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**INTRODUCTION**

Traditionally, telecommunications had been regarded as a relatively straightforward public utility. Economies of scale, political and military sensitivities, and large externalities made this typical public service believe itself to be a natural monopoly. In Pakistan, as in most developing countries, telecommunications services were run by a government agency, Pakistan Telephone Corporation (PTC). Unfortunately these state monopolies generally fell far short of meeting needs, as evidenced by a persistent large unmet demand for telephone connections, call traffic congestion, poor service quality and reliability, limited territorial coverage, demonstrated willingness of users to pay far higher prices to obtain service, the virtual absence of modem business services, and user pressures to bypass the system by building their own facilities.

Technological advances and momentum for reform have changed all that. In their hunger for capital and technology to build telecoms networks, governments around the world are embracing ideas that a decade ago would have been heresy. Monopolies are being broken up and new private-sector firms are being encouraged to enter the business. In particular foreign companies, capital and technology are seen as the key to the sectors modernization and growth nowhere is the pace of change faster than in Pakistan. For its part the government of Pakistan (GOP) considers the expansion and rehabilitation of the telecommunications network to be an area vital to the survival and progress of the nation.

Vast sums of money have been spent and are being allocated for telecom projects funded by the World Bank, the Asian Development Bank, Pak Telecom (PTC) internally generated funds, Pakistan government funds, and vendor-financed projects. Since the mid-1980s the Pakistan government has been aware of the need to overhaul the telecommunications sector in order to generate capital for investment, improve the performance of the operating enterprises, and respond to rapidly growing business pressures for improved telecommunications services. In this regard the movement toward reform in Pakistan is driven by the same forces at work in many developing countries-technologies and demand-and is reinforced by the recognition of the sector's importance for productivity, competitiveness, and participation in the world economy.

**PTCL History**

The foundations of the communications and transport infrastructure in Pakistan were laid during the period of British rule. The Post and Telegraph Department was a central department under the Government of India, rather than under the provincial governments. After 1947 the Pakistan Telephone and Telegraph Department (T &T) was also under the federal government. Postal operations were separated from telephone and telegraph operations in the late 1950s, and were handled by a postal department which also came under the central government. Joint post and telegraph offices were opened, although the majority of post offices remained without telegraphic facilities. Public call facilities were also available at certain centers.

Telecommunications facilities remained limited during British rule, and more rapid growth occurred after 1947. At independence, only 12,436 telephone lines were in existence; and these too were highly concentrated in a few urban centers. Only two manual exchanges existed, at Karachi and Lahore. These two cities were also connected through a long-distance overhead line. With a population in 1947 around 35 million, the density of telephones was less than 0.355 per thousand, or roughly one telephone for every 3000 people. Thus, the legacy of colonial rule was a virtually undeveloped telecommunication infrastructure. Telecommunications in Pakistan has been a virtual public-sector monopoly. Even the privately operated exchanges of the British period, like the Bombay Telephone Company in Karachi, were nationalized after 1947. In the absence of major private sector involvement, capital expenditure in the telecommunications sector has been made through the government, either directly or through bilateral arrangements with foreign governments or international agencies. This investment has been underwritten by the net revenue surpluses generated by T&T (and its successor Pakistan Telecommunication Corporation (PTC), which has throughout enjoyed positive returns, only part of which were reinvested in the system.

**Tariff structure**

Unlike a number of other countries, PTC's business and residential tariff rates are equal. Hence, connection fees, call charges, and line rentals are the same for both business and residential customers. Local calls are also untimed. PTC's rates for international calls are fixed according to the country of destination. For international outgoing calls, charges are not differentiated by time of day. Further, PTC's international tariffs have increased over time, contrary to the trend elsewhere. Tariffs on domestic long-distance calls are based on the distance from the origin of the telephone call. Today tariffs ranged from Rs 1/min for any distance in a city. Discounts of 50-75% are provided for off-peak calling hours. PTC's domestic long-distance rates were increased four times between 1986 and 2011 while rates for local calls were increased five times during the same period. Presently the cost structure of the local call during 2019 is as follows.

