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Jingxia Shi

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TELECOMMUNICATIONS UNIVERSAL SERVICE IN CHINA: MAKING THE GRADE ON A HARMONIOUS INFORMATION SOCIETY*

Jingxia Shi**

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* "Building social harmony" has recently become a national strategy taken by Chinese government to resolve pressing social injustice in its efforts to attain sustainable development. China emphasizes time and again the significance of social harmony in long-term prosperity and development. See, e.g., *Chines Government's Official Web Portal, CPC Session Concludes, Elevating Social Harmony*, Oct. 11, 2006, http://english.gov.cn/2006-10/11/content_410337.htm (last visited Jan. 27, 2008).

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I. INTRODUCTION

Access to telecommunication services has been increasingly acknowledged to set the threshold for citizens' participation in the democratic process, economic marketplace, as well as social and cultural activities that enrich their life quality. As an integral component of telecommunication policy emerging out of the interaction of political,¹ economic,² social,³ and technological forces,⁴ universal service casts direct impact on the citizens' ideal of equal access to knowledge and information.

1. On a political ground, it is desirable that people have access to telecommunication facilities in order to be informed, exchange opinions or to exercise their political rights. BOB JOSEPH MATHEW, *THE WTO AGREEMENTS ON TELECOMMUNICATIONS* 176 (2003).

2. Economic arguments arise from the existence of network externalities and the link between telecommunication development and Gross Domestic Product (GDP) increase. *Id.* (addressing the externalities of communication network). See also MAKING UNIVERSAL SERVICE POLICY—ENHANCING THE PROCESS THROUGH MULTIDISCIPLINARY EVALUATION 3 (Barbara A. Cherry et al. eds., 1999) (discussing telecommunication development and economic increase).

3. MATHEW, *supra* note 1 (arguing that social rationale for universal service tries to avoid the gap between informed and not-informed groups).

4. It is widely recognized that universal service closely relates with technological innovations in terms of definition, scope and accomplishing channels. See *infra* Part III.C (technologic choices and universal service).

While its economic boom in recent decades has triumphantly raised living standards for a great fraction of the population,⁵ China is still confronted with the digital divide,⁶ a disharmonious signal in information society. Relevantly, China has been skyrocketing itself to the fastest-growing telecommunication market across the globe, with the largest telecommunication network, the largest amount of fix-line, cellular phone subscribers⁷ and the second-largest number of Internet users (the United States having the highest).⁸ Despite this trajectory of growth in sheer size and market potential, penetration rate of telecommunication service in China remains low.⁹ This carries over to an astounding imbalance in natural conditions and economic development among different regions.¹⁰ Statistically, the penetration rate of fix-line and mobile in Eastern China is, on average, double than that in Central and Western China, with the lowest, or even no penetration, rate in some outlying rural regions.¹¹

5. See THE STATE COUNCIL LEADING GROUP OF OFFICE FOR POVERTY ALLEVIATION AND DEVELOPMENT, DEVELOPMENT-ORIENTED POVERTY ALLEVIATION IN CHINA'S RURAL AREAS HISTORICAL PROCESS (2004), <http://en.cpad.gov.cn/item/2004-05-24/50006.html>.

6. The "digital divide" is described as "the divide between those with access to new technologies and those without." NATIONAL TELECOMMUNICATION INFORMATION ADMINISTRATION (NTIA), FALLING THROUGH THE NET: DEFINING THE DIGITAL DIVIDE (1999) (Introduction) [hereinafter NTIA], <http://www.ntia.doc.gov/ntiahome/fttn99/FTTN.pdf>. In the case of China, the digital divide can be identified from three aspects: digital divide between China and other countries; digital divide among different regions in China and digital divide between the urban and rural areas. The last two categories are to be discussed in this Article.

7. By the end of 2007, China had 912.835 million telephone subscribers with mobile users topping at 547.286 million and fix-line users at 365.449 million. China's telecommunications sector earned revenue of over RMB 728.01 billion (US\$ 97 billion) in 2007, a year-on-year rise of 10.9%. The Ministry of Information Industry (Mii), China Communication Industry Main Indicators: Dec. 2007 n.8 (2008) [hereinafter MII, China Communication Industry], http://www.mii.gov.cn/art/2008/01/31/art_166_36019.html.

8. By the end of 2007, China has 210 million Internet users, a year-on-year rise of 53.3% (87 million). CHINA INTERNET NETWORK INFORMATION CENTER (CNNIC): THE 21TH STATISTICS REPORT ON CHINA INTERNET NETWORK DEVELOPMENT 10 (2007) [hereinafter CNNIC], <http://www.cnnic.cn/uploadfiles/pdf/2008/1/17/104156.pdf>.

9. By the end of 2007, there are 27.8 fix-lined phones, 41.6 mobile phones for every 100 inhabitants in China. MII, China Communication Industry, *supra* note 7. By the end of 2007, the penetration rate of the Internet was 16% in China. CNNIC, *supra* note 8, at 11. Compare INTERNATIONAL TELECOMMUNICATION UNION (ITU): ICT STATISTICS DATABASE, <http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx#>, for a comprehensive statistics on telecom indicators of over 200 economies.

10. The physiognomy of China is formed into three ladders, descending from west to east with diversified terrains. China's economic development is accordingly divided into three regions, i.e., Eastern (10 provinces), Central (9 provinces), and Western China (12 provinces). The Eastern China is on average better developed while the Central and Western China lag far behind.

11. For statistics on penetration rate in each province, indicating geographic disparities and demographics of subscribers, see MII: The Fix-line and Mobile Subscribers in Different Provinces

Similarly, a noticeable gap of Internet development exists between urban and rural China.¹²

The affordable access of all Chinese people to telecommunication services is of extreme significance in the sense that telecommunications can both empower and threaten a regime.¹³ As an indispensable segment of constructing a "harmonious society," the most frequently-echoed developmental theme since late 2002, universal service has been paid more attention in China. Nevertheless, carrying universal service into practice poses various formidable challenges as a result of China's unique natural conditions¹⁴ and a daunting rural-urban wealth differential.¹⁵ Meanwhile, the debates on universal service have been particularly contentious and perplexing in China, given regulatory reform toward competitive provision of telecommunication service during China's post-WTO epoch and technological advancements in the broadband era. These two elements, if handled inappropriately, may trigger more spatial inequality.

Against this backdrop, this Article focuses on a central issue on how China should craft its universal service mechanism to fit well into both intrinsic demands and extrinsic challenges. Taking up this task, this Article attempts to identify several core issues that should be considered in devising a feasible system, centering on how such promoters of tele-density as regulatory reform, foreign participation and technological innovations are able to function together to bridge the digital gap.

This Article proceeds as follows: After a brief historical review and summary of universal service bifurcated into monopolistic stage and

and Areas: December 2007, http://www.mii.gov.cn/art/2008/01/31/art_166_36022.html (last visited Feb. 1, 2008).

12. In June 2007, the netizen population of rural China reached 37.41 million and the Internet penetration rate reached 5.1%; the netizen population in urban areas reached 125 million, with the penetration rate reaching 21.6%. See CHINA INTERNET NETWORK INFORMATION CENTER (CNNIC), SURVEY REPORT ON INTERNET DEVELOPMENT IN RURAL CHINA 4 (2007), http://www.cnnic.cn/download/2007/2007_Survey_Report_on_Internet_Development_in_Rural_China2007.pdf.

13. See L. KWABENA RIVERSON, TELECOMMUNICATIONS DEVELOPMENTS: THE CASE OF AFRICA 16 (University Press of America 1993) (arguing that widely available telecommunications affects governance and rule of law). See also John Ure, *China's Telecommunications: Options and Opportunities*, in TELECOMMUNICATIONS AND DEVELOPMENT IN CHINA 245, 248 (Paul S.N. Lee ed., 1997) (pointing out the gap between telecom rich and telecom poor is a situation ripe for political instability).

14. As a vast developing country, China consists of 31 provinces, 56 ethnic minorities and a total population of over 1.3 billion among which around 60% resides in the countryside. There are numerous different languages, cultural traditions, and local loyalties to meld together adding more complexities to law enforcement. See Ure, *supra* note 13, at 248-49.

15. In China, ever-widening urban-rural gap has drawn intensive public concerns in recent years, especially as the economic reform continues to unfold and deepen. See Jun Xia & Ting-jie Lu, *Universal Service Policy in China: Building Digital Service for Rural Community*, unpublished conference paper (on file with author), Sept. 23, 2005, at 7-8.

competitive period, Part II delineates the status quo of universal service in China, featuring the implementation, achievements and pitfalls of the Village Access Project (VAP). Subsequently, Part III analyses the objective of universal service, the potential impact of foreign participation on universal service and technologic choice. This part tries to demonstrate that a changing landscape in China requires a compatible change in some critical ideas regarding the establishment of a pragmatic universal service framework. Part IV touches upon several components in designing a workable financing mechanism for telecom operators to fulfill their universal service obligations (USO). This part features universal service fund (USF) and underscores the necessity, feasibility and difficulties in the contribution and distribution of the Fund.

II. A HISTORICAL SNAPSHOT AND THE STATUS QUO

China's telecommunication service sector, in its modern sense, has undergone a series of changes since the 1980s: the highly planned and monopolistic stage, loosening controls on price and deregulation, preliminary break-up of monopoly and introduction of competition, institutional restructuring and to the current six-operators-dominated competitive pattern as a consequence of "north-south splitting" in late 2001.¹⁶ The implementation of universal service roughly went in tandem with these developments and can be divided into a monopolistic period and a competitive era with respective traits.

A. Monopolistic Period: Universal Service Through Cross-Subsidization

In an economic sense, provision of universal service incurs net costs for the provider, which ought to be appropriately compensated.¹⁷ The funding for universal service, based on various experience in various jurisdictions, can derive from a number of sources, including internal cross-subsidization and USF.

Prior to 1994, China Telecom (CT), the first state monopoly of telecommunication service, established directly under Ministry of Posts and Telecommunications (MPT) in 1949, was the sole basic telecommunication operator in China. In 1994, signaling the debut of

16. See Kang Rui & Feng Xiaojun, *A Challenge to Emerging Economies: New Competition Patterns Required in the Telecommunications Industry—The Case of China After Its Entry Into the WTO*, 36 INT'L LAW. 1173, 1176 (2002) (giving a detailed account of historical evolution of China's telecommunication service sector).

