, 2013(2): 5-15, p.8.

Such data penetration was discovered by China Telecom and China Unicom soon, who decided to take action in late 2010. The two State-owned operators interrupted all of the user's network connection who provide Internet access service to other operators so that millions of users who relied on the penetration service cannot access to foreign servers.

Because the dispute was related with prices competition, it is the responsibility for NDRC to investigate. Private operators carried out a complaint to the NDRC and got a response in April of the following year. The NDRC decided to start an investigation on both price discrimination and price squeeze. Eight months after the investigation launched, in December, two State-owned operators made public statements separately, expressing their willingness to make commitments to suspend the investigation. The NDRC terminated investigation and approved the commitments which included to increase the frequency range and to reduce the price of Internet access. The case ended with the commitment made by State-owned telecommunications companies.

3.1.2. Paradox

Apparently, the conflict between Anti-monopoly Law and sector-specific regulation triggered the case. The pricing behaviors of China Telecom and China Unicom were suspected of violating the provisions of the antitrust laws, but in fact, their prices were in line with standards under provisions of the MIIT. It is a paradox that if it did not violate antitrust laws, the two operators would violate the telecommunications regulations. But the result of the case did not solve the problem, and the involving companies had made settlement irrelevant to the case. In fact, since the ending of this case was not a punishment decisions, therefore it can not judge whether China Telecom and China Unicom's conduct was a violation of antitrust rules, and can not determine whether NDRC has the power to evaluate the behaviors of regulated industries based on the power of Chinese Anti-monopoly Law.

To say the least, if the NDRC investigation result was that the two companies violated Anti-monopoly Law, and the NDRC had the power to intervene, then the

case will be caught in an awkward position, that legal norms conflict. In China, Anti-monopoly law enacted by the People's Congress, while sector-specific regulations belong to the State Council regulations. Taking the provisions of Article 79 of the Legislation Law [388] into account, regulations cannot be inconsistent with the law of the State Council. Telecommunications regulation should, therefore, give way to the application of Anti-monopoly Law. This seems to support the action of the NDRC, and the conflict between Anti-monopoly Law and Telecommunications Regulation can be well solved.

However, the thorny problem is that the NDRC has no competence to abolish the incompatible regulations, because under Article 90 of Legislation Law, only the Standing Committee of People's Congress enjoys such power. If it was allowed to proceed the antitrust lawsuit of the NDRC that would produce the same effect to repeal provisions of the MIIT, and further jeopardize the authority of the Standing Committee of the Chinese People's Congress[389]. In other words, even Telecommunication Regulation conflicted with the Anti-monopoly Law, and the behaviors of the two Stated-owned operators violated the Antimonopoly Law, the NDRC can not make a decision on punishment applying the Anti-monopoly Law.

3.1.3. Solutions

Since there is no substantive solution to the conflict between the competition rules and sector-specific regulations in China, it is better for us to focus on the approaches of the EU and the US, in order to find a suggestive solution.

In the EU, as part of the primary EU Law, Competition Law will take precedence over sector regulatory rules, which once generates the effect of restricting competition. Similarly with the EU, regarding legislative hierarchy between competition rules and telecom regulation, in China, the former ranks higher than the latter.

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[388] National People's Congress, Legislation Law of the People's Republic of China, Order No. 20 of the President, 15/03/2015.

[389] Hou, Liyang. "When Competition Law Meets Telecom Regulation: The Chinese Context." *Available at SSRN 2562380* (2015). p.12-13

But unlike the EU, even though the regulation contradicts competition law, the agencies of Chinese Anti-monopoly Law have no authority to revoke the effective telecommunications rules[390]. This problem can only be resolved at the legislative level.

The US, dealing with such conflict, tends to analyze case-by-case and set competition policy and regulatory policy on an equal level. American approach requires three preconditions to verify whether the rules of competition suit for intervening into regulated issues. First, whether competition rules are included in the sector-specific regulations; if not, second, whether the sector-specific regulations are intended to remedy the harm of anti-competition; and third, whether the intervention of competition law may disturb the regulatory strategy. In the next part, I will try to use the methods described above to analyze Chinese Anti-monopoly Law and Telecom Regulations, and further to examine whether the involvement of competition will be able to enhance the social welfare.

On the first condition, as we mentioned before, Chinese Telecommunications Regulation can not preclude the application of the Anti-monopoly Laws. In terms of time, the Telecom Regulation was drafted, enacted and took effect before Anti-monopoly Law, which leads the Telecom Regulation can not exclude the application of antitrust law in the content. This factor can also explain the conflict between Regulation and Competition Rules in China.

