A Challenge to Emerging Economies: New Competition Patterns Required in the Telecommunications Industry—The Case of China after Its Entry into the WTO

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One of the leading characteristics of our current era is the speed of change. This can also best describe the status quo of today's telecommunications industry.

In view of the increasing importance of propelling prosperity and development, the world has witnessed a wave of liberalization and competition enhancement in the telecommunications industry in many countries over the last decade. The recipe for reform recommended by the International Telecommunications Union (ITU) is privatization, competition and independent regulation; but the experimental results have varied greatly. As one of the notable examples, China has not only developed into the second largest telecommunications network in the world, but has also offered its own experience and lessons to the telecom industries of other emerging economies.

While the developing rate of the telecommunications market in China may be remarkably fast, another noteworthy fact is that those dramatic figures have all been achieved within a rather short time period (about ten years) and under a unique route: gradual reform with Chinese characteristics.

By reviewing the developmental history of the telecommunications industry in China, this article seeks to analyze the basic characteristics of the regulation and competition in

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2. Id., Table 1—Winners and losers.

3. Ministry of Information Industry, China, Latest statistics (Apr. 2002), available at http://www.mii.gov.cn/mii/yzxw/tongji/yb/tongjiliao200203.htm [hereinafter Statistics]. By the end of March 2002, exchange capacity of the whole country had reached 201 million lines and mobile switching capacity to 235 million; the total telephone subscribers had grown to 350 million, with 188 million fixed users and 162 million mobile users, making China's telecommunications network the largest one in the world, in terms of its size and subscribers.
this specific sector, and to analyze certain essential factors that will greatly affect the new perspective of competition in the post-WTO epoch in China. The relevant agreements and documents of the WTO as well as the commitments that China has made to other WTO member countries will also be examined to facilitate the discussion.

I. Review of the Developmental Stages and Competition Patterns in the Chinese Telecommunications Industry

A. The Highly Planned and Monopolized Stage (1949-1979)

Before China adopted an Open Door policy and began its economic reform, the basic structure of Chinese telecommunications was a highly planned, directed governmental monopoly by the former Ministry of Post and Telecommunications (MPT). Natural monopoly is the basic characteristic at this stage. Because of the strict controls on telecommunications tariffs and prices by the government, the entire industry basically made no profit and was in a constantly losing financial status. Inadequate telecommunications infrastructure and services were among the bottlenecks that limited economic growth.

B. Loosening Controls on Price and the Beginning of Rapid Development (1979-1993)

The administrative system reform in telecommunications started alongside with reforms in many other sectors in 1979. The government began to loosen controls over the prices and fees for telecommunications, and allowed China Telecom Corporation (then the sole market player and directly under MPT) to levy an installation fee on subscribers of fixed telephones. This preferential policy had a tremendous leveraging effect and the telecommunications industry has since been on the fast track of development.

From 1979 to 1995, about one third of the total investment in fixed assets of the telecommunications sector (amounting to approximately U.S.$33 billion) was attributed to the collected installation fee, according to China Telecom’s annual report. However, rapid development did not touch the foundation of the failures of the system. The administrative monopoly and lack of competition that resulted from a combination of the administration, regulation, management, and operation of the Chinese telecommunications industry spurred massive public complaint over the poor service and high prices in this sector.


In 1994, the second telecommunications carrier, China United Telecommunication Company, Ltd. (China Unicom) was established. This was an ice-breaking event for the long monopolized domestic telecommunications market. The designed duopoly improved

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the efficiency and services in the basic telecommunications market to some extent; and, in
the areas in which Unicom has entered the MPT has reduced its tariffs and prices, considerably. This duopoly market was similar to that in the United Kingdom from 1982 to
1996. However, both of these markets have moved further in deregulation so as to enhance
the competition.

D. INSTITUTIONAL RESTRUCTURING (1999–2001)

At this stage, the reform was preceded by two trends. In March 1998, the Ministry of
Information Industry (MII) was established on the basis of the former Ministry of Electronic
Industry and the MPT, and hence separation between the administrative function and the
operational function became practical.