Local call charge (Rs)

Local call fee 1.30

Excise duty 0.70

Total charge per call 2.00

The excise duty charged is payable to the government of Pakistan. This tax is netted out before calculation of PTC revenue. According to the Telecommunication Ordinance passed in 1994, the tariff structure of the Pakistan Telecommunication company Limited is calculated according to the following two price cap provisions. In any year, the prices for all basic telephone services will not increase on Average more than the percentage rate of increase in the Pakistan Consumer Price Index. In addition, in any year, the residential exchange line rental for basic telephone services will not increase by more than the percentage rate of increase in the Pakistan Consumer Price index, plus ten percentage points.

**Why the monopoly exists.**

Telephone services experience high fault rates, and the average waiting time for a telephone exceeds a month, serious problems exist with crosstalk, noise, and significant downtime, particularly when it rains during the monsoon. Most of the time Voice lines are very noisy, and most calls must be tried several times before getting through, even during off-peak hours. Now when masses have access to WhatsApp like applications PTCL International calls dialed to Pakistan are often not completed for lack of circuits, or are very noisy. During busy hours, calls are limited to a certain number of minutes, then, following a warning beep, they are disconnected to clear the circuit for another user. By the late 1980s, the country's inadequate telecommunications network had become a major constraint on economic development, particularly in industry, banking and commerce the shortcomings in the country's existing network are a product of the developmental constraints facing a poor, backward nation. In turn, these shortcomings have been the major impetus behind the government's current policy of deregulation and privatization.

**Domestic market**

PTC is the exclusive provider of domestic fixed line telephone services in Pakistan. Its domestic telephone operations, which consist of local exchange and domestic long-distance, represent PTC's largest source of revenues. For the fiscal year that ended 30 June, 1992, domestic telephone operations accounted for Rs 12.7 billion, or approximately 62.9% of total revenues. Revenues from domestic operations are generated from tariffs on domestic long-distance and local calls, telephone installation charges and monthly rental charges, of telephone lines. The level and variety of services offered have improved with the introduction of the digital exchanges. A number of services are only possible with the availability of certain equipment configurations offered in the digital system.

PTCs domestic long-distance network consists of more than 2,500 km of optic fiber cable and an extensive microwave transmission system. This network provides long-distance service to customers throughout the country. Remote areas not covered by this network are provided long-distance service through a satellite-based system (DOMSAT) using circuits leased from INTELSAT, a satellite system owned by international cooperative of approximately 120 nations. PTC's domestic operations are characterized by a high concentration of telephone lines in major cities. It is estimated that approximately 60% of PTC's customers are residential, and more than 90% are based in urban areas. The metropolitan areas of Karachi, Lahore, Islamabad, and Faisalbad constituted approximately 63% of the lines in service and 80% of the digital lines in service as of June 1992. Rural areas of Pakistan had a line penetration of 0.13 per 100 inhabitants in 1992 although PTC expects to double the number of telephone lines servicing rural areas

**INTERNATIONAL**

PTC is the exclusive provider of international fixed line telephone telex and telegram services in Pakistan, linking PTC's domestic telephone network to approximately 150 destinations worldwide. In 1992 PTC operated three international gateways, two in Karachi and one in Islamabad, and had approximately 2787 international telephone circuits. In addition PTC has four earth stations which provide direct access to 52 countries through• the INTELSAT network and a 1177-km analogue submarine cable between Karachi and the United Arab Emirates (UAE) with the capacity of 1,200 channels. Other international outlets to neighboring countries including India, Iran, and Turkey are via coaxial cable and microwave links. PTC's international operations represent the second largest source of revenues for the company. For the fiscal year ended 30 June, 1992, international operations generated revenues of Rs 6.8 billion, comprising approximately 34% of total revenues.

