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TELECOMMUNICATIONS POLICY IN TURKEY: RESTRUCTURING FOR ECONOMIC GROWTH

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Summary

Modern telecommunications technology is now widely seen as a critical driver in economic development. However, the issues involved in the rapid deployment of this technology are complex and frequently highly controversial. While some of these issues are technical, the most difficult ones involve changing a legal and regulatory framework which was originally designed for different times and different technologies. The process of changing this framework necessarily involves disruptive change for existing service providers as well as substantial benefits for the economy at large. This paper seeks to discuss these issues in light of Turkey's progress to date in taking advantage of advanced available telecommunications technology and the myriad productivity-enhancing services that are associated with it.¹

An important element in developing a more competitive and dynamic sector in Turkey has been the desire of the country to become a member of the European Union. This has encouraged changes in the telecommunications regulatory regime following the guidelines set out in Chapter 19 of the EU "acquis" for candidate members. Nonetheless, substantial further efforts are needed to complete and implement the desired regulatory framework, particularly as it affects the former government monopoly carrier, Turk Telekom, and the cable companies. A further limiting factor has been an overall investment climate in Turkey which has been characterized by a high level of uncertainty for most investors, regardless of size or nationality.

Policy recommendations to help accelerate the deployment of telecommunications technology include a clear reaffirmation of the government's priorities for the sector, a reduction in the level of ownership and regulatory uncertainty, strengthening the Board and Staff of the Telecommunications Authority, and reviewing policies which reduce the scope and increase the cost of telecommunication licenses.

Background

Before discussing the status of telecommunications infrastructure and policy in Turkey, it will be helpful to review briefly why modern telecommunications are so important for economic development² and how the technology has advanced in recent years.

Most studies by economists conclude that a modern telecommunications infrastructure has a substantial impact on economic growth. Based on samples of 47 and 124 countries, Norton (1992) concludes that in economic development “a telecommunications infrastructure ...must be viewed as at least as important as conventional economic forces such as stable money growth, low inflation and an open economy.”³ Roller and Waverman (2001) found that one-third of the economic growth in a group of 21 OECD countries over the 20-year period, 1970-1990, could be attributed to the direct and indirect impact of the telecommunications sector.⁴ This author has studied the remarkable economic transformation of Ireland in the 1990s, which owed much of its impetus to timely investment in a modern telecommunications system.⁵

One major channel of impact on economic growth is through the reduction in transactions costs, of which communications costs are a good example. Forty years ago, a three-minute call between London and New York cost \$9.00; today, it is just a few cents. Such a cost reduction stimulates the exchange of information and the volume of transactions. More generally, lower costs of communication expand a firm’s markets and supplier base, help buyers and sellers acquire better pricing information at a lower cost, and reduce the risks in making contracts and allocating capital.

More recently, with the growth of “broadband” communications, firms have been able to radically restructure their organization and operations. Nearly any activity traditionally carried out within the firm (or by its suppliers) that can be “digitized” can now be physically located anywhere in the world with the requisite labor supply and telecommunications infrastructure. For many kinds of products and services, geographic constraints on marketing or sourcing have nearly disappeared. While potentially disruptive in the short-term (as economic growth generally is, especially for existing firms), “the death of distance” has helped create jobs and raise living standards where the necessary environment for the effective deployment of the technology exists. Ireland and India are two prominent examples of such a positive impact. Table I (below) provides an overview of the various ways in which lower-cost telecommunications can support economic growth.

Telecommunications: Infrastructure v. Services

It is helpful to make the distinction between telecommunications infrastructure and the many types of services (voice telephony, text and email, data, video, internet, etc.) which are delivered by that infrastructure. The telecommunications infrastructure can be roughly distinguished by the following types of networks:

Fixed line networks. These include Public Switched Line Networks (PSTN), the traditional copper wire analog telephone circuits and switches, as well as newer fixed lines systems that encompass digital transmission, optical fiber cable and similar advances. Cable companies originally established for the delivery of television are part of this group. In the future, this category may well include the electric power grid, where the basic infrastructure is already in place.⁶ With the exception of microwave transmission