17. See Stuart Buck, *TELRIC vs. Universal Service: A Takings Violation?*, 56 FED. COMM. L.J. 1, 31-32 (2003).

market competition, the Ministry of Electronics Industry (MEI) created the second state-owned operator—China Unicom. Another operator, Jitong Telecom also was set up by over ten large state-owned enterprises in the same year. These two competitors, however, faced an uphill battle in their early stages and were hardly true rivals to CT.¹⁸

During this monopolistic period, universal service heavily relied upon the favorable fiscal policy granted by the government to CT and CT's internal cross-subsidization mechanism. On the one hand, China carried out mandated pricing controls effectively requiring consumers in low cost areas to bear the cost of providing services to high cost consumers. On the other hand, as the sole telecom operator, CT indeed undertook an informal USO by utilizing the large tariffs gap among different service types or different regions to cross-subsidize rural phone services. For example, CT charged business phone users a higher rate or added a surcharge to urban users' phone bills to fund services in rural areas. In the meantime, in order to enable CT to provide basic telephony for rural communities, the MPT authorized CT to charge a high initial access fee, another method of cross-subsidization, to raise capital for its rural network expansion.¹⁹ Availing itself of these measures, China witnessed a period of rapid growth in rural telecommunication coverage, most notably from 1995 through 1997.²⁰

B. Competition Era: Universal Service through Village Access Project (VAP)

1. Phasing out of Cross-subsidization

Despite its effectiveness, the cross-subsidization mechanism is traditionally used in monopolistic era and fundamentally at odds with market competition.²¹ As WTO accession loomed, China stepped up to transform its telecommunication sector from a monopoly-based scheme into a market-driven orientation. First, the Ministry of Information

18. Rachael Abramson, *Catching Flies with Chopsticks: China's Strategic Leap into Wireless Telecommunications*, 11 MINN. J. GLOBAL TRADE 21, 20 (2002).

19. Initial access charge existed for 20 years from 1980 to 2001 in China. Before July 1, 2001, the initial access charge for a fix-phone could be as high as 5000 Yuan (over 620 US\$) in some cities. The abolishment of initial access charge signified the end of a telecommunication development model in China and was marked as a milestone in China's telecom history. See, e.g., Qin Li, *Abolishing Initial Access Charge*, Nov. 15, 2002, <http://www.people.com.cn/GB/shizheng/252/8956/8964/20021115/867661.html>.

20. During this period, the annual growth of rural connections reached over 10% supported by cross-subsidization of CT. See Tao Lin et al., *Universal Service Obligations in China's Telecom Sector: Situations, Reforms and Implementation*, May 2002 (unpublished research report, on file with author), at 16-18.

21. THOMAS G. KRATTENMAKER, *TELECOMMUNICATIONS LAW AND POLICY* 349-50 (1998).

Industry (MII) was established as the regulator of the communication sector in 1998. Second, the former CT was separated from MPT and transformed into a market-oriented group company that same year. Third, several rounds of consolidation and restructuring of telecom operators, particularly the restructuring of the former CT, were launched by the MII.²² Following these reforms, the pattern of market competition with six players has basically taken shape in China's basic telecommunication service sector.²³ The story does not reach curtain call, however, when a new round of restructuring with the deployment of 3G and full-service license issuance is allegedly in the pipeline.²⁴

Alongside with the emergence of competition and further removal of initial access charge as the corollary of telecommunication reform, cross-subsidization gradually became unsustainable.²⁵ The new CT, frustrated by the tremendous business loss incurred by providing telephone services to rural areas, slowed down its step in rural networks investment after 1998. The annual growth of rural connection resultingly plummeted from 10% to 2%.²⁶ More to this point, when competition became more extensive, cross-subsidization was in peril of being squeezed out of the rate structure inch by inch.²⁷ This urged China to devise an economically sensible mechanism to accomplish universal service. Early in 1998, the MII embarked on a USF initiative in an effort to subsidize rural telecommunication networks. The establishment of USF was ever officially mentioned in 2001 by the State Council as an approach to reform universal service framework and accelerate economic development in the

22. In 1999, CT was first divided into four operators that specialize in different types of services. See Mari Pangestu & Debbie Mrongowius, *Telecommunication Services in China: Facing the Challenges of WTO Accession*, Dec. 9, 2002, http://siteresources.worldbank.org/INTRANETTRADE/Resources/panmron_telecom.pdf. Thereafter on Dec. 11, 2001, the date when China entered into the WTO, the State Council approved the scheme of second splitting of the former CT along Yangtze River into two parts. See Jingxia Shi, *Telecommunication Service in China: Implications from WTO Membership*, 5 J. WORLD INVESTMENT & TRADE (Geneva) 585-87 (2004) (discussing government-drive market competition from 1994-2002 in China). See also Abramson, *supra* note 18, at 19-22.

23. They are: after-restructured China Telecom, China Netcom, China Mobile, China Unicom, China Railcom, and China Satcom. None of them owns over 50% of market share, indicating that competition is fierce to a large degree. With regard to some basic facts and figures of six operators, see Abramson, *supra* note 18, at 19-25.

24. See *infra* Part III.C, (3)—3G License Issuance and Universal Service, with accompanying footnotes.

25. See Martyn Taylor, *Reforming China's Telecommunication Laws: Lessons from the Australian Experience?*, 7 INT'L J. COMM. L. & POL'Y 10-18 (2002/2003).

26. See Jun Xia & Ting-jie Lu, *supra* note 15, at 8.

27. See generally STUART M. BENJAMIN ET AL., *TELECOMMUNICATIONS LAW AND POLICY* 631-32 (2001).

Western China.²⁸ But the plan thus far has failed to come into fruition partly because of the different opinions held by MII and the Ministry of Finance (hereinafter "MOF"). Their divergent opinions focus on such intractable issues as the collection basis, the operational standards, and the regulation agency of USF,²⁹ and exemplify a bureaucratic conflict of interests and difficulties to coordinate among government ministries.

2. Village Access Project (VAP) as a Makeshift

Without an explicit support mechanism reconciling universal service with competitive markets, MII had to take a makeshift (or stopgap) by launching the Village Access Project (VAP) in early 2004, when the deadline for fulfilling 95% penetration rate of village telephone as pronounced in the tenth Five-Year National Economic Development Plan.³⁰ Six operators were assigned the tasks, based on their revenues and geographical locations of their networks, to carry out USO in designated provinces within the following two years.³¹

By the end of 2005, there were 732.7 thousand rural administrative villages consisting of 5 million natural villages, with rural households of 210 million and rural population of over 745 million in China.³² In areas covered by the VAP, at least two telephones, one of which is manned, should be connected with each administrative village. The operators can adopt either wire line or wireless transmission technology to provide telecommunication service. The terminal can be either fixed or mobile. These six basic telecom operators may freely negotiate and transfer

28. The State Council of China, Circular on Releasing the Reform Scheme of Telecommunication System, Guofa [2001] No. 36, Nov. 14, 2001 (mentioning that China would set up USF and accelerate the transformation of universal service mechanism). *See also* Jinliang Li, *Telecommunication Universal Service as a Prerequisite for Comprehensive Construction of a Well-being Society*, PEOPLE'S POSTS & TELECOMM. NEWSPAPER (REN MIN YOU DIAN BAO, CHINA), Apr. 18, 2003, at A5.

29. *See, e.g.*, Zhigang Chen, *Branching Opinions Between MII and MOF: The Telecommunication Universal Service Fund is in Dystocia*, 21 CENTURY ECON. REP. (21 SHI JI JING JI BAO DAO, CHINA), Mar. 17, 2004, at A3.

30. MII, *Rural Communications Universal Service—The Implementation of Village Access Project*, Jan. 14, 2004, Preface [hereinafter *Rural Communications*], http://www.mii.gov.cn/art/2005/12/29/art_992_4083.html. China's Five-Year Plan aims to determine national critical projects, manage the distribution of productive forces and individual sector's contributions to national economy, map the direction of future development, and set up specific targets to be fulfilled. In 1953, the central government implemented its first five-year plan. Except for a period of economic adjustment between 1963 and 1965, a total of ten five-year plans have been implemented to date. The plan for 2006-2010 is the eleventh five-year plan.

31. *Id.* ¶¶ 3.1-3.2.

32. *See* NATIONAL BUREAU OF STATISTICS OF CHINA, *China Statistics Yearbook 2006 (abridged)*, <http://www.stats.gov.cn/tjsj/ndsj/2006/indexeh.htm> (last visited Jan. 15, 2008).

assigned tasks among themselves. This permission is conducive to achieving economically sound outcomes and avoiding the rigidity arising from the MII's compulsory designation. In order to enhance competition, no operator is allowed to bar other operators from providing service in the areas that are originally assigned to it. The connections established in areas other than those designated ones by a telecom operator also can be calculated into its final accomplished tasks.³³

The administration of VAP is primarily upon the MII while supports from the local governments are encouraged as well. To ensure the affordability of telephone services to those rural areas already connected, MII exercises a price regulation, capping the tariffs of rural services to the operator's existing pricing schemes.³⁴ The operator should ensure interconnection made in the VAP with its current networks. Dismantling or disconnecting such interconnection with any excuse including unpaid tariffs is prohibited.³⁵

By the end of 2007, 29 out of 31 provinces (excluding Sichuan and Tibet) fully actualized VAP, hoisting the penetration rate of telephone in administrative villages to 99.5%. In May 2007, MII formally launched the project of extending VAP to each natural village and made a breakthrough within half a year, particularly regarding the rural Internet development.³⁶ In the meantime, VAP further aims to informationalize rural villages and to attain the goal of town access to Internet within a short period of time.³⁷

3. The Problems and Difficulties Associated with VAP

It is undeniable that VAP has acquired remarkable achievements in rural telecommunication universal service. It should be noted, however, the VAP is no more than a stopgap to shrink China's digital divide. By its own nature, the VAP was minted and conducted under the context where there is no explicitly defined universal service policy available in China. The VAP features an administrative allocation and could not be relied upon as the best way to attain the goal of universal services because of its incompatibility with market competition and notorious political nature.

33. MII, *Rural Communications*, *supra* note 30, ¶ 3.3.

34. *Id.* ¶ 4.5.