Consequently, in February 1999, MII restructured the whole industry by breaking China
Telecom into four smaller companies: China Telecom, China Mobile, ChinaSat and Guoxin
Paging. For the purpose of strengthening competition, telecommunications service licenses
were granted to three more governmental companies: China Network Communication
Group, China Jitong Communication Co. and China Railway Telecommunication Cor-
poration. Adding the existing China Unicom, the number of nationwide basic telecommunications operators increased to seven and a basic pattern of competition was formed at
different levels.

E. LATEST “NORTH-SOUTH” SPLITTING (DECEMBER 2001)

The rapid development and the government’s constant endeavors to increase the number
of market players did not lead to adequate competition as anticipated. The total market
share of all the other service carriers was still remarkably low when compared with the
dominant share of China Telecom (see the below figure). A typical “Market Failure” could be seen where market forces and competition had been nullified or distorted. A
monopoly still existed in some areas. For example, China Telecom still monopolized the
international market, China Mobile occupied most of the market share of the GSM net-
work, and China Unicom tended to monopolize the CDMA project.

Facing the mounting pressure of potential competition with the market opening to for-
eign investment and giant multinationals, the Chinese government approved the latest re-
structuring plan of the industry. The government divided China Telecom into two tele-
communications groups by regions, north and south, on December 11, 2001. On the same
day China formally entered into the WTO. The north China Telecom (including ten

7. Armstrong, supra note 4, at 139–140.
8. Ministry of Information Industry, China, Memorabilia of Reform and Opening to the outside World of Tele-
communications Industry of China, available at [website link].
available at [website link]. In terms of this report, market share is calculated on the basis of annual business income of leading telecommunications service carriers of China.
10. LAN WALEN & JOHN ANGEL, TELECOMMUNICATIONS LAW AND REGULATIONS: AN INTRODUCTION
11. Wang Yong & Liu Qiankun, A Thorough Review of the Splitting of China Telecom, THE ECONOMIC OBSERVER,
provinces and cities, roughly 30 percent of the old China Telecom's national backbone network) merged with Netcom and Jitong and was named China Netcom Group Corporation. The south China Telecom (including twenty-one provinces and cities) retained the brand name. Both companies were allowed to build a local telephone network and operate local fixed-line services, and each would provide equal and fair interconnection to the other.\(^\text{12}\)

Officially, this breakup was regarded as "a signal of further opening up to the world," and was targeted at increasing the chances for Chinese telecom operators to be listed overseas, thereby elevating the competition to a higher level.\(^\text{13}\) But comments from both domestic and overseas observers are controversial. Whether the split improved the level of competition between firms of comparable size and capacity is still questionable.

In addition, several other important factors should be considered in developing the existing competition pattern and its prospects.

1. Lack of Statutory Law of Regulation and Competition

Through the above developmental history, we find that the basic principle the Chinese government has adopted was to break up the monopoly and foster more competition. However, the regulating authority concentrated more on the former and ignored the need to design a complete set of rules governing competition. The lack of fair rules of competition resulted in inefficient, improper and insufficient competition. "Pricing Wars" was the only form of competition that occurred in many places between the duopoly of China Telecom and Unicom.

In the meantime, industry regulation was generally in the form of governmental policies or documents instead of in the form of statute or law, resulting in an unstable and less-binding system of regulation.

The revised law on telecommunications has been discussed for approximately eight years. Unfortunately, it still has yet to be implemented. It was not until September 25, 2000, that the Regulations on Telecommunications of the People's Republic of China were promulgated.\(^\text{14}\) The Administrative Methods of Internet Services, a basic telecommunications regulatory rule, was then created and the development of the telecommunications and industrial administration made progress toward being more compliant.\(^\text{15}\)

2. Limited Source of Investment

During this time period, most of the telecommunications operators were state-owned enterprises or state-held undertakings. Only an insignificant amount of foreign investment had been made in the newly approved carriers, like Unicom and Netcom, by bypassing the relevant regulations; and, future investments of this type were publicly prohibited. Additionally, the government still strictly restricted international and private investment in basic telecommunications infrastructure and service.