TABLE I. TOTAL FACTOR PRODUCTIVITY IMPACTS OF ADVANCES IN TELECOMMUNICATIONS TECHNOLOGY

	Activity	Examples	Illustrative implications
#1	Decision-making involved in allocating resources with a given amount of information	Substitution of phone call/conference call/video-conferencing for face-to-face meetings	Reduction in cost and cycle time in decision-making
#2	Collection of information	Remote real-time scanning; online product/service search	Deterrence of criminal activity; prediction of flood crests; equipment monitoring
#3	Distribution of information	Online data banks; vendor web sites	Ability to make marginally better decisions with more information; transformation of uncertainty into risk
#4	Financial market arbitrage	Global financial markets	Reduction in cost of capital and improved liquidity in markets
#5	Substitution of information for fixed capital	Ability to single-track railways; reduce inventories	Reduced capital investment
#6	Creation of value-added services	Off-shore software development; processing and analysis of financial and medical data; remote operating control	Lower cost of service activities; shifts in location of value-added activity

systems, these types of networks do not require publicly-supervised allocation of through-the-air bandwidth. However, they do require extensive “rights of way” to put in place the transmission infrastructure.

Wireless networks. These networks are distinguished by their heavy reliance on through-the-air bandwidth for terrestrial-based transmission of analog and digital signals containing the various services mentioned above. Many wireless networks also rely heavily on fixed networks for some portion of their transmission chain, since they interconnect with them. Mobile telephony is the most visible type of wireless network. However, broadband services transmitted at local “fixed wireless” points, such as shopping centers or university campuses, are increasingly common in many countries. The right to use specific transmission frequencies is generally allocated by governments.

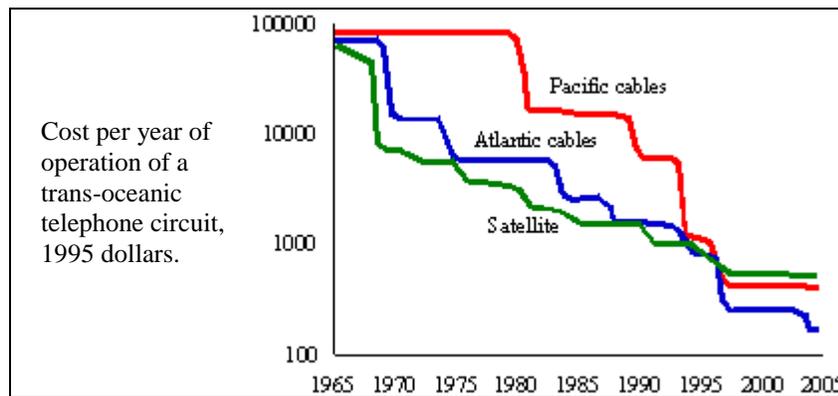
Satellite-based networks. Once thought to be the future of international telecommunications, satellite networks are now largely used for television broadcasting

to subscribers, and for military and niche commercial applications, such as vehicle positioning information. Satellites can also be used for internet services, usually in conjunction with fixed line facilities (needed for “uploads” from the user). Here, too, transmission frequencies must be allocated through some government-supervised process.

Think of the three different types of infrastructure (as well as alternative types of delivery technology within each basic type) as competing “pipelines.” The two critical factors in competing are the volume of traffic that can be transmitted (frequently expressed as “bandwidth”) and the cost of building and maintaining a particular type of infrastructure. Helped greatly by a competitive environment, technology breakthroughs of the past several decades have resulted in extraordinary reductions in cost, as the diagram tracking the costs of transoceanic telephone circuits demonstrates.⁷

Given the continuing rapid change in telecommunications technology and continued experimentation in the development of telecommunications-based services, it

TRENDS IN TRANSOCEANIC CIRCUIT COSTS IN 1995 DOLLARS 1965-2005



Source: The Challenge Forum

is wishful thinking to believe that any one person, firm or government can determine what the optimal infrastructure should be for any country. Making such a determination, and trying to enforce it, would be certain to block innovation and stifle the competitive forces that help to drive down costs. The alternative approach, which is embodied in the 2002 European Commission Directive on competition in electronic communications networks and services, is to encourage a viable, competitive marketplace to make such decisions.⁸ Certainly mistakes will be made, as they were in the internet “bubble” years of the late 1990s, but the costs of those failures will be borne largely by those who made the investments.

Similar arguments apply to the deployment of services which use the telecommunications infrastructure. In general, deciding which “pipeline” should deliver

a particular service is best left to a competitive market. Voice telephony is a classic example. Originally dismissed as a narrow niche market, wireless telephony is now more widely deployed than fixed line telephony in many countries, including Turkey. More recently, telephony using traditional PSTN systems is being challenged by internet-based services (“VOIP”), particularly for international calling and within large corporations. A competitive market is far better at encouraging and evaluating new services, and selecting the optimal “pipeline”, than some government-sanctioned “master plan” or regulatory authority determinations.