The growing internationalization of the Pakistani economy has contributed to increasing demand for the international telecommunications services. Between 1988 and 1922 the number on international calls more than doubled, from 42.2 million calls to 89.1 million calls (representing an annual growth rate of (20.5%) while the number of international paid minutes increased from 104.2 million minutes to 235.5 million minutes (representing an annual growth rate of 22.6%).

PTC provides the necessary switching and transmission facilities to connect its domestic telecommunications network to foreign networks, and in coordination with foreign telecommunications companies, to ensure the smooth flow of international traffic between these networks. For example, an outgoing international telephone call from Pakistan originates on one of PTC's local telephone exchanges is transferred to one of PTC's international gateways either directly or through PTC's domestic long-distance network. The call is then switched by PTC's network to the desired international destination via satellite, undersea cable, above-ground cable, or microwave links based on a predetermined routing plan developed by the company in coordination with foreign telecommunication companies. The foreign carrier receiving the call is then responsible for delivering the call to its final destination. When an international call is received at one of PTC's international gateways, PTC then switched the call from its gateway to the local recipient through PTC's domestic telephone network.

**Costs and benefits of the monopoly**

Revenues from international operations consist largely of amounts paid for international telephone calls made from Pakistan and incoming settlement payments from overseas telecommunication 'carriers for using PTC's domestic network in completing incoming calls to Pakistan. The provision of telephone services between the two countries and the corresponding settlement payments are established through bilateral negotiations between the two carriers.

These agreements, which typically stipulate a per-minute rate in U.S. dollars, govern the rates charged for PTC's use of the facilities of foreign carriers in completing outgoing calls from Pakistan as well as the use of PTC's domestic network in completing incoming calls which are billed in the country of origin. Settlements among carriers are normally made quarterly on a net basis.

As typical in developing countries, the volume of incoming calls to Pakistan has exceeded the volume of outgoing calls, providing PTC with new settlements from foreign telecommunications carriers and a source of hard currency. For the fiscal year ended 30 June, 1992, these new settlements provided PTC with US $210 million.

It is expected that this situation will continue in the foreseeable future. Based on calls to and from Pakistan from the top four international destinations (the United States, the United Kingdom, Saudi Arabia, and the United Arab Emirates) incoming calls to Pakistan accounted for 86.2% of PTC's total international minutes relative to these four countries while outgoing calls from Pakistan accounted for 138%. This imbalance is due in part to the large number of Pakistanis living overseas who take advantage of lower international telephone tariffs in foreign countries as compared with tariffs in Pakistan. Rates charged for international calls are

fixed on a destination-by-destination basis and are not subject to a government excise duty.

**Plans for the deregulation**

Privatization of PTC is an important component in the government's economic reform strategy. It will mobilize private funds for investment and relieve the government from allocating scarce public funds to activities that can be better performed by the private sector, given a proper regulatory framework. With privatization and the emerging new technologies, the opportunities for private participation in the country's telecoms sector have been dramatically expanded. While no doubt there are ample opportunities in the more traditional areas of electric and telecoms equipment, much of the new activity will be focused on businesses derived from the newly emerging technologies. The emerging technologies in mobile communications have catapulted wireless, mobile, and personal communications into one of the fastest growing markets in the world. The range of technologies becoming available is immense. Plans are well under way for future wireless and mobile communications systems which will obfuscate the demarcation lines between wireless and fixed telecommunications. Some of the potentially more important areas include the cellular technologies, and internet.

**Regulation of the monopoly by the authorities**

Till the late 1990s, and more especially in the 1970s and 1980s, Pakistan’s economy was dominated by the public sector in significant sectors of manufacturing, while banking and insurance were publicly owned. Publicly owned monopolies and quasi-monopolies in fields such as telecommunications, fertilizers, cement and oil refining were vehicles not only for the delivery of the services or goods in question but implicitly for the wider economic and social objectives of the government as well. The corporatization of telecommunications had not yet taken place and the sector operated as a government department until 1995.