The second condition is that whether the sector-specific regulation is comprehensive and aims to prevent and rectify the anti-competitive restriction. This condition actually pays attention to the text of the rules, consisting of two levels, first, whether provisions itself is detailed, and secondly whether the purpose of the text is conducive to promoting the competition.

On the first level, the Chinese Telecom Regulation is not comprehensive. In the number of provisions, comparing with the US, whose Telecommunications Act comprises more than 700 articles and the EU, whose telecommunications regulatory

[390] Hou, Liyang. "When Competition Law Meets Telecom Regulation: The Chinese Context." *Available at SSRN 2562380* (2015). p.17.

framework contains four directives, the Chinese Telecom Regulation consists of only 81 articles. The second level is whether the purpose of rules is set for preventing anti-competitive behaviors or correcting the effect of excluding competition. From the aim and terms of the context, Chinese Telecom Regulation does not have such provision to stop restricting competition. Also, the effect from the implementation of the Telecom Regulation can not prevent and correct restrict competition. On the one hand, China just completed a small part of the liberalization. Only value-added services have been privatized, and basic telecommunications services are still tightly controlled in the hands of the three state-owned enterprises. It is worth mentioning that the driving force of the privatization is not the only from the competitive pressure of value-added services, but also the desire of Chinese Government to join into WTO, which requires opening value-added services for foreign investors. On the other hand, the Telecom Regulation promotes the competition powerlessly. Chinese telecom industry has now formed an impregnable oligarchical structure. Such a market structure can not prevent tacit collisions between the incumbents. And there are lots of complaints about the three operators acting monopolist conduct. This indicates that the telecommunications regulation is not able to solve competitive problems. Thus, the intervention of Anti-Monopoly Law may provide additional protection to small competitors and consumers, thereby increasing overall welfare in the telecommunications industry.

The third condition is whether the application of the competition rules may be contrary to the plan of the Regulatory Agency. Under the background of China's reform and opening up, we believe that interventions of Chinese Anti-Monopoly Law is not inconsistent with the targets of regulatory agencies and even unified.

A competitive market is the highest goal set by the Chinese Government. In 2013, the Chinese Central Government developed the highest goal to establish a competitive market, making the market forces play a decisive role in the allocation of

resources[391]. This goal was reconfirmed in 2014 by the State Council[392]. Currently, in the telecommunications market, there are at least three major obstacles to the development. First, the MIIT still insisted that only state-owned monopolies are allowed to provide basic telecommunications services; second, the mimic competition by regulation can not satisfy the relevant market; and third, in order to preserve the interest of the telecommunications sector, the MIIT hesitated to grant the telecommunications licenses to broadcast operators, so that technology convergence is difficult to take place in this market. In order to break such impasse, it is necessary to introduce instruments of Competition Law into the telecommunications market. Such additional driving force might push the Ministry to speed up the process of liberalization[393].

In summary, if we learn from the United States experience to resolve the conflict between antitrust laws and sector-specific regulations, China shall first apply the anti-monopoly law to adjust the issues relating to restrict competition in the telecommunications market. Coincidentally, this result is actually dealing with these issues in Europe in the same way.

3.2. The Establishment of an Independent Regulatory Agency

The independence of a regulatory agency is mainly reflected in substantial dimension, but not in a formal one. It is not a practical way for China to model on the US to establish a regulatory body independent of the government. The main reason for the establishment of an independent American regulatory agency in the United States is to prevent the expansion of presidential powers on behalf of the executive branch, under a particular political system of separation of powers. However, according to the Chinese Constitution, China implement the people's congress system which means the National People's Congress and local people's congresses are the authorities, and the State administrative organs, judicial organs, procurator-

[391] Decision of the Central Committee of the Communist Party of China on Some Major Issues Concerning Comprehensively Deepening the Reform, Adopted at the Third Plenary Session of the 18th Central Committee of the Communist Party of China on November 12, 2013, Article 3.

[392] Chinese State Council, Opinions of the State Council on Promoting Fair Market Competition and Maintaining the Normal Market Order, No. 20 [2014] of the State Council, June 04, 2014, Article 1.