The Current Status of Telecommunications Deployment in Turkey

Taking a snapshot of where Turkey stands as of mid-2005 in deploying telecommunications technology is hampered by the lack of timely data, an accelerating program of regulatory liberalization, and substantial uncertainties regarding the privatization of the incumbent *de facto* monopoly fixed line carrier, Turk Telekom (TTK). However, based on a review of the available data and a series of interviews and discussions with industry participants, customers, and regulators, the following tentative conclusions have been drawn:

1. The basic physical framework for the principal competing infrastructure “pipelines” is present, although not fully developed, especially in terms of its ability to deliver broadband services. Infrastructure in the eastern part of the country is spotty. Satellite-based services are available. Cable companies operate in the principal cities of the country. While personal computer (PC) penetration is low, an increasing percentage of mobile phones have some internet access.
2. At present, the development and deployment of new services and additional infrastructure is being severely hampered by lengthy regulatory delays, difficulties associated with the policies of TTK and issues arising out of its privatization and loss of monopoly over fixed line telephony.
3. Despite (2), the liberalization program has attracted some new entrepreneurial investment and management into the telecommunication sector. More is probable if uncertainties regarding the regulatory regime and TTK’s privatization are promptly resolved.
4. The advent of limited competition in Turkey has helped to reduce the cost of many telecommunications services, although they still remain high compared to most other OECD countries. This is particularly the case when taxes on the sector and its customers are factored in.
5. A problem that affects most economic sectors in Turkey, but which has particular relevance for telecommunications, is an investment climate that

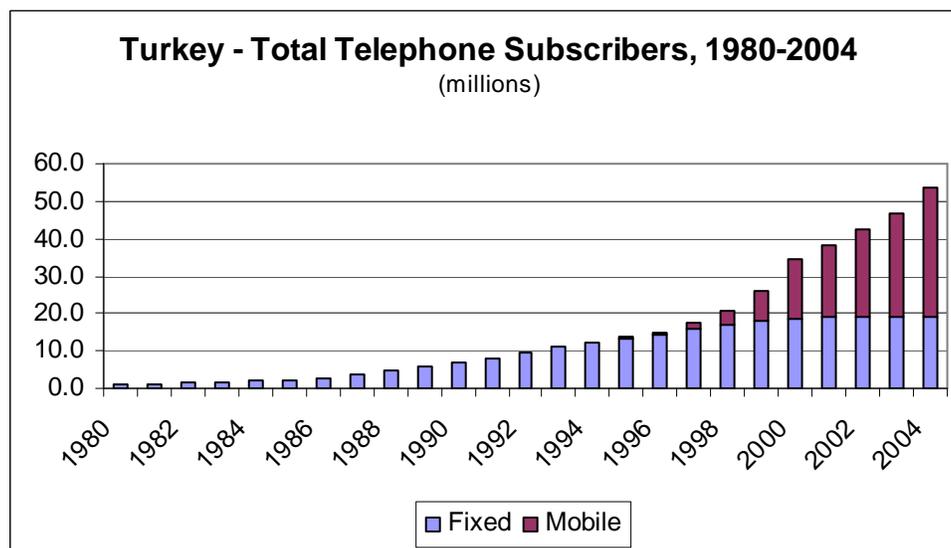
poses special hurdles for “outsiders” – large or small, domestic or foreign. Such hurdles include the lack of a well-functioning capital market, a banking system with limited expertise in working with technologically-oriented firms, and a relatively opaque regulatory process that tends to favor existing enterprises, particularly if they are part of a major family-controlled holding company.

Infrastructure Systems

As in many other countries over the past two decades, Turkey’s telecommunications sector has shown significant growth. Chart I shows the growth of telephone subscribers in Turkey, 1980-2004. Three important trends stand out. First, it was not until the late 1980s that the percentage of the population connected to the network started to rise from exceptionally low levels. This lack of connectivity did not reflect a lack of demand: in 1987 the backlog of requests for main line telephone service exceeded two million would-be subscribers. This situation largely reflected the presence of a capital-starved state monopoly provider. The backlog did not drop below one million units until 1994.⁹ A second important trend has been the rapid growth of mobile phone subscribers beginning, effectively, in the late 1990s. The third trend, which is closely related (and evident in many other countries), is the stagnation in the number of fixed line subscribers. By 2004, the number of mobile subscribers exceeded by 15 million those with fixed lines.¹⁰

While progress has been impressive in deploying wireless telephony, an equally relevant question is how Turkey compares to other countries. Chart II provides a comparison in total telephone subscribers against four other countries and the European

CHART I.