Thus, there was no valid and intense competition in the Chinese telecommunications market, despite the constant efforts of the government, rounds of restructuring in the sector,


\(^{13}\) *Id.*


and the numerous operators in that market. This is another economic phenomenon with Chinese characteristics.


MPT and its successor, MII, as well as their provincial branches, are the primary regulators and policymakers for the telecommunications sector at their respective levels; however, the same entities are the dominant service providers in the sector at the same time. Although MPT and MII had separated the functions of policy-making or regulation and operation into different departments, there was still a close financial and administrative connection between the government and the operators. It was difficult to regard MPT and MII themselves as independent, and the existing domestic competitors complained loudly that MPT was both player and referee, and did not exact impartial treatment.

Actually, this characteristic was not confined to the telecommunications sector, but occurred in many other economic areas like civil aviation, railway transportation, petroleum and gas, because of the existing political and administration system in China. The impact of entering the WTO on this unresponsive and obsolete administrative system will be reviewed in the third part of this article.

II. WTO Agreement on Basic Telecommunications and China’s Commitments

On February 15, 1997, the General Agreement on Trade in Services (GATS) and its Annex on Telecommunications of the WTO concluded the negotiations on basic telecommunications services. Sixty-nine governments comprising more than 91 percent of global telecommunications revenues made commitments to open up their respective telecommunications markets beginning in January 1998. These commitments involved three basic areas: (1) market access, (2) foreign investment, and (3) acceptance of certain regulatory principles intended to make market openings meaningful.

The following WTO rules that were established in the GATS and its annexes reflected some of the basic principles in the development of the telecommunications sector.

A. Most-Favored-Nation Treatment (MFN)

Consistent with GATT, MFN is firmly established as a universal rule for all service sectors, and should be committed to by all members. According to MFN, the members should treat all other members equally in telecommunications market access.

B. “Non-Discriminatory” Principle

Stipulated in the Annex on Telecommunications (AT), this principle ensures “access to and use of public telecommunications transport networks and services”

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16. Yong & Qiankun, supra note 11, at 10. Actually they belong to the fourth model of regulatory authorities—a government ministry—that is distinguished in Walden.
18. Id. at 1192.
19. Id.
20. Id. at 1169.
21. Id. at 1194.
C. Market Access, National Treatment, and Additional Commitments

For market access, the members should clearly indicate any limitations in their telecommunications services (basic and value-added). The GATS also prohibits the members from discriminating against foreign telecommunications service providers as compared with their domestic counterparts in terms of national treatment. Some other important regulatory commitments aimed at creating a competition-oriented, independent and transparent regulatory institution were concluded in the Reference Paper. Committed to by sixty-eight members in 1998, the Reference Paper laid out six guiding principles for the members in redesigning their domestic telecommunications regulatory institutions. These principles are: (1) competitive safeguards, (2) interconnection, (3) universal service, (4) public availability of licensing criteria, (5) independent regulation, and (6) allocation and use of scarce resources. Some of these items, which would considerably affect the potential competition patterns, will be discussed in the third part of this article.

The above listed fundamental principles reflect that the diverse representatives that negotiated the Agreement realized that monopolies enjoying structural advantages in the telecommunications market could nullify or minimize competition effectively. China could be an example of such a minimization. Therefore, in addition to the imperative step of opening markets, certain other aspects of the regulatory environment have to be designed and implemented as well, in order to make competition effective.

The most significant and material concessions that China made during the negotiations for accession to the WTO were reflected in the bilateral agreement between the United States and China, which was signed on November 15, 1999, following thirteen years of tough bargaining. According to this Agreement, foreign firms in the telecommunications industry will be allowed to have up to 49 percent ownership upon China's accession to WTO. The ceiling for foreign ownership would be raised to 50 percent in the second year after accession. In addition, China will end all geographic restrictions for paging, Internet service, mobile, voice, and data services within the country. Foreigners may invest in Chinese Internet businesses and own up to 50 percent of Chinese telecom ventures in two years. Taking into consideration the universal MFN and the non-discriminatory principles of the WTO, the telecommunications industry in China, which has traditionally been tightly controlled and carefully shielded, will finally be opened and exposed to genuine foreign competition.