35. *Id.* ¶ 5.2.

36. MII, *The Objective of VAP in 2007 Has Been Satisfactorily Realized*, Jan. 7, 2006, http://www.mii.gov.cn/art/2008/01/07/art_989_35757.html.

37. THE ELEVENTH FIVE-YEAR PLAN ON NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT OF CHINA (2006-2010), pt. II, ch. 6, § 1 (providing the establishment of USF, realization of telephone access in each natural village and Internet access in each town by the end of 2010), http://news.xinhuanet.com/misc/2006-03/16/content_4309517_3.htm, Mar. 16, 2006 (last visited Jan. 18, 2008).

This scheme currently seems to be functioning, but that is largely because political support is crucial to constitute an effective universal service mechanism, even within a market-based regulatory environment.³⁸ In particular, when the existing framework cannot create a USF, political invigoration is imperative for six operators to plunge into a program under the auspice of the Chinese government.³⁹ After all, the fact that six operators are all state-owned enterprises (SOEs),⁴⁰ in tandem with sensitive and opaque government-enterprise relations, renders administrative designation a workable method to implement universal service during China's transition from command economy into market economy.

What cannot be overlooked, however, is that the enforcement of VAP has not been always satisfactory to MII, especially when some operators opt to wait and see. In any sense, without an effective supporting and compensation mechanism,⁴¹ the implementation of VAP is at odds with the telecom operator's economic interests. Even these telecom operators are labeled as SOEs, they also are obliged to maximize profits for their shareholders, including overseas investors.

In addition, the award of USO through a purely administrative order probably nourishes some hidden problems for the administration of future policy. For instance, the approach used in task distribution under the VAP is forging rigidity instead of flexibility with potential detriment to the competitive provision of telecommunication service. This may pose practical difficulties and problems for China to further advance USO at its post-VAP stage. Moreover, even though we could temporarily park the questioning of political rationales for the VAP, there are still some problems with regard to what constitutes an economically sustainable

38. See Jennifer A. Manner, *Achieving the Goal of Universal Access to Telecommunications Services Globally*, 13 COMMLAW CONSPECTUS 93-96 (2004).

39. As a matter of fact, VAP acts as a key component of "Three Nongs" issue in China, which has been put on the top agenda of Chinese government in building "social harmony." "Three Nongs" refer to the development issues concerning "Agriculture, Villages, and Farmers," these three words all start with the same "Nong" in Chinese character and pronunciation. See MII, *Rural Communications*, *supra* note 30, Preface (mentioning that VAP is a specific measure to deal with "Three Nongs" issue).

40. Although China Telecom, China Mobile, China Unicom, and China Netcom list their parts of shares in overseas stock markets, the largest shareholder is still the State-Owned Assets Supervision and Administration Commission (SASAC) of the State Council, which acts as a shareholder on behalf of the State.

41. MII does mention that the operators shall be compensated for accomplishment of VAP. See MII, *Circular on Several Issues Concerning Overall Promotion of VAP in 2005*, Xin Bu Dian [2005] No. 55, May 11, 2005, available at http://www.mii.gov.cn/art/2005/12/29/art_992_4081_1.html (last visited Jan. 22, 2008), Part V: Scheme of Subsidy. But the compensation is subject to the outcome of unknown progress of fundraising thus far.

universal service regime.⁴² In the long run, it is predictable that only a USF coupled with increased market competition, a model adopted by many countries,⁴³ could provide China with the best opportunity to accomplish universal service. This will be contemplated in Part IV in greater detail.

C. Universal Service in Telecommunication Legislation

China is still in its early stage of regulatory and institutional transformation of telecommunication service. Due to the lack of relevant experience and expertise in this area, China unsurprisingly followed a piecemeal approach in its telecommunication regulation.⁴⁴ That is until the Regulations on Telecommunication (ROT) was issued in September 2000,⁴⁵ which is primarily prepared for China's WTO accession and also viewed as an actual preview of a future comprehensive Telecommunication Act.

There is only one article in ROT roughly outlining a scheme of universal service.⁴⁶ This article imposes an explicit and mandatory universal service obligation on telecommunication operator,⁴⁷ and authorizes MII to select appropriate operator(s) to assume universal service tasks through either direct designation or bidding.⁴⁸ It also mandates MII, in consultation with the MOF, the National Pricing Board, to formulate rules on the cost compensation mechanism of universal service. The rules should be promulgated and implemented subject to the approval of the State Council.⁴⁹

42. See Jun Xia & Ting-jie Lu, *supra* note 15, at 10-12.

43. See United States, Canada, Australia, and India, which have comparable land sizes as China, have set up USF. See Shin-yi Peng, *Universal Telecommunications Service in China: Trade Liberalization, Subsidy, and Technology in the Making of Information Equality in the Broad Band Era*, 4 ASIAN-PAC. L. & POL'Y J. 24 (2003).

44. See Theodore Oliver Yee, *Price-Cap Regulation: The Answer to China's Telecommunications Competition Dilemma*, 3 WASH. U. GLOBAL STUD. L. REV. 486-87 (2004).

45. Regulations on Telecommunications of the People's Republic of China, Order No. 291 of the State Council, Sept. 25, 2000, effective Sept. 25, 2000 [hereinafter Regulations on Telecommunications].

46. *Id.* art. 44.

47. *Id.* art. 44(1).

48. *Id.* art. 44(2).

49. *Id.* art. 44(3). It is reported that the Bureau of Liquidation under the MII has been taking the initiative of drafting the regulations regarding USF since 2002, which involves funding sources, ways of fund distribution, project management, cost compensation, project planning, and other issues. The draft is reportedly to have been sanctioned (though not officially) by the MOF, and solicited opinions from telecom operators. See Ying Ning, *The Ministry of Finance has Formally Commenced the Work to Establish USF*, May 28, 2004, <http://www.enet.com.cn/article/2004/0528/A20040528312307.shtml>.

As a matter of fact, the issue of universal service prescribed is rather imprecisely written in ROT. For one thing, the terms “universal service obligation” and “cost compensation” are left undefined. Second, it does not specify the objectives, let alone the support mechanisms and governance of universal service. As a consequence, the regime of universal service remains elusive and there is a de facto “regulatory vacuum” in this regard. Therefore, although telecomm operators are imposed such a mandatory obligation, none of them cares to fulfill it. Even worse, some remote areas, which were originally connected, even retrograded to disconnection when business loss of telecom operators piled up.⁵⁰

It goes without saying that only with a clarified legal framework can USO be enforced smoothly and regulatory uncertainties reduced.⁵¹ In the meantime, WTO’s transparency requirements conclude the history of China’s regulation of telecommunication sector under nebulous administrative rules even internal red tapes. This holds true as to universal service as well. Universal service expectedly constitutes one of the points in the pending Telecommunication Act of China.⁵² The 2006 version of Draft Telecommunication Law has a specific chapter on universal service, explicitly imposing universal service on all operators as an essential obligation. This chapter prescribes the concept and scope of universal service, several principles regarding the provision of universal service, objectives design, mechanism of cost compensation, selection of providers, cost review, administrative supervision, and other pertinent matters. Although these provisions ostensibly seem framework-like, they unprecedentedly iron out more specifics of a universal service regime at a formal and legislative level. The forthcoming debut of the Telecommunication Act will undoubtedly ameliorate an overall regulatory environment, among which universal service mechanism constitutes a definite part.

50. See Jun Xia & Ting-jie Lu, *supra* note 15, at 7-8.

51. See Tao Lin et al., *supra* note 20, at 76.

52. Showing the utmost fortitude, the drafting of Telecommunication Law has been experiencing a rather lengthy and complicated process since 1980. China initiated its effort on telecommunication legislation in 1984. Due to unpredictable directions of economic reform and political uncertainty, the process has undergone rise-and-falls for over two decades. To the extent that this law is so untoward to come out, it draws extensive attention home and abroad. But the Draft Telecommunication Law has not been publicly available for discussion so far. With view to a drafting history of Telecommunication Law, see, e.g., Tingshuo Qian, *Chinese Government is Accelerating the Formulation of Telecommunication Law*, <http://tech.sina.com.cn/t/2006-07-24/16401052494.shtml> (last visited Jan. 23, 2008).

III. TOWARD A PRAGMATIC UNIVERSAL SERVICE FRAMEWORK: OBJECTIVE, COMPETITION AND TECHNOLOGY

China has been experiencing many rapid changes at various levels in recent decades. The devise of universal service framework needs to match with this changing landscape to be pragmatic and enforceable. This section attempts to examine how the interaction among a doable objective, foreign participation and technological advancement affects the design of universal service mechanism in China.

A. *The Objective of Universal Service*

1. A Dynamic Concept

Universal service may be defined in an essentially analogous way in different jurisdictions, but a common feature emphasizes the public's accessibility and affordability of telecommunication service.⁵³ Nevertheless, universal service is, to a large extent, a sophisticated construct of social and political forces that respond to a specific set of economic and technological possibilities. Once these forces or possibilities alter, the definition of universal service unavoidably is remodeled with them.⁵⁴ Consequently, the very concept of universal service is dynamic and contingent on the status of a society's particular social, economic and technological development.⁵⁵

Telecommunication service historically embraced a limited notion, referring only to telephone service. The attempt to articulate universal service goals, however, is complicated by rapidly advancing technologies. Technological advancement dramatically shifts the range of telecommunication services available and also lowers the costs at which they can be supplied.⁵⁶ In particular, the technological innovation and convergence taking place in the end of last century has led to a worldwide rethinking of whether universal service policy should include broadband

53. See Shin-yi Peng, *supra* note 43, at 22.

54. See Cherry et al., *supra* note 2, at 6.

55. For instance, the United States repeatedly has attempted to come up with new definitions of universal service to respond to ever-advancing technological capabilities and a sense of social entitlement that advances with them. *Id.* at 3. Telecommunication Act of 1996 requires universal service to be an "evolving level of telecommunication services." FCC shall periodically reevaluate its definition in light of "advances in telecommunication and information technologies." Telecommunication Act of 1996, *Pub. L. No. 104, 11 Stat. 56* (1996), § 254(C). Compare Patricia M. Worthy, *Racial Minorities and the Quest to Narrow the Digital Divide: Redefining the Concept of "Universal Service,"* 26 HASTINGS COMM. & ENT. L.J. 1, 3-8 (2003), for a detailed account and evolution of universal service concept.