Competition policy (the MRTPO or the Monopolies and Restrictive Trade Practices Ordinance of 1970), was, as the name indicates, narrowly focused on preventing the emergence of monopolies in the private sector. It was implemented through the aptly named Monopoly Control Authority. The rationale of competition policy was therefore limited in intent and somewhat nebulous, i.e. lacking in clarity and unpredictable in its interventions and had little, if anything, to do with the pursuit of greater efficiency in the economy and of making Pakistan a more internationally competitive economy, which are more recent concerns Over the last three decades, i.e. taking together the previous MRTPO and the current competition law, the main lessons that have been learned are that there are relatively few markets in which economies of scale are so great that only a single supplier can serve them efficiently. It has been found that it is indeed possible to institute competition even in the gas and electricity industry by unbundling them, and in the telephone and related industries, and that once considerations of dynamic rather than static efficiency are factored into the calculus, natural monopolies are few and far between. Regulation based on a strong realization of the public interest is the key and while the relevant sector regulators are grappling with the challenges of technology, efficiency and largeness, the current state of play does not indicate how the future will unfold. There is much still left to be done in maximizing consumer welfare and this has been found even in the developed countries. In the remaining natural monopoly sectors a policy that responds effectively to the pro-competition practices of major companies has yet to be developed. Nor have the complex problems of regulating vertically integrated firms possessed of monopoly power at one horizontal level of the industry in which they operate, but facing competition at other strata of the industry been resolved. Telecommunications present one example of such an industry. The PTA (Pakistan Telecommunications Authority) believes it has solved this problem by setting up a regulatory system that requires PTCL (successor to the T and T Department) to offer equal access to its monopoly facility. In the long term questions of an equitable, and workable, formula for the sharing of investment expenditures could raise contentious issues. Hence, it might be too early to say that extant arrangements will be long-lasting, amicable and effective. As with electricity transmission, the terms of access to PTCLs system are too complicated and chances that potential competitors in down-stream markets could be at a disadvantage are not insignificant.

Over the last few years a variety of industries and activities in Pakistan have been freed from government control, and from the restrictive attitudes of bureaucracy towards urgently needed investment expenditures, by moving them into the private sector. Along with a range of sector-specific regulatory bodies, Pakistan now undoubtedly has a more vigorous competition policy regime, a policy regime developed in the face of some opposition from the business community but now with substantial support from the country’s bureaucracy and successive governments since the late 1990s. By and large, the overall competition and regulatory regime is being implemented effectively. The problems that policy-makers now have to face relate to firms and industries that are not natural monopolies, that is, they are not entities that serve markets in which costs will be lower if only a single supplier operates. A particular case is that of the financial services industry. It has two characteristics that justify strong regulation. One, it has many structural conflicts of interest between the profit-maximizing objectives of the institutions and the need for systemic stability that is the primary responsibility of the regulator, the State Bank of Pakistan.

In the case of telecommunications, vertical integration occurred because the fixed land lines had been laid by the government itself through its erstwhile Telephone and Telegraph Department, which also billed the consumers. However, with the introduction of mobile or cellular phones and the internet and the granting of equal access to all operators at a cost, competition in the market has become more intense and the former so called natural monopoly has lost a considerable portion of its market share in the telecommunications sector. In hindsight, it is an open question whether the break-up of the government monopoly in telecommunications was driven more by the march of technology than by any desire on the part of the government to make the sector more competitive.

Conclusion

Privatization of PTC is an important component in the government's economic reform strategy. It will mobilize private funds for investment and relieve the government from allocating scarce public funds to activities that can be better performed by the private sector, given a proper regulatory framework. With privatization and the emerging new technologies, the opportunities for private participation in the country's telecoms sector have been dramatically expanded. While no doubt there are ample opportunities in the more traditional areas of electric and telecoms equipment, much of the new activity will be focused on businesses derived from the newly emerging technologies. The emerging technologies in mobile communications have catapulted wireless, mobile, and personal communications into one of the fastest growing markets in the world. The range of technologies becoming available is immense. Plans are well under way for wireless and mobile communications systems which will obfuscate the demarcation lines between wireless and fixed telecommunications.

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