That this Agreement was concluded in the middle of two highly corresponding events—the accomplishment of GATS in 1997 and China's formal entry into the WTO in 2001—was not a coincidence. Rather, it mirrored both the tremendous pressures that the Chinese...
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government was facing in its challenge to enter the WTO and its willingness and confidence to adopt unprecedented policies in opening its market and facing the international competition in this sector.

III. Prospective New Competition Patterns in China after Its Entry into the WTO

For a very long time, China's policy makers had been very cautious about opening the information and communication industry. These were thought to be not only highly related to the nation's security and sovereignty but also among the most sensitive and vulnerable service sectors, like the financial and legal industries. Therefore, it was believed these should be opened last and only with adequate precautions.

Taking into consideration the above outlined commitments and concessions that China made, and in view of the fundamental rules and regulatory principles provided in the GATS, its AT and the Reference Paper, the new picture of the industry and competition pattern in China is clear: more market players and investors, both international and domestic; overall real competition instead of simple price wars; more credible and transparent market access criteria and regulating mechanisms; and, more independent and efficient regulating authority/authorities. However, all these possible changes can definitely not happen overnight. The government's control of balance between economic reform and social stability, and the effectively proven gradual reform should still be followed. The common method of market liberalization by privatization of the incumbent operator from being a state-owned public body to a privately owned entity adopted in many other countries like the United Kingdom is still far from being a practical possibility in China.

Considering the peculiar situation in China, the following issues that concern the Western observers and investors, such as terms and operating parameters for introducing competition, the degree and timetable to which direct foreign investment is allowed, creation of and constitutional support for relatively independent regulation; and the removal of non-tariff trade barriers are believed to play a more important role in shaping new competition patterns and are, hence, worthy of detailed discussions.

A. Competition Safeguards

Because China is still in a transitional period, moving from a central-planning mechanism towards a pro-competitive market orientation, it is not surprising that there exists a large gap between the present reality and the principles in the WTO Reference Paper. China passed a general Anti-unfair Competition Law in September 1993. The law prohibits price-fixing, prevents predatory pricing, and protects trademarks and patents. Enforcement responsibilities, however, are vaguely assigned to "authorities above the county level," and there is still no specialized agency to monitor, interpret, or enforce the provisions of the law.

30. Yong & Qiankun, supra note 11, at 4.
33. Id.
Further, before the newly implemented Regulations of Telecommunications of the People’s Republic of China, there had been no well-established and coherent telecommunications competition policy to prevent anti-competitive behavior by the dominant operators associated with MPT, and later MII, such as cross-subsidization, which was discouraged in the Reference Paper and has happened with many provincial subsidiaries of MPT/MII. Facing new competition in cellular markets from Unicom, those subsidiaries reduced the cellular phone calling rates drastically while increasing the rate of international calls (international calls are a protected monopoly, and are, thus, more profitable). This shortcoming has also resulted in distorted tariffs and highly concentrated markets and has significantly blocked the entry of potential foreign competitors.

In the above Regulations newly published in September 2000, the fourth article provides for principles such as separating the regulating and operating functions, breaking up the monopoly, encouraging competition and development, publicity, justice and equity. Also, in the forty-first and forty-second articles, a variety of anti-competitive behaviors and actions are listed and prohibited, including cross-subsidization.34

However, similar to the previous rules and regulations along this line, and unlike the European Community and the United Kingdom, the Regulations still lack well designed, self-executing and reliable enforcement procedures and mechanisms.35 In addition, the liabilities and punishments stipulated in Articles 70 through 73 against those anti-competitive actions are still very light. They range from condemnation by the competent regulating authority to the most severe measures, such as fines (maximum up to one million RMB, which amounts to approximately U.S.$120,000) or suspension of operations.36

Furthermore, there is still no explicit stipulation in the above Regulations about whether foreign investors and telecommunications service providers are allowed to take part in the competition, or under what circumstances and conditions they would be approved to do so, although the Sino-U.S. Bilateral Agreement on China’s entry into the WTO was signed over a year ago and the commitments that China offered to the WTO Members have been finalized.