56. See Cherry et al., *supra* note 2, at 5.

and Internet access,⁵⁷ even further, a concept of "universal service with regard to content."⁵⁸

It is perplexing to find a consensus of what constitutes an essential package of universal service when a wide array of telecommunication services is offered. The debate over how universal service should be defined focuses on the terms and conditions under which specified bundles of services are made available to end users.⁵⁹ Relying heavily on cost-benefit analysis, the main point in the discussion about the level of universal service lies in the price which society is willing and able to pay.⁶⁰ Even within the same period, there are substantial disparities as to the specific scope and goal of universal service in different countries arising from different developmental levels. Therefore, while developed countries pursue the universal service with telephone access in every household, developing countries may target a less resource-intensive model of universal access, with tele-center as a good example to this end.⁶¹

2. Stage-by-Stage Strategy for China

Given the fact that universal service is process-determined, or context-oriented, fundamental economic, political and technological constraints cannot be ignored in designing an effective objective.⁶² As indicated earlier, China is the most populated developing country characterized by the vast geographical areas, harsh natural conditions in the western regions, and scanty populations in many rural villages,⁶³ as well as ill-balanced levels of telecom development across the country.⁶⁴ With these

57. There have been considerable discussions about the role of broadband networks in stimulating economic development and whether the time is ripe to include access to broadband network in universal service in recent years. See, e.g., TELECOMMUNICATIONS ACT: COMPETITION, INNOVATION, AND REFORM 42 (Charles B. Goldfarb ed., 2006).

58. See generally Peggy Valcke, *The Future of Must-Carry: From Must-Carry to A Concept of Universal Service In the Info-Communications Sector*, 15 MEDIA L. & POL'Y 247, 249 (2006).

59. See Cherry et al., *supra* note 2, at 3.

60. See Sawhney Harmeet, *Universal Service: Prosaic Motives and Great Ideals*, 38 J. BROADCASTING & ELE. MEDIA 375-77 (1994).

61. According to International Telecommunication Union (ITU), universal service implies the situation where a telephone has been installed in every household whereas universal access means everyone may access to telephone services within a reasonable distance in any region. See Peter Benjamin & Mona Dahms, *Background Paper on Universal Service and Universal Access Issue*, June 1999, <http://cbdd.wsu.edu/edev/edp/benjamin-dahms-1999.pdf>. See also Manner, *supra* note 38, at 91-92. Tele-center model has been successful in some developing jurisdictions to accomplish universal access. See *id.* at 102-04.

62. Claire Milne, *Stages of Universal Service Policy*, 22 TELECOMM. POL'Y (UK) 775-80 (1998).

63. See Tao Lin et al., *supra* note 20, at 16-17.

64. See Taylor, *supra* note 25, at 18.

in mind, China deliberately has to set a practical goal of universal service to shrink its digital divide.

As a matter of principle, the status of social-economic development and national informationalization strategy are two primary considerations in determining the objective of universal service in China.⁶⁵ In particular, the objective shall be designed to meet two essential criteria. First, it shall demonstrate a basic level of services that respond to regional uniqueness, and, therefore, services that fall into the realm of universal service at the present moment do not have to cover the most advanced ones. Second, the scope of universal services will be restricted only to those services in the case of market malfunctions and those that operators do not voluntarily opt to furnish.⁶⁶ To put them together, the objective of universal service aims at providing services to those groups who are underserved or not served at all within a deregulated Chinese telecommunication market.

Based upon these considerations, together with the social progress and technological feasibility, China has chosen to follow a stage-by-stage strategy to deal with its digital inequality. As to the telephone service, the first stride attempts to achieve the goal of administrative village access. This is implemented via the VAP and the objective will be ideally reached by the end of 2007. Subsequently, the short-term objective (by the end of 2010) will extend voice grade access to PSTN available to each natural village, no matter its geographical location and social-economic standing. Then a long-term objective (by the end of 2020) is to actualize household penetration across the country.⁶⁷ With regard to the Internet service, there are two steps to follow as well. First, each town should be connected to the Internet by the end of 2010. Second, a long term scheme ensures that each village is able to access the Internet by 2020.⁶⁸

65. It shall be emphasized that China has attached much more importance to national informationalization strategy including the informationalization of rural villages in recent years. See generally State Council, *Some Guidelines on Promoting the Building New Socialistic Rural Villages*, Dec. 31, 2005, available at http://news.xinhuanet.com/politics/2006-02/21/content_4207811.htm; see also Development Strategy of National Informationalization for 2006-2020, May 8, 2006, available at http://news.xinhuanet.com/newscenter/2006-05/08/content_4522878.htm.

66. See Jun Xia & Ting-jie Lu, *supra* note 15, at 13.

67. MII, *The Eleventh Five-Year Plan for Information Industry and Middle-Long-Term Scheme by 2020*, Aug. 29, 2006 [hereinafter MII, *The Eleventh Five-Year Plan*], available at <http://www.mii.gov.cn/col/col2303/index.html>; see also *Universal Service and Consumer Protection—Questing for A Chinese Answer*, special report for joint conference by the MII and ITU, Aug. 24-25, 2005, Objective of Development, available at <http://www.ccidcom.com/contents/special/2005/479/index.htm>.

68. *Id.* But along with the mushroom of rural Internet users in the recent two years, this objective is likely to be reached by 2020. *Id.*

In addition to the adoption of an explicit concept of village penetration for the time being, the objective also responds to the regional unevenness in another context, primarily as far as the income of each household is concerned. This leads to a hybrid objective of universal service, meaning that in most Western and Central regions, the current target is to first ensure that every village has at least one telephone connected, while in relatively affluent areas in the Eastern China, the time is ripe to include household penetration and Internet diffusion.⁶⁹

The rationale for this stage-by-stage strategy is sensible, especially when it comes to the cost of rural access and economic sustainability.⁷⁰ It might be interesting to note a wider background for China to formulate this strategy. As a matter of fact, China is traditionally inclined to set a concrete target for each specific industry to accomplish via such means as a Five-Year Plan.⁷¹ The telecom industry, a key infrastructure in national economy, is without an exception. With clear goals in orientation, MII develops a more detailed set of measures instructing the operators to fulfill. Though these guidelines seem to be a legacy of planned economy, they demonstrate their vitality in present China.

B. Foreign Participation and Universal Service

The long-awaited World Trade Organization (WTO) membership⁷² urges China to expose its telecommunication market to foreign competition. The questions raised here is what foreign participation means to China's scheme of universal service and to what extent this participation might contribute to bridging the digital gap. After a brief overview of WTO telecommunication framework and China's commitments, the issue on how China should respond to the more competitive market and to a sound universal service scheme will be addressed.

69. For example, Shandong Province, a relatively affluent region in Eastern China, has achieved the goal of village penetration of broadband and wireless service thus far. See Shandong Information Industry Bureau, *The Broadband and Mobile Service has Reached Each Village in Shandong Province*, Dec. 20, 2006, available at http://www.mii.gov.cn/art/2006/12/20/art_2021_27486.html.

70. It is estimated that about USD 20 billion of infrastructure investment is required to increase rural pre-hundred-households penetration only by an extra 2%, and this amount will reach USD 2400 billions for household penetration without considering the time consumed. See Jinliang Li, *Wireless Access as the Optimal Technological Means for Rural Areas*, PEOPLE'S POSTS & COMM. NEWSPAPER (China), Apr. 25, 2003, at A4.

71. See *supra* note 30 (explaining Five-Year Plan in China).

72. Dec. 11, 2001, China legally became the 144th Member of the WTO after 15 years of negotiation. WTO, *Accession of the People's Republic of China—Decision of Nov. 10, 2001*, WTO Doc. WT/L/432, Nov. 23, 2001.

1. Universal Service in the WTO Telecommunication Framework

WTO embraces a series of instruments on telecommunication service, including General Agreement on Trade in Service (GATS),⁷³ GATS Annex on Telecommunication Service,⁷⁴ the Fourth Protocol to GATS⁷⁵ and the Reference Paper on Pro-competitive Regulatory Principles.⁷⁶

First, GATS contains general principles on trade in services and sets up for WTO members with a basic tune for telecommunication service.⁷⁷ Recognizing members' different developmental phases and individual rights to regulate its own services industry, GATS bifurcates members' obligations into general disciplines and specific commitments.⁷⁸ Where this dichotomy applies to telecommunication service, it means that members undertake commitments not to restrict foreign service and service providers beyond conditions laid down in their schedules of specific commitments.⁷⁹ Second, the Annex on Telecommunication Service as a whole illustrates WTO's "freer access" policy favoring the opening of telecommunications services, with the access to and use of "public telecommunications transport networks and services" as the core obligation.⁸⁰ Third, GATS Fourth Protocol, the first agreement geared toward the liberalization of basic telecommunications, has unparalleled significance regarding its encouragement of worldwide competition and deregulation of telecom market.⁸¹ Fourth, aiming to bring substantial transformation into regulatory environment of telecom market,⁸² the

73. General Agreement on Trade in Services (GATS), contained as Annex 1(b) to *General Agreement on Tariffs and Trade—Multilateral Trade Negotiations (The Uruguay Round): Final Act Embodying the Results of the Uruguay Round of Trade Negotiations*, Dec. 15, 1994, 33 I.L.M. 1167 (1994) [hereinafter GATS].

74. GATS Annex on Telecommunication Services, in *WTO Agreement, The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts*, 33 I.L.M. 44 (1994).

75. Agreement on Telecommunication Services, Attachment of the Fourth Protocol to the General Agreement on Trade in Services, 36 I.L.M. 354 (1997).

76. Reference Paper to the Fourth Protocol to the General Agreement on Trade in Services, Apr. 30, 1996, 36 I.L.M. 367 (1997) [hereinafter Reference Paper].

77. Tracy Cohen, *Domestic Policy and South Africa's Commitments Under the WTO's Basic Telecommunications Agreement: Explaining the Apparent Inertia*, 4 J. INT'L ECON. L. 743 (2001).

78. GATS, *supra* note 73, pt. II *General Obligations and Disciplines*, arts. II-XV; *Id.* pt. III *Specific Commitments*, arts. XVI-XVIII.