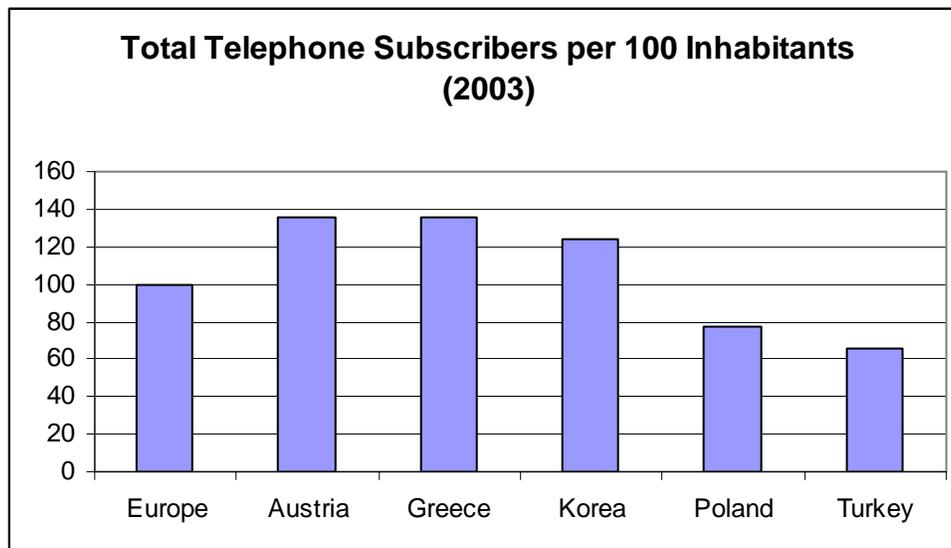
Source: ITU database

average as of 2003. By this measure, Turkey is close to Poland's penetration rate, but well below Greece and the European average.¹¹ Data on the number of business leased lines unfortunately is not available (but see the discussion below on leased line pricing).

While Turkey's telephone system, in terms of its penetration rate, appears to be relatively satisfactory, given the country's income level, the same cannot be said for its development of cable systems and broadband delivery. This is bothersome, especially since cable franchises have been awarded for 20 cities that together cover roughly 80% of the Turkish market. The Istanbul metropolitan area alone contains roughly 12 million of Turkey's 70 million people. According to industry sources, as of 2004, cable systems had about 1.3 million subscribers with an existing infrastructure capable of reaching 2.6 million households.¹²

The International Telecommunications Union estimates that there were six million internet users (including dial-up PSTN users) in 2003. However, broadband

CHART II.

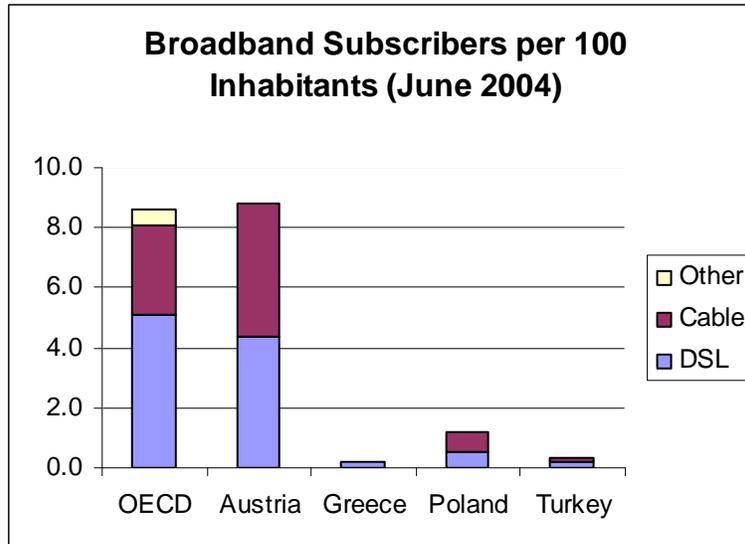


Source: International Telecommunications Union

penetration rates are a fraction of the OECD average, although they fare somewhat better against comparisons with Poland and Greece, as Chart III (below) demonstrates. Part of the explanation undoubtedly lies with the low level of personal computer ownership (4.31 per 100 inhabitants in 2003 v. the 22.43 average for Europe). More important may have been the relatively high cost of ADSL until August 2004, when the dominant provider (TTK) cut its charges by well over 80% for most services and launched a major program to provide additional ADSL ports. Subscribers by year-end 2005 were expected by management to reach one million, up from 455,000 at the end of 2004.