Obviously, along with many other legislative documents in various sectors, all the prevailing laws and regulations in the telecommunications sector that are either obsolete or in contradiction with the WTO principles or commitments of Chinese government need to be reviewed and amended thoroughly and completely.

B. INTERCONNECTION

Interconnection is widely regarded as a necessity for telecommunications competition. The WTO regulatory principles require interconnection with a major supplier at any technically feasible point in the network upon request. Further, interconnection must be provided on nondiscriminatory terms, at cost-based rates, with sufficient unbundling so that competitors need not pay for network components or facilities they do not require.37

In the Temporary Regulation on Telecommunications Network Interconnection issued by MII in 1998, certain basic concepts highlighted in the Reference Paper such as “suffi-

34. Regulations, supra note 14.
35. Yong & Qiankun, supra note 11, at 268.
ciently unbundling" were not included. Although it demonstrates noticeable progress to issue such a regulation on interconnection, its real effect remains to be seen.

C. Universal Services

Members of the agreement have the right to establish universal service obligations but they must be administered in a transparent, nondiscriminatory, and competitively neutral manner, and must not be so burdensome as to constitute a barrier to competition. In China, the huge geographical region, rough natural conditions, and scanty populations in vast western areas, as well as the tremendous differences in economic development and consumption capacity between eastern and western China make the universal service obligation a burdensome challenge and natural barrier to the newcomers of this market. Thus, the sole provider of the basic telecommunications service, China Telecom, has inevitably adopted cross-subsidiaries. How to maintain the basic telecommunications service, for which a government is held responsible, while discontinuing the long and effective solution of cross-subsidization, so as to satisfy the WTO principles and also place this obligation upon the old and new telecom carriers impartially and non-discriminatorily, has become a big issue before MII, the regulator.

D. Licensing Criteria

According to the Reference Paper, where licenses to operate a service are required, the country must make publicly available all licensing criteria, as well as the time period required to reach a decision about a license application. Signatories are also committed to make the terms and conditions of individual licenses publicly available.

This is another area that has been fiercely criticized, both domestically and internationally. In fact, China lacks a set of established, practical, and transparent criteria in awarding the telecommunications license, especially for the national carrier. Most of the licensing decisions were made at a level even higher than MPT or MII, such as the State Council or the State Programming and Development Committee (SPDC). Decisions are made politically, but not economically, and the process lacks transparency and is full of uncertainty. Setting up such a system is definitely not an easy task, and China still has a long way to go in this regard.

E. Independent Regulator

Regulatory bodies should be "separate from, and not accountable to," any supplier of services. Decisions and procedures of the regulator should be impartial.

It is always difficult to ensure the independence of a regulatory authority from the government, because essentially the regulator remains a branch of the government and deeply-rooted in the whole system. In China, the situation is even more complex and puzzling, mainly because of the following two reasons.

39. Id.
40. Id.
41. Id.
First, there is more than one regulator in the market and the entire regulation procedure and the individual competence and authority of each regulator is either vague or non-transparent. For example, the MPT, or MII, is usually the sole regulator, but most of the essential and regulatory decisions like the rounds of institutional restructuring outlined in the first part of this article, and the final approval of licenses for basic telecommunications service were actually made by the SPDC and State Council.

Second, reciprocal relations in terms of economics, personnel, and the like existed between MII and telecom operators. A basic fact is that almost all of the present operators are state-owned or state-held enterprises (SOE) and differ from private firms pursuing maximum profits for shareholders in Western countries. In those cases, there is no fundamental conflict of interest among the regulators and operators, the competition among those subsidiary enterprises under such a circumstance was just like competition between the left hand and right hand of the same person. This fact can explain the failure of the government's efforts to foster effective competition in the SOEs. Additionally, the key management staff of most of the operators is still nominated by MII. Transforming to a market- and profit-oriented company, and bestirred by the possibility of an overseas listing, may effectively change this practice.