79. *Id.* art. XVI:1 (Market Access); *id.* art. XVII:1 (National Treatment).

80. GATS Annex on Telecommunication Services, *supra* note 3, § 2.

81. See Laura B. Sherman, *World Trade Organization, Agreement of Telecommunication Services (Fourth Protocol to the General Agreement on Trade in Services)*, 36 I.L.M. 366-69 (1997) (outlining the fourth protocol).

82. Laura B. Sherman, *Wildly Enthusiastic About the First Multilateral Agreement on Trade in Telecommunications Services*, 51 FED. COMM. L.J. 64 (1998).

Reference Paper, despite an ostensible guideline,⁸³ lays the most substantive foundation for designing a template on domestic regulation of telecommunication service.⁸⁴ The widespread adoption of these rules by the WTO members successfully opened 95% of the world market to competition, arguably the most momentous lubricant to telecommunications liberalization on a global scale.⁸⁵

Among these instruments, the Reference Paper directly involves universal service. Any member has the right to define the kind of universal service obligation it wishes to maintain. Such obligation will not be regarded as anti-competitive *per se*, provided that they are administrated in a transparent, non-discriminatory and competitively neutral manner.⁸⁶ There is some criticism toward the vagueness of this section and concern that Reference Paper could not sufficiently deal with the member's regulation on universal service. Moreover, failure to provide regulatory specifics may weaken competition or deter foreign participation.⁸⁷ But considering the uneven levels of telecom development of the WTO Members, it is pragmatic to acknowledge the diversity of each member's implementation of universal service.

2. Foreign Participation in China's Telecommunication Market: A Changing Front

China has accumulated abundant experiences over availing itself of foreign investment to boost economic growth in recent decades. Though China needs a large-scale investment in telecom infrastructure, and foreign

83. The Reference Paper was never formally issued as a WTO document even though fifty-seven countries adopted its principles in their entirety as additional commitments in their schedules of commitments. Schedules of Commitments & Lists of Article II Exceptions (showing the WTO Member's schedules of service commitments), available at http://www.wto.org/english/tratop_e/serv_e/serv_commitments_e.htm (On this web page, please go to "search documents online" and select a country's name from the menu and click "search," and then all documents regarding this country's service commitment will display on a separate page) (last visited May 12, 2008).

84. See Laura B. Sherman, *Introductory Note to the Fourth Protocol to the General Agreement on Trade in Services*, 36 I.L.M. 355 (1997).

85. For a detailed explanation on WTO telecommunication liberalization, see, e.g., Yun Zhao, *Further Liberalization of Telecommunication Services in the Framework of the WTO in the 21st Century*, 7 INT'L J. COMM. L. & POL'Y 25 (2002/2003); see also Krista Schwarting Rose, Note, *Changing Frequencies: The Federal Communications Commission Globalizes the Telecommunications Industry with the Adoption of the WTO Agreement*, 8 MINN. J. GLOBAL TRADE 189-94 (1999).

86. Reference Paper, *supra* note 76, § 3.

87. See, e.g., Markus Fredebeul-Krein & Andreas Freytag, *The Case for a More Binding WTO Agreement on Regulatory Principles in Telecommunication Markets*, 23 TELECOMM. POL'Y 625 (1999).

capital is readily available, it has adopted a very cautious way to open its telecom market to foreign participation. In principle, China's investment strategy in the telecom industry is closely intertwined with national policy. There is a potential tension between attracting foreign investment and controlling domestic key industries and infrastructures.⁸⁸

Historically, China explicitly prohibited foreign investment in telecommunication service because of a number of reasons, including national security and sovereignty.⁸⁹ The notorious demise of Chinese-Chinese-Foreign (CCF) scheme, which went through a legal loophole to sidestep restrictions, may offer an illustration of China's persistence with this bedrock principle.⁹⁰ WTO accession, however, renders this landscape a thing of the past. China has promised unprecedented opening of telecommunication service to foreign operators. The terms of entry open the market by allowing as much as 50% foreign ownership in an entity that provides value-added services. If such an entity provides basic telecommunication services, foreign ownership in this entity should be no more than 49%.⁹¹ In order to regulate foreign participation in telecommunication service, China specifically issued Provisions on the Administration of Foreign-Invested Telecommunication Enterprises (FITE

88. See Richard Janda, *Benchmarking a Chinese Offer on Telecommunications: Context and Comparisons*, 3 INT'L J. COMM. L. & POL'Y 6-2 (1999) (addressing China's cautious road to telecommunications liberalizations). Recently China reiterated the stance of national control in seven key sectors including telecommunication. SASAC of the State Council, *State-Owned Economy Should Continue to Keep Absolute Control in Seven Key Industries*, Dec. 18, 2006, http://www.gov.cn/jrzq/2006-12/18/content_472256.htm.

89. Despite innumerable criticism, one could not deny that there is a strong natural connection between national security and telecommunication service, and it holds true for all countries. See generally James A. Lewis, *New Objectives for CFIUS: Foreign Ownership, Critical Infrastructure, and Communications Interception*, 57 FED. COMM. L.J. 457, 460 (2005); see also Kathleen A. Lacey et. al., *International Telecommunications Mergers: U.S. National Security Threats Inherent in Foreign Government Ownership of Controlling Interests*, 4 TUL. J. TECH. & INTELL. PROP. 29, 42-56 (2002); Janda, *supra* note 88, at 23-26.

90. With respect to more discussions on CCF and foreign investment in China's telecommunication industry, see Leontine D. Chuang, Comment, *Investing in China's Telecommunication Market: Reflections on the Rule of Law and Foreign Investment in China*, 20 NW. J. INT'L L. & BUS. 509, 516-22 (2000) (analyzing Unicom Case). See also Rachelle B. Chong & Wendy Chow, *Financing Telecommunications Projects in Asia: A Promising Regulatory Perspective*, 52 FED. COMM. L.J. 1, 4-5, 13-15 (1999) (discussing foreign participation restrictions and CCF in China).

91. The People's Republic of China, *Schedule of Specific Commitments*, GATS/SC/135, Feb. 14, 2002, at 17-20, available at http://www.wto.org/english/tratop_e/serv_e/serv_commitments_e.htm (last visited May 12, 2008) (on this web page, please go to "search documents online" and select "China" from the menu and click "search," and then all documents regarding China's service commitment will display on a separate page).

Provisions) on December 11, 2001, the same date as China's WTO accession.⁹²

3. Foreign Participation and Universal Service

It is argued that the U.S. experience supports the hypothesis that telecommunication liberalization, whether in the form of market competition or privatization, promotes tele-density.⁹³ Yet as commonly observed, within a competitive environment without government intervention, operators in pursuit of profit maximizing are inclined to serve the most profitable areas, termed cherry-picking or cream-skimming arising out of the market competition.⁹⁴

Foreign capital in telecommunication industry is without exception in terms of its return-chasing nature.⁹⁵ Likewise, as a result of the daunting regional difference, foreign participation may cast an adverse effect on the poor by concentrating their efforts on those profitable coastal regions while ignoring the interior. Furthermore, due to the existence of strong network externality, those outlying areas in the Western China, such as Xinjiang, having fewer customers over which to spread fixed costs and therefore leading to inherently higher service costs, are the least likely to be served by foreign investors.⁹⁶ In this sense, the outcome of increased competition may further asymmetric development and exacerbate geographical disparities, thereby posing more complex challenges to reduce the ever-widening spatial inequality.⁹⁷

China continues to face pressure from the United States to ease its foreign investment restrictions so as to bolster market opening.⁹⁸ The

92. See State Council of China, *The Provisions on the Administration of Telecommunications Enterprises with Foreign Investment*, Decree No. 333, Dec. 11, 2001, effective Jan. 1, 2002. For an analysis of the impact of foreign investment on China's telecommunication service, see generally Jingxia Shi, *supra* note 22, at 579-612.

93. See, e.g., Shin Cho et al., *Competition and Deregulation: An APEC Perspective*, in UNFINISHED BUSINESS: TELECOMMUNICATIONS AFTER THE URUGUAY ROUND 155, 163-169 (Gary Hufbauer et al. eds., 1997).

94. See, e.g., BENJAMIN ET AL., *supra* note 27, at 631-32.

95. See Markus Krajewski, *Public Services and Trade Liberalization: Mapping the Legal Framework*, 6 J. INT'L ECON. L. 341, 345 (2003). This is often cited as a reason for the persistence of public monopolies in telecommunication industry, see THOMAS G. KRATTENMAKER, TELECOMMUNICATIONS LAW AND POLICY 350-51 (2d ed. 1998).

96. See Jack Linchuan Qiu, *Coming to Terms with Informational Stratification in the People's Republic of China*, 20 CARDOZO ARTS & ENT. L.J. 157 (2002) (elaborating on the uneven access to information in China).

97. Taylor, *supra* note 25, at 19-23.

98. Letter from Bob Vastine, Coalition of Service Industries, to Timothy Stratford, assistant U.S. Trade Representative for China, (Oct. 3, 2005), available at http://www.uscsi.org/publications/papers/China_TelDialogue_letter_100305.pdf. This letter addressed such issues as

introduction of foreign competition creates a new set of stakeholders and more diversified economic interests groups, fashioning a political consensus on universal service policies is likely to become more difficult.⁹⁹

Against this scenario, China has to figure out how to utilize competition both to maximize rural access and minimize information inequalities in Western and Central China. The welfare nature of universal service defines itself as a quasi-public good which cannot be efficiently supplied if left alone to pure market mechanism.¹⁰⁰ Consequently, many regulatory regimes incorporate access to telecommunication service in rural and economically disadvantaged regions as a public policy.¹⁰¹ By the same token, China is not in a position to rely exclusively on market mechanisms to elevate its tele-density. Even though increased market competition is an outgrowth of foreign participation, China should seek to avoid an uncontrolled phenomenon by advocating an administrative or institutional regulation. In striving to do this, China needs to mesh WTO obligation with domestic policy objective in an appropriate way.