[393] Hou, Liyang. "When Competition Law Meets Telecom Regulation: The Chinese Context." *an updated version was published on Computer Law & Security Review* 31.5 (2015): 689-700. p.700.

ial organs and Military organs are all produced by the people's congress of it is responsible, subject to its supervision. It is very different to establish a formal independent regulatory agency under such institutional arrangement because the establishment requires the approval at the constitutional level, which is impossible in practice. A more realistic reform is to establish a substantial independent regulatory body, which means the independence of the regulator does not require the isolation from the executive branch, but more importantly, the transparency and fairness of the decision-making.

3.2.1. The clarity of the authority and the responsibility

In order to strengthen the independence of regulatory body, firstly, it must be clearly defined the power of the regulatory agency in the legislation. The US Telecommunications Act of 1996 uses an entire chapter to describe the structure of the organization and to define the responsibilities of the Federal Communications Commission. However, in *Regulation on Telecommunications of the People's Republic of China*, there is only one provision related to the regulatory body, "the Ministry of Information Industries (MII) under the State Council is responsible for the nationwide supervision and administration of telecommunications in accordance with this Regulation. The telecommunications administrative authorities of all provinces, autonomous regions and cities under the direct control of the Central Government are responsible, under the guidance of MII, for the supervision and administration of telecommunications in their regions in accordance with this Regulation." This provision is too simple to define the competence of regulatory agency. Therefore the primary task of reform is to define the limits of authority with the form of legislation.

3.2.2. The centralization of the authorities

Currently, Chinese telecommunications regulatory authorities are set up according to the division of administrative regions, which is not suitable for the actual situation of the telecommunications market. Because with the continuous development of communication technology, the distinction between the province and the provincial communications becomes increasingly blurred. If different local authori-

ties exercise their power separately, there will be regulatory overlap or regulatory vacancy, which is not conducive to the exercise of regulatory authority effectively. At the same time, the popularity of the Internet and the promotion of global information infrastructure reduce the rationality of geographical demarcation of authority. Therefore, the establishment of a centralized management of market supervision system is the main goal for the reform of the telecommunications regulatory agency.

3.2.3. The establishment of a converged regulatory agency

According to "*The 11th Five-Year Plan for Economic and Social Development of the People's Republic of China*"[394], the information infrastructure of the broadband communications network, the digital television and next-generation Internet should be strengthened, the "triple play" should be promoted, and the information security system should be built up. What's more, "*Telecommunications Act of People's Republic of China*"(draft) also try to break barriers among the radio, television and telecommunications, and to set up a bidirectional entry system. The introduction of the present situation of Chinese Telecommunications Regulatory Authority in Chapter 2 shows that, due to historical reasons, the current telecommunications regulatory functions are exercised jointly by the Ministry of Industry and Information Technology (MIIT) and the State Administration of Radio, Film, and Television (SARFT). The MIIT is in charge of the telecommunications industry, and the SARFT is in charge of television, radio, and other media industries. Such segregation of the responsibilities of management does not comply with the trend of technological development in the telecommunications sector.

With the development of telecommunications technology and network convergence, it is a general trend to regulate television, telecommunications, and the Internet together. Combined with the successful experience of the EU, China should establish a convergent regulatory system. A more feasible approach is to merge the

[394] The Central People's Government of the People's Republic of China, *The 11th Five-Year Plan for Economic and Social Development of the People's Republic of China* (in Chinese), 2006.03.16, from http://www.gov.cn/ztzl/2006-03/16/content_228841.htm

MIIT and the SARFT, exercising of unified regulatory authorities on telecommunications, television and the Internet. The very first step is to implement two-way access to both broadcasting and telecommunications networks. Under Chinese political situation, to achieve this goal, it is necessary for the State Council to coordinate these two ministries. Telecommunications reform in China is not a purely legal issue, but a political one.

4. Conclusion

The liberalization taking place in the telecommunications industry market broke the natural balance, which was built up between market force and administrative power. This imbalance caused the conflict between the Antitrust law which protects competition in the market and the sector-specific regulations which simulates market forces when the market failed. As the classical theory has assumed that market forces is the best way to protect consumers, Antitrust law is designed to maintain competition, and specific sector imitates of the competition by the executive power in the case of market failure or can not be adjusted in the market environment and quits when the competition has reached a satisfactory level. However, in the face of specific circumstances, the boundaries between competition rules and regulatory specific sectors have never been clear. And there is no a globally consistent solution. The EU promotes the competitive policy based on the EU competition law at the constitutional level. America takes the method of assessment case by case to measure the competition rules of the regulated market intervention whether effective competition will bring added value. But for China, there is no a clear solution to solve this conflict in a liberalized telecommunications market. Based on the review under the current market conditions, competitive strategy shows more in line with China's demands. Therefore, administrative rules shall not exclude the application of the competition rules. In other words, when conflict occurs, the competition rules should get the priority.