The political reality in China is decidedly that there is less possibility to form an independent regulator even after its accession to the WTO. The Party is still responsible for making fundamental socioeconomic policy and controlling the political and economic process. In addition, the Party holds the power of appointing and removing officials, including the Minister of MII. It is beyond reasonable imagination and is meaningless that MII would demand an independent status from the central government, even after China joined the WTO. On the contrary, like most other countries and following the administrative principle, MII must implement the policies, decisions, and tasks directed by the State Council on behalf of the government.

Actually, the independence required by the Reference Paper should not be interpreted so narrowly by asking for a complete separation of institution from the government. To remain a branch of the administration system is a prerequisite of its authority and competence. Hence, we should concentrate more on how to ensure two basic requirements included in the Reference Paper, specifically "... separate from and not accountable to any supplier . . ." and "... be impartial and nondiscriminatory in dealing with all market participants." As for the situation in China, we may have a clearer picture about the perspective in this regard through the lens of a macro view—the political reform that has been pending since 1989. MII itself cannot be insulated and independent of the entire political and administrative system. Therefore, we can expect another gradual reform through the efforts and interaction of MII and all the present and new market players, by establishing a set of clear, transparent, and practical rules and procedures, further separating the regulation and operation of MII, and restructuring the dominant carriers according to contemporary company law in forming independent and sophisticated operators concurrently.

42. Although some other countries like the United Kingdom also have more than one regulator (OFTEL, MMC, DTI), their functions and competence are clearly divided by the relevant Act and the regulating procedure is open and established. Armstrong, supra note 4, at 139.

43. Reference Paper, supra note 25.
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F. Status as Developing Country

GATS allows developing countries to "... place reasonable conditions on access to and use of public telecommunications transport networks and services necessary to strengthen its domestic telecommunications infrastructure and service capacity." Since China's government insisted, and succeeded, on joining the WTO in the status of a developing country, with the exception of the explicit timetable set out in the Sino-U.S. bilateral agreement for China's accession to WTO, the market-opening schedule in other areas of telecommunications service could accordingly be arranged in a relatively longer time period, consistent with this very principle of GATS. However, penetration of foreign capital to China's domestic, value-added telecommunications services, data transmission and mobile calls (one year after entry into the WTO); to basic telecommunications service and basic infrastructure construction (two years after entry into the WTO); and, to long-distance and international telecommunications business (four years after entry into the WTO) will be inevitable, whether through the capital market directly or through setting up of new joint-ventures or other methods of indirect cooperation with incumbent operators.

IV. Conclusion

The impact of China's entry into the WTO will be long lasting and enormous. The WTO entry will certainly change the landscape, especially the competition patterns of the telecommunications industry in China. It will prompt the Chinese government to allow more competition in the industry, and force telecom companies to improve efficiency.

The WTO principles and disciplines do have positive effects in promoting telecommunications liberalization on its members, but the actual progress toward the WTO goals would display great variations and would mainly depend on the specific institutional character and regulatory stances of the members. In China's telecommunications sector, the present conservative regulating system would still play its role for a foreseeable long time, even at the post-WTO stage. Establishment of a pro-competition regulating system is still dependant upon on fundamental political and economic reforms.

However, the above observation does not suggest a pessimistic outlook for the new competition patterns of post-WTO China in the telecommunications sector. The door has been opened and cannot be closed. Also, the commitments that the Chinese government made to the WTO members are almost impossible to re-contract, withdraw or reconsider. Undoubtedly, the Chinese telecommunications sector is now entering a crucial transitional stage, while simultaneously facing huge challenges and development opportunities.

Like many other sectors in both service and manufacturing in China, a new wave of development will be realized under the momentum and competitive pressures within the WTO framework, although pain and suffering is unavoidable at the same time.