C. Technology Choice in Universal Service

If advanced technologies could be used at best, it may offer a country more choices to bridge its digital divide. Therefore, technological innovation plays a pivotal role in implementing universal service. While on the other spectrum, technological progress also may further aggravate the disparities among different geographical regions and social classes at a faster speed.¹⁰² These arguments, together with the requirement of technology neutrality and the issuance of 3G licenses, render the realization that universal service is more complicated in China.

elimination of capitalization restrictions, market access for resale services, broaden concept of value added services, establishment of an independent and impartial telecom regulator, and issuance of China's Telecom Bill). See also U.S. Trade Representative (USTR): 2007 Report to Congress on China's WTO Compliance, Dec. 11, 2007, at 96-98 available at http://www.ustr.gov/assets/Document_Library/Reports_Publications/2007/asset_upload_file625_13692.pdf.

99. Cherry et al., *supra* note 2, at 5.

100. See Jun Xia, *Telecommunication Universal Service Policy: China vs. Western Countries*, 14 WORLD TELECOMM. 9 (2001).

101. Lucien Rapp, *Public Service and Universal Service?*, 20 TELECOMM. POL'Y (UK) 391-94 (1996).

102. See Shin-yi Peng, *supra* note 43, at 28 (arguing that to some extent, the gap in the availability of Internet access will have a multiplier effect and create an even more significant divide in critical areas).

1. Choices of Technology: Cost v. Benefit?

Given the constraints arising from the harsh conditions particularly in Western China, appropriate network technology and transmission means are key elements to achieving the goal of universal services. To date, although not a single access technology is proven perfect for rural communication, there has been a tendency for operators to choose wireless access primarily because of the cost-effectiveness exhibited by mobile technologies.¹⁰³ For those outlying areas with even lower population density, other technologies including satellite transmission, as a complement, have been sought to serve the purpose and are permitted by MII if they prove to be indispensable.¹⁰⁴

The choice of technology raises not only the issue of cost and benefits, but also other concerns. In particular, despite the principle of technological neutrality,¹⁰⁵ the choice of technology in China is largely determined by two factors: the availability from the operators' existing technology portfolio and the government's preference toward certain technologies.¹⁰⁶ The former expedites the process of providing universal service and in one way or another might be justified while the government intervention in the latter form may trigger potential trade disputes within the WTO framework in the future. For instance, to cover the cost from utilizing satellite technology, operators need to import equipment and rent satellite relay capacity, thereby introducing more market opportunities for foreign corporations. Nevertheless, operators are not always free to choose whatever technologies they deem appropriate in building rural networks as MII explicitly encourages operators to adopt certain technologies with domestic proprietary intellectual property.¹⁰⁷

Given that nurturing of innovative ability of domestic enterprises becomes a part of national strategy, China attaches more importance to the

103. See Jinliang Li, *supra* note 70.

104. See Chunhua Yao, *Satellite Communication Is A Good Solution for Remote Village Access*, 19 WORLD TELECOMM. 19-21 (2006).

105. Technical neutrality is advocated in most countries. See Manner, *supra* note 38, at 91-92. See also ITU, Global Symposium for Regulators, *Universal Access Regulatory Best Practices Guideline*, Dec. 8-9, 2003, http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR03/Documents/bestpractices_31.pdf.

106. Regarding the selection of technology in the implementation of VAP, the first priority should be given to those eligible for the effective extension of existing networks of operators, therefore avoiding incompatibility among different norms as well as making human and organizational skills accumulated with current technologies more transferable for rural applications. See MII, *Rural Communications*, *supra* note 30, ¶ 4.3 (addressing technical means in the VAP).

107. *Id.* SCDMA 400 MHz may serve as an example in this regard. Commercially deployed in 2004, it is vowed as a solution specifically designed for rural communications. Top officials from the MII often recommend operators to use this technology as it is both effective and domestically developed. See Jun Xia & Ting-jie Lu, *supra* note 15, at 16.

realization of technologic breakthroughs of independent IP in telecommunication industry.¹⁰⁸ But taking a forward-looking perspective, competitively technical neutrality has to be honored eventually, either as China's stance toward its WTO commitments or as a means to foster corporate competitiveness of domestic operators.

2. Wireless Technology and Leapfrogging Policy

China is the fastest growing cellular phone market in the world.¹⁰⁹ Mobile service is hailed as a "crown jewel" with a huge market potential and the highest revenue generator.¹¹⁰ As widely pointed out, the cycle of network construction and maintenance cost hold the key to the implementation of universal service. Wire-line technologies are often pricey in rural access while wireless communication technically enjoys such advantages as short construction phase, network design flexibility, low operational expenses, and wide coverage. Wireless technology, therefore, is claimed as the ultimate savior of universal service in those harsh territories.¹¹¹ In practice, China Mobile, the country's largest wireless operator, has set its sights on the less-developed regions and undertook most parts of the VAP tasks. All these shed light on the popularity of wireless technology as the optimal means to extend universal service to scattered rural areas and also solicit discussions on leapfrogging strategy in China.

Interestingly, there are various pro and cons over the possibility of leapfrogging strategy. Advocators argue that leapfrogging supports the theory of technology acting as a cyber-cel connector. A well-defined policy promoting the build-out of wireless infrastructure will bring both telephone use (cel) and the Internet (cyber) to remote rural areas faster than wireline.¹¹² At the same time, Internet access can facilitate closer integration among different regions in China and allows underserved areas to catch up with their developed peers. Therefore, if wireless technologies are more well-suited to rural access, China is in position to pursue

108. See MII, *The Eleventh Five-Year Plan*, *supra* note 67. See also State Council of China, *Development Plan for Handling Intellectual Property Rights*, Aug. 22, 2006, pt. 9 (talking about enforcing enterprises IPR work and help more businesses own their own brands and IPR as well as international advantages), available at http://www.sipo.gov.cn/sipo_English/laws/developing/dphipt/.

109. See Marc Laperrouza & Yves Pigneur, *China's Broadband Wireless Industry—A Prospective Approach*, <http://www.hec.unil.ch/yp/Pub/04-PACIS.pdf> (last visited Jan. 25, 2008) (for a comprehensive overview of wireless technology developments in China).

110. See Abramson, *supra* note 18, at 35.

111. See Lee, *supra* note 13, at 15.

112. See Abramson, *supra* note 18, at 2.

leapfrogging policy, using wireless technology to make strides toward universal service and shrink digital gap.¹¹³

Despite this hilarious prophesier, it is also a concern that an undeniable reality may dampen this optimistic thinking on technological empowerment in the country toward leapfrogging strategy.¹¹⁴ Although the Internet is consistently touted as the "newest educational tool," the income and education levels determine the extent of technology access.¹¹⁵ To a large extent, the problem itself is not information haves versus have-nots, but rather "cans" and "cannots."¹¹⁶ Long-standing poor conditions deprive rural peoples of the education opportunity and render the orientations of rural dwellers toward adopting new technologies rather passive as opposed to urban dwellers. This technology exclusion reduces their capacity to benefit from society and economy in the digital era.

As a matter of fact, wireless technology presents a bright avenue to providing the backbone necessary to bring data services into remote areas, and, hence, China should take a chance to pursue leapfrogging policy. To this end, encouraging wireless infrastructure outgrowth and fueling foreign capital into the updated generation of technology may serve as an efficient resource allocation. At the same time, however, the implementation of leapfrogging, at its core, concerns a systematic exaltation of economic and educational level rather than mere technological access in uncultured areas. In order to be primed to leapfrog, China first has to posit a linkage between universal service and a more overall objective of development in those regions.

3. 3G License Issuance and Universal Service

The growth of third generation wireless system (3G technology) is fostering a synergy between wireless innovation and Internet revolution. The increase in 3G capacity has a profound bearing on the communication network.¹¹⁷ Among other things, 3G technologies requiring less terrestrial infrastructure than wired broadband could offer a golden opportunity for countries with low rates of wireline telephone/Internet penetration to actively participate in information society and supply an economically sound means to narrow the digital divide. It is therefore argued that once

113. *Id.* at 35-36.

114. See Shin-yi Peng, *supra* note 43, at 28.

115. See NTIA, *supra* note 6.

116. "In the information age---, if you don't have a computer, it is not 'have' and 'have not.' It is 'can' and 'can not.'" David B. Bolt & Ray A.K. Crawford, DIGITAL DIVIDE 119 (2000).

117. See Christopher J. Banks, *The Third Generation of Wireless Communications: The Intersection of Policy, Technology, and Popular Culture*, 32 LAW & POL'Y INT'L BUS. 585 (2001).

3G technology matures, it is more likely that the vision of universal service will finally be actualized in China.¹¹⁸

China is actively involved in the ITU's 3G standard-setting process. In March 2002, ITU accepted TD-SCDMA, created and owned by a Chinese company, as one of three standards for 3G technology. Partly because of this domestically proprietary IP standard, recent years have witnessed that China's 3G license issuance is one of the most controversial issues, highlighting a salient conflict between protection of national industry and international advocacy of technical neutrality.¹¹⁹ Though this clash goes beyond the realm of this Article, questions such as when to issue a license, how many licenses shall be issued, and to whom and how the 3G license shall be issued, are pertinent to the crafting of a universal service system. A proposal is that China may connect the allocation of 3G licenses with USO of operators. Given the astronomical business accruals gestated by 3G operation in the tremendous Chinese market, the license gainer might be charged with the corresponding USO. This can be done by the way of imposing conditions on all operators in the license awarding to achieve an equitable outcome.¹²⁰ By any means, if China is ready to launch 3G, taking advantage of license issuance as an optimal occasion to boost its universal service might be a wise choice.

IV. UNIVERSAL SERVICE FUND AS FINANCING MECHANISM

Through an economic prism, the cost of providing universal services is high whereas the market of rural demand for telecommunication

118. See Shin-yi Peng, *supra* note 43, at 47-48.

119. In particular, there were two hot topics in China's telecom industry through 2005 into 2007: the awarding of 3G licenses and the restructuring of operators, which closely intertwined with each other. In early 2006, the MII selected China Telecom, China Netcom, and China Mobile to build out pre-commercial TD-SCDMA networks across the country, which reinforced the belief that the two giant fixed-line operators—China Telecom and China Netcom—might be awarded 3G licenses, thereby making it imperative for China to move on a new round of restructuring of the industry. See Wuyang You, *3G: Taking up to Reshape A Fair Environment for Market Competition*, PEOPLE'S POST & TELECOMM. NEWSPAPER, June 15, 2006. Moreover, the MII made commitments to provide 3G wireless service in 2008 Beijing Olympics. So it is argued that the time is ripe to issue license as late as early 2007 in order for the operator to have sufficient time to prepare the network ready for use. See, e.g., Liao Qi, *The Restructuring of Telecommunication Industry is Unavoidable with 3G License Issuance*, Dec. 22, 2006, <http://www.chinanews.com.cn/it/txxw/news/2006/12-22/842171.shtml>. But the author observed that since the rewarding of 3G licenses is still subject to various arguments in China, it has remained mysterious when and how to issue the licenses and a new round of restructuring could happen.