CONCLUSION

The principal purpose of this work is to observe the telecommunications reforms in the US and the EU and to sum up the successful experience and the consensus, which can be applied in the reform of Chinese telecom market and response the issue since liberation. The main problem that the Chinese telecommunications market faces now are, first, whether the existing Anti-monopoly Law can or should adjust the telecommunications market. If the Anti-monopoly Law can be applied to the telecommunications market, then the second problem is how to introduce competition rules or how to deregulate; after the introduction of competition rules, the third, how does competition law operate in the field of telecommunications, and the fourth, at the normative level, how to adjust the conflicts between the existing telecommunications regulation and Anti-monopoly Law, and in the practical level, how to arrange the authorities between the anti-monopoly law enforcement authorities and telecommunications regulatory agencies when the competitive dispute arises in the telecommunications market.

To answer the first question, we need not only recall the history, to question the reason for regulating telecommunications market but also view the present, to analyze the characteristics of modern telecommunications market (Chapter I). The rationality of regulating the telecommunications market was the features of scale effect and network effect, causing high sunk costs. The purpose of the telecommunications regulation is to ensure that no one can run a telecom company as a monopoly, meanwhile, as consideration, it should supply telecom products at competitive prices and provide universal service to the consumers. With the development of technology, the cost in the telecommunications industry reduced drastically, which smash the ground of maintaining telecommunications industry as a natural monopoly sector, and thus the reform of deregulation emerged in the relevant market. From this perspective, the reform of introducing competition into Chinese telecommunications market can not be avoided.

The reform of the telecommunications market is facing two problems, how to deregulate (Chapter II), as well as how to deal with the relationship between the introduced competition rules and the existing telecom regulations (Chapter III Section I). In order to introduce competition rules into the Chinese telecommunications market, the core steps are as follow,

first of all, to remove the political exclusive rights in the telecommunications market, and then, to establish a complete telecommunications regulation whose purpose is to promote the development of telecommunications but not to exclude competition within the industry, at last to build up an independent telecommunications industry regulator. In China, such independent status does not require completely independent of the administrative system but need to enjoy independent decision-making powers within the administrative framework. In order to promote the development of the telecommunications industry, telecommunications regulation needs to cultivate the competition in the market. Therefore, facing competition matters, on one hand, the telecommunications regulation as *ex ante* rule can carry out asymmetric policy to foster competitive markets, as well as determine the access standards. On the other hand, as *ex post* rule (mainly), the antitrust laws adjust the behaviors of restricting competition in telecommunications market neutrally.

When the Antimonopoly Law is applied in the Chinese telecommunications market, the experience that the EU use competition law to regulate the restriction of competition and to control the merger in telecommunications market (Chapter III) should be gained. In the telecommunications market, the main restriction of competition includes, but it is not limited to, refusal to deal, tying and margin squeeze. Among them, the behavior of the margin squeeze is not literally prohibited in Chinese Antimonopoly Law. However, such behavior can be adjusted by explaining the fallback provision. The Chinese Antimonopoly Law enforcement authority can also learn the implementation of the EU Merger Regulation to promote the development of competition in the telecommunications market by granting conditional clearance.

At last, when there are conflicts between telecommunications regulations and competition rules in the Chinese telecommunications industry, it should be given priority to the application of competition rules (Chapter IV). On the one hand, the Chinese Antimonopoly Law takes precedence over the telecommunications regulations in the legal hierarchy. On the other hand, when competitive telecommunications market has not been established, it is imperative to promote competition within the industry by the competition rules, to protect the welfare of consumers, rather than to apply for telecommunications rules to safeguard the interests of the

incumbent shortsightedly. When it comes to the division of authority between the antimonopoly law enforcement authorities and the telecommunications regulatory agency, the experience of the EU is also worth learning from. Dealing with the competitive matters in the telecommunications market, the neutral role of the antimonopoly law enforcement authorities and the expertise of the telecommunications industry regulatory are both indispensable. In the current circumstances, a practical way is that based on professional expertise, both authorities take collaborative work with the method of negotiation.

The reform of the telecommunications industry is a highly complex but necessary systematic work in any country or region, due to the technical and competitive neutrality, but can also be replicated. The preemptive experiences of the EU and the US are treasured to China where the telecommunications reform has not been represented completely. I hope my suggestions will introduce such experience into China, improving the efficiency of the entire telecommunications industry through liberalization.

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