The Chinese case has also proved that the transition from a monopoly telecommunications market to a rather competitive one is not easy, requiring the dedication from the government to change institutional structures and obsolete legal frameworks, and to watch over the entire process of competition enhancement. Other emerging economies can share China's experiences and lessons in this course and explore their own way of succeeding.

44. GATS, supra note 17, at 1169.
Annex

Table: The Winners and Losers in the Development of Telecommunications Industry46 (1990-2000)

Changes in total teledensity rank, between 1990 and 2000, for selected economies

Economies with rising rank

<table>
<thead>
<tr>
<th>Economy</th>
<th>Rank 2000</th>
<th>Rank 1990</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>17.8</td>
<td>95</td>
<td>64</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>4.2</td>
<td>141</td>
<td>48</td>
</tr>
<tr>
<td>Botswana</td>
<td>21.6</td>
<td>91</td>
<td>38</td>
</tr>
<tr>
<td>El Salvador</td>
<td>21.8</td>
<td>90</td>
<td>35</td>
</tr>
<tr>
<td>Jamaica</td>
<td>34.1</td>
<td>71</td>
<td>35</td>
</tr>
<tr>
<td>Hungary</td>
<td>67.4</td>
<td>43</td>
<td>35</td>
</tr>
<tr>
<td>Mauritius</td>
<td>38.6</td>
<td>67</td>
<td>33</td>
</tr>
<tr>
<td>Chile</td>
<td>44.4</td>
<td>61</td>
<td>32</td>
</tr>
<tr>
<td>Philippines</td>
<td>12.4</td>
<td>112</td>
<td>31</td>
</tr>
<tr>
<td>Morocco</td>
<td>13.3</td>
<td>107</td>
<td>29</td>
</tr>
<tr>
<td>Paraguay</td>
<td>20.7</td>
<td>92</td>
<td>28</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1.2</td>
<td>167</td>
<td>27</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>17.2</td>
<td>98</td>
<td>27</td>
</tr>
<tr>
<td>Taiwan-China</td>
<td>137.0</td>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>Poland</td>
<td>45.6</td>
<td>60</td>
<td>25</td>
</tr>
</tbody>
</table>

Economies with falling rank

<table>
<thead>
<tr>
<th>Economy</th>
<th>Rank 2000</th>
<th>Rank 1990</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>15.6</td>
<td>102</td>
<td>-42</td>
</tr>
<tr>
<td>Iraq</td>
<td>2.9</td>
<td>149</td>
<td>-40</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>3.6</td>
<td>143</td>
<td>-38</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>6.9</td>
<td>128</td>
<td>-36</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>7.9</td>
<td>125</td>
<td>-35</td>
</tr>
<tr>
<td>Angola</td>
<td>0.7</td>
<td>177</td>
<td>-31</td>
</tr>
<tr>
<td>Liberia</td>
<td>0.2</td>
<td>190</td>
<td>-28</td>
</tr>
<tr>
<td>DPR Korea</td>
<td>4.6</td>
<td>138</td>
<td>-27</td>
</tr>
<tr>
<td>Canada</td>
<td>96.1</td>
<td>33</td>
<td>-27</td>
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<tr>
<td>Turkmenistan</td>
<td>8.4</td>
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<td>-26</td>
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<tr>
<td>Cuba</td>
<td>4.4</td>
<td>140</td>
<td>-25</td>
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<td>Moldova</td>
<td>16.5</td>
<td>99</td>
<td>-25</td>
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<td>Kazakhstan</td>
<td>12.5</td>
<td>111</td>
<td>-24</td>
</tr>
<tr>
<td>Comoros</td>
<td>1.0</td>
<td>171</td>
<td>-22</td>
</tr>
<tr>
<td>Ukraine</td>
<td>22.7</td>
<td>87</td>
<td>-21</td>
</tr>
</tbody>
</table>

Note: Total teledensity is the sum of fixed lines and mobile users per 100 inhabitants. Some 193 economies were ranked.

Source: ITU World Telecommunication Indicators Database.

46. Statistics, supra note 3.