120. See Hongfeng Zheng, *An Examination of Universal Service within Market Mechanism*, 16 WORLD TELECOMM. 21 (2003) (arguing USF is not enough to resolve universal service issue and China shall bundle the allocation of telecommunication resource with the USO).

services is relatively modest, a scenario that can be attributable to a spectrum of factors including economic, technological, natural, educational, and cultural elements.¹²¹ This subsequently generates a major disincentive for operators to provide universal service. Therefore, China should figure out a sustainable supporting mechanism for USO costs. Universal service fund (USF), more in line with the principles of fairness, transparency, and competition-compatible,¹²² is on track to be introduced in China and the relevant specifics are being sketched. These fall into the realm of discussion in this section.

A. USF in China: Necessity, Feasibility, and Difficulty

Now that cross-subsidization embedded with monopoly has lost its functionality within a competitive environment, a new financing instrument has to be located to suit the need. International experiences demonstrate that when competition fosters affordability by reducing the costs in profitable areas, USF can assist in extending basic services to unprofitable rural areas.¹²³ Many countries, including the United States, Brazil, and South Africa, use USF as the main support instrument to universal service.¹²⁴

USO has thus far not been set up in China, largely due to the failure to craft a feasible funding mechanism. USF, as a vexed subject, has long been a political, industrial, and academic limelight, and the relevant debates are abundant in supply. The initial contention dates back to 1998 when China started to deregulate its telecommunication service. After the promulgation of the first-ever Regulations on Telecommunication in 2000,

121. For example, rural telephone traffic in China is mainly generated from local-calls instead of long-distance calls. Many subscribers have only made calls within the limitation of free-calls coming with the monthly access charge. Unsurprisingly, the average number of inbound-calls is several times larger than that of out-bound calls in rural areas. Many rural dwellers treat telephone call merely as an expense. Those households who do choose to have a telephone installed where possible mainly expect calls from their family members working in the cities. See Jun Xia & Tingjie Lu, *supra* note 15, at 8.

122. See Tao Lin et al., *supra* note 20, at 46.

123. See generally OECD, *Universal Service Obligations in Competitive Telecommunications Environment* (1995) (offering a comprehensive examination of USF), available at <http://www.oecd.org/dataoecd/38/26/2349175.pdf> (last visited Feb. 2, 2008). See also Shin-yi Peng, *supra* note 43, at 29 (arguing that a strategy combining increased competition with USF conforms to the requirements from WTO Reference Paper).

124. For instance, the U.S. Congress established USF under 47 U.S.C. § 254. Pursuant to subsection (d), this statute requires telecommunication carriers to contribute money to a common account used to promote equal distribution of telecommunication service to all parts of the United States. At the same time, the United States created an explicit Federal Universal Service Fund (FUSF) funding mechanism to provide a significant portion of total universal service subsidies. See Glodfarb, *supra* note 57, at 42.

China formally imposed USO upon telecom operators.¹²⁵ The funding mechanism has, from then on, become a spotlight in the telecommunication policy arena,¹²⁶ and intensive discussions can be found in various media coverage with a wide range of consensus from the government agencies, telecom industry as well as research circles regarding the establishment of USF. In addition to the compatibility of USF with competition, these favorable attitudes also reflect other considerations. For instance, USF lends itself to China's transition to a fully rebalanced rate structure and, therefore, stifling price distortion and helping to maintain a healthy market order.¹²⁷ The zest for USF has hoisted even more with the kick-off of the VAP in early 2004 when funding for this project appeared as a bottleneck to advance rural service.

In the meantime, given China's telecom industry leading a vigorous rise and yielding much more profits as opposed to other sectors, the introduction of USF is feasible and operational so long as the mechanism could be schemed out soon.

Despite the various favorable opinions and operators' economic strength toward establishing USF in China, an array of arguments still exists on such aspects as the contribution, distribution and regulation of the Fund. The primary complications can be boiled down to the perceived excessive regulatory cost arising from accounting and duplicate administrative activities. It would not be easy for MII to evaluate the cost of providing universal service with the asymmetric information and the shortage of suitable cost modeling. Thus, arbitrary subjectivity may be inevitable and fairness is hard to ensure as has been demonstrated in the task assignments of VAP.¹²⁸ Challenges also result from the uncertainties associated with regulatory vagueness across the sector. Policymakers face a trade-off between regulatory convenience and regulatory cost, which is often ignored under soft-budget constraints.¹²⁹ In addition, fairness and transparency, efficiency and low enforcement cost also need to be taken

125. See *supra* note 45-49 and the accompanying text.

126. See, e.g., *supra* note 28. This Circular first addressed the establishment of USF in the publicly available document.

127. See J. Gregory Sidak & Hal J. Singer, *Überregulation Without Economics: The World Trade Organization's Decision in the US-Mexico Arbitration on Telecommunication Services*, 57 FED. COMM. L.J. 1, 21 (2004). Indeed, in a developing country like China, understanding how to regulate the rate for basic telecommunication service is even more challenging because they lack the experience and expertise of regulating utilities in a competitive market environment. *Id.*

128. In the implementation of VAP, the MII first calculated a proportion on the basis of business income of six operators at the end of 2002 and other economic indexes and then assigned the total tasks in accordance with this proportion. But because of the different natural conditions among different areas, and the resulting different level of difficulty in connecting a telephone, this method is unlikely to yield a fair outcome.

129. See Jun Xia & Ting-jie Lu, *supra* note 15, at 19-20.

into account in designing USF as the support instrument of realizing universal service.

B. *The Contribution of USF*

As a method of payment transfer, USF embraces a policy of income rebalancing through which the subsidies from the rich or the population in urban areas to the poor or the population in rural areas can be realized. From this perspective, USF can come from various channels, including government finance, collection from operators, spectrum and number appropriation fees, auction of licenses, and other means. Most countries choose to levy upon telecom operators as the main source of funding with a view to its continuity, sustainability and compatibility with competitive neutrality. General tax revenue¹³⁰ and government finance, however, on occasions can be an expedient complement.¹³¹

1. Who Should Contribute to USF

The contribution to USF is closely related with the interests of market participants. Theoretically, all players in the telecom market are obliged to contribute to USF. Nonetheless, along with technological advancement and market fractionization, the issue on who should contribute to USF has become complicated. For instance, as the IP-enabled network platforms evolve and compete, how should the public goal of universal service be met? Is a policy based on the category of operators or the service classification desirable? Should local services and IAPs (Internet Access Providers) and competitive new entrants contribute? In the United States, much doubt has been recently cast on whether the current version of the federal universal service program can be sustained. Declining supplies of revenues, from which the fees are collected, and increasing demands for the fees that remain are identified as the immediate problem.¹³² A proposal

130. It is argued that since universal service is a subsidy program intending to benefit all sectors and segments of the population, it should be funded from general tax revenues. See Glodfarb, *supra* note 57, at 47.

131. For example, in addition to the Federal Universal Service Fund, there are a number of federal programs trying to foster the deployment of broadband networks and services in the United States. See Lennard G. Kroger & Angele A. Gilroy, Broadband Internet Access and the Digital Divide: Federal Assistance Programs, CRS Report RL 30719, Jan. 17, 2006, available at http://digital.library.unt.edu/govdocs/crs/data/2006/upl-meta-crs-8576/RL30719_2006Jan17.pdf. This Article also provides a good discussion of these programs.

132. On the supply side, the method by which universal service is funded through fees collected from the revenues of local and long distance wireline and wireless carriers, is being undermined partly by wireless competition, the growing use of e-mail, and all distance service bundling. On the demand side, increasing requirements on the high cost fund by telecommunications carriers and continuing requirements for funding of social inclusion subsidies

thus tabled is to impose the duty of contributing to the USF on IP-enabled network providers.

Free from these debates, there is a consensus in China to limit the levy to the service providers while excluding equipment manufacturers standing at the top of the telecom industry chain and Internet Service Providers (ISPs), Internet Content Providers (ICPs) and other value-added service providers standing at the bottom of the chain.¹³³ In light of the current market structure, all six licensed basic telecom operators should contribute to the USF as required by the Regulations on Telecommunication.¹³⁴

It should be emphasized that the mechanism for collecting USF intends to ensure equitable and nondiscriminatory treatment to all telecom operators. Taking the possibility of new market entrants into account, particularly those potential Sino-foreign telecom joint ventures in the wake of WTO accession, it seems necessary to clarify that despite a disincentive for foreign participation, China shall exert equal USO on all operators so long as they engage in basic service and secure the profits from this market. But it is possible that, subject to approval from MII, new entrants and vulnerable competitors might be temporally waved USO to enhance market competition in the telecommunication industry.

2. The Assessment of Contribution Factor

In general, as a basis for assessing the contribution of operators to USF, the contribution factor is calculated in accordance with the cost of universal service and general revenue of the telecommunications market in a given fiscal year or quarter. But the difficulty here may lie in establishing a scientific percentage because neither the cost of universal service nor the revenue scope can be identified easily in China. For example, with respect to the identification of revenue, which is subject to contributing to the USF, despite the recognition that the revenue should come from public telecommunication service market, it is still difficult for

for indigent, school-age, and rural American combine to place increasing strain on the funding process. See Allen S. Hammond IV, *Universal Service: Problems, Solutions, and Responsive Policies*, 57 FED. COMM. L.J. 187, 188-90 (2005); see also Glodfarb, *supra* note 57, at 44-45.

133. Several reasons can be identified to account for this practice: first, it is hard to distinguish between the telecom manufacturers and other producers; second, the burden on telecommunication services would eventually be transferred by service providers to manufacturers and consumers, the incidence of the levy would therefore be shared by service providers, manufacturers, and consumers. See June Xia & Ting-jie Lu, *supra* note 15, at 20. In addition, I also suggest that value-added service providers are generally in small-scale and need policy support to secure growth at their early stage. In addition, their profits are relatively low and therefore the amount they could contribute to the USF is rather limited.

134. See *supra* note 45-49 and accompanying text.

MII to determine each operator's genuine revenue due to asymmetric information and weak regulatory competence.¹³⁵

Another problem is how to achieve a fair result in determining the contribution factor for different operators. Ostensibly, the fairness principle means that each operator should contribute to the USF based on the same contributing factor. But given China's unique telecommunication development history, this may inflict substantial inequity among telecom operators. Though six operators are currently all state-owned enterprises, their resource of initial capital, licensed business scope, and profit-gaining ability are very different.¹³⁶

Under this context, if the new operators, China Satcom and China Railcom, are subject to the same contribution factor regardless of the amount of their business revenue, they are likely to be deprived of the momentum for further development and growth. Consequently, in addition to an adjustable contribution factor based on the cost of universal service in different periods, working out a variable factor adjustable with operators' business volume and revenue bases seems a necessity as well. This further complicates the issue and deserves more seasoned intelligence.

C. The Distribution of USF

Given the positive externality of telecom consumption on community development, rural communities would become better off as a whole if the subsidies are directly transferred into this consumption.¹³⁷ To ensure real, rural consumption, USF ought to be distributed to those eligible providers that provide eligible services. Further, given that eligible service is closely related with the scope and objective of universal service addressed

135. A contribution factor ranging from 1% to 3% of general revenue of overall income from public telecommunication service market is suggested to be appropriate in China. See Jun Xia & Ting-jie Lu, *supra* note 15, at 20. China's telecom section earned revenues of over 97 billion US\$ in 2007. See MII, *supra* note 7. Assuming the contribution factor is set at 2%, USF can collect about 2 billion US\$ per year based on the current market dimension, and is able to cover the most compensation for rural service.

136. Due to the historical reasons, the incumbent China Telecom enjoyed national preferential policy and long-term monopolized status, which accumulated a high market share for it. On the contrary, such new operators as China Satcom and China Railcom emerging from several rounds of telecomm restructuring, lack these advantages and have a limited market share and even a substantial loan burden. This leads to an obvious difference with regard to the profit margin among six operators ranging from the highest 20% to the lowest 1%. See, e.g., Jianchao Li, *Summary of 2006 Four Telecom Operator's Semi-Annual Report and Prospect for Future Trends*, Sept. 12, 2006, http://news.ccidnet.com/art/1032/20060912/898205_1.html. In addition, China still needs to take measures to shape a real and effective competition pattern in the telecomm market. *Id.*

137. Jun Xia & Ting-jie Lu, *supra* note 15, at 21.

above,¹³⁸ it is necessary to discuss the selection of service providers and some special problems associated with the USF distribution.

1. The Selection of Service Providers

The selection of providers of universal service, also referred to as the awarding of USO, determines who is going to provide universal service and qualify to receive subsidies from the USF. Generally there are two ways in awarding USO to appropriate operators: direct designation and market competition, which includes the auction and bidding process.¹³⁹ At the present time, the VAP tasks are directly assigned by MII to six incumbent operators. This awarding mechanism is somewhat effective and probably more pragmatic under the current regulatory regime, taking into account present economic and political climate in China.¹⁴⁰ But by and large, direct designation shall be a mere interim solution in awarding USO, largely because of its arbitrary nature and incompatibility with competition and transparency requirements.

China needs to take a forward-looking vision in awarding USO as the telecom reform unfolds and progresses. I argue that an auction mechanism or bidding process is, in the long run, the best way of choosing providers of universal service. For one reason, these means better reflect market laws and serve for competitive neutrality and transparency. In the meantime, from an economic perspective, bidding and auction are better ways by which market participants can inform regulators of information regarding the provision of universal service. As a general rule, when the regulator determines the providers of universal service, it needs to accumulate the cost and benefit information in order to select suitable providers. Nonetheless, the regulator is often less knowledgeable about real information than the operators in practice. Auction or bidding can, to some degree, supply this gap and alleviate the problem of asymmetric regulatory information.

Bidding includes open bidding and invited bidding. The latter is more appropriate because telecommunication service involves the construction of critical national infrastructure and the provision of basic service

138. See *supra* Part III.A (Objective of Universal Service).

139. Regulations on Telecommunications, *supra* note 45, art. 40. It shall be noted that auction and bidding are two different means to actualize fair market competition and they are subject to different laws in China. See Zhao Biao Tou Biao Fa [hereinafter Law on Tender and Bidding] (promulgated by the Standing Comm. Nat'l People's Cong., Aug. 30, 1999, effective Jan. 1, 2000); Pai Mai Fa [Law on Auction] (promulgated by the Standing Comm. Nat'l People's Cong., July 5, 1996, as amended on Aug. 28, 2004, effective Aug. 28, 2004).

140. Jun Xia & Ting-jie Lu, *supra* note 15, at 21-22.

indispensable with people's daily life.¹⁴¹ Despite the advantages of bidding or auction, one problem might arise here. Considering the economic nature of universal service, it is likely that no operator bids or attends auction. When this situation does takes place, direct designation can be an alternative.¹⁴²

2. The Problems Associated with the Distribution of USF in China

USF gives compensation to eligible universal service providers. The amount of compensation is calculated on the basis of net cost, usually amounting to the difference between the revenues from providing such services and the costs actually incurred.¹⁴³ In China, the cost of providing rural services basically falls into three parts: historical cost, infrastructure commitments, and maintenance expenses.¹⁴⁴ These three parts are interdependent in affecting the provision of rural services. In most rural regions, infrastructures built prior to 1998 become obsolete and require substantial maintenance and replacement fees before they completely break down. Some rural areas originally connected by the former CT are now disconnected because of an avowed funding shortage for needed maintenance. In comparison, the demand from infrastructure investment would have a greater impact on new initiatives of village access, as operators are complaining of connecting without funding support. However, the availability of services after rural connection has been made however, would rely on reasonable maintenance fees.¹⁴⁵

141. By this way, the regulator first qualifies the eligibility of potential bidders prior to the commencement of formal bidding process. Then these eligible operators are invited to bid for providing universal services in certain areas. Law on Tender and Bidding, *supra* note 139, art. 10. In fact, China once employed auction to allocate 3.5GHz broadband wireless access in 2003 and acquired some experience in this regard. *Id.*

142. For instance, in the United States, if no carrier is willing to provide universal service supported by federal universal service support mechanisms to an unserved community or portion thereof, the eligible carrier is to be designated for interstate purposes by the FCC and for intrastate purposes by the state commission. 1996 Telecommunication Act, § 214(e)(3).

143. See Tao Lin et al., *supra* note 20, at 46.

144. Historical cost refers to the cost inherited from former China Telecom when it was a monopoly in the wireline market and undertook the task of promoting rural access through cross-subsidization before 1998. This part of cost is now borne by new China Telecom and China Netcom after former CT was split in 2002: Infrastructure investment refers to the investment committed in rural telecom infrastructure after the market restructuring in 2002, especially after the VAP was launched in 2004. Cost involved in the maintenance of network also accounts for a substantial proportion of funding demand. See Wuyang You & Xiufeng Zhang, *Profound Analysis—Examining Telecommunication Universal Service from An Equitable Information Society*, http://www.btxxb.gov.cn/Article_Print.asp?ArticleID=3420.

145. See Jun Xia & Tingjie Lu, *supra* note 15, at 21.

These three parts are competing for the USF, which may not be enough to satisfy them all. Questions presented here involve what part of costs is to be recovered, how to calculate the percentage, and whether the potential benefit of providing universal services have to be considered if applicable. In this regard, Australia and the U.K. are two of the pioneers in modeling net universal service cost as direct costs minus benefits. But according to current practice, the implementation of VAP has not brought much benefit to the operators thus far. This, as well as the issue of asymmetric information between the MII and telecom operators, makes the use of this model far from being practical in China. It also is recommended that the USF primarily be used to cover basic infrastructure investment while excluding terminals that are supposed to be undertaken by the telecom operators.¹⁴⁶

These recommendations obviously could not respond to all issues presented here. In general, the distribution of USF is another unsettled problem. Like the contribution of USF, the distribution also needs a sophisticated model built to evaluate the cost and benefit. The collaborations from telecom operators in providing relevant information proved to be an arduous task as indicated earlier. In this respect, not only should China borrow experiences of other countries as reference, it should figure out an adaptive mechanism to effectively address its historical legacy issues, current market structure, priority of universal service, and promotion of competition as well.

V. CONCLUSION

China realizes that the accessibility, affordability, and availability of telecommunication services hold the key to bettering the lives of more than 1.3 billion Chinese people in an information age. Unsurprisingly, narrowing digital divide to create a harmonious society has become a shared belief in China. But in comparison with full-blown mechanisms in developed countries, public concerns and debates on universal services are merely events of recent years in China.¹⁴⁷ Consequently, while consensus has been reached on the necessity to provide universal service, its specifics are yet to be ironed out.

146. The proposal of partial, instead of full subsidy, is out of the consideration of implicit benefits received by providing rural services due to network externality. Partial subsidy also embraces the principle of risk sharing and incentive compatibility that would encourage operator's efforts to improve efficiency. *Id.* at 20.

147. See Jun Xia, *Telecommunication Universal Service Policy: China vs. Western Countries*, 14 WORLD TELECOMM. 4-5 (2001).

Crafting a feasible system is not an easy mission for Chinese government to fulfill since universal service policies are conceived of as time-dependent outcomes of a process driven and constrained by social, economic, and technological forces. As discussed in this Article, the unique circumstances surrounding China are presently characterized by such factors as domestic telecom reform, outside pressures to further open market to competition, explosive technological innovations and historical legacy inherited from monopoly era. All these factors complicate the issues and need to be fully considered in designing China's universal service policies and mechanisms.

It shall be emphasized that though the policy goal of universal service can be pursued through an array of approaches in China, including cross-subsidization and VAP, the long term resolution rests with how to strike a balance between market efficiency with increased competition and social equity with universal service available. To this end, I argue that establishing competitive-neutral USF and a fair USO mechanism, through which telecom operators can undertake their social responsibility, shall be of paramount significance for China to make the grade on a harmonious information society.