Broadband penetration for Turkey (and other countries) is actually higher since an increasing number of mobile phones are internet-capable. According to one industry source, 6-7 million of Turkey’s 35 million mobile phone subscribers in 2005 have access to the internet via their devices. An additional element in under-reporting broadband access is the existence of internet cafes, which are common in most Turkish urban areas, and which provide access at relatively low cost.

CHART III



Source: OECD

Internet access for educational institutions is uneven. At the university level, it appears that nearly all institutions have broadband access with fairly high degrees of reliability. At the primary and secondary level, the Ministry of Education, working with TTK, intends to provide all 40,000 schools in the country with ADSL. According to TTK sources, as of mid-2005, 20,000 schools had been connected. The most difficult connections will be at 3-4000 relatively remote locations, mostly in the eastern part of the country.

Service Availability

While the basic “pipelines” for delivery of telecommunications services are present in most major markets within Turkey, the development of new products and the “bundling” of products have been retarded by several factors. First, TTK has historically been slow to introduce new services in fixed line telephony. In recent years, when liberalization of the telecommunications market made it clear that new competitors were going to appear, product development and marketing have assumed a higher priority.

A second reason for sluggish growth has been the licensing process adopted by the recently-established Telecommunications Authority. Long delays in the issuance of licenses, their cost and their narrow scope have frustrated would-be entrants into the market, as well as the few already-established firms. In the case of cable system operators, licenses for new cable-based services have been approved by the Telecommunications Authority but require final approval by the Minister of Transportation, which has been slow in forthcoming.

Pricing of Telecommunications Services

An important indicator of competition is the degree of price competition. Obtaining an up-to-date overview of pricing in any country's telecommunications market today is extremely difficult, given the need to construct the basket of rates available to a representative user, to consider the different pricing schedules by different firms and to evaluate tariff rates against other countries' structures. However, based on the most recent available OECD survey of member countries' pricing structures (2004), Turkey continues to be a relatively high-cost country for most services, with the notable exception of domestic leased lines, an important business service (Table II). An important element in the cost to users is taxes, which in Turkey's case are substantial: 55%-60% in the case of mobile phone calls.¹³ In Europe, taxes generally range from 7%-20%.¹⁴ (In the United States, the highest combined Federal-State tax rate is 21%.) Table II provides selected tariffs for 2002 and 2004 for several telecommunications services.¹⁵

TABLE II. TURKISH TELECOMMUNICATION CHARGES RELATIVE TO OECD AVERAGES

OECD Average = 100

Service	8/2002	8/2004
Composite basket of residential charges*	148	164
Composite basket of business telephone charges*	179	153
Basket of international business charges*	262	121
Basket of national leased line charges	96	80
Basket of high user mobile phone charges, including VAT	183	160

Source: Calculated from price tables in OECD Communications Outlook (2003 and 2005-preliminary). Domestic currency charges converted at \$US purchasing parity exchange rates

*Inclusive of tax

With the exception of leased line charges, Turkish rates tend to be somewhat higher than the OECD average. As the table shows, the August 2004 tariff reductions by TTK were especially large for international rates (probably in response to increasing competition from VOIP providers), but they still remain measurably greater than the OECD average. The relatively low leased line charges may well reflect the ability of larger business users to use competitive satellite services in place of TTK landlines. Although they are widely deployed, mobile phone charges are substantially in excess of the OECD average, no doubt due largely to the heavy tax burden.

Turk Telekom Issues

Perhaps because of a long history of state involvement in the economy, Turkey has been extremely late in recognizing the desirability of privatizing its state-owned monopoly fixed line provider. Advisors to the government (most notably, the IMF) have had trouble convincing it of the linkages between communications privatization, increased competition, and economic development. After two unsuccessful efforts to privatize TTK, a third effort was successful in 2005 when a controlling 55% interest was sold to foreign investors. Additional shares were slated to be sold in a public offering.

The primary benefit from a successful privatization of TTK will be a more level playing field for the company's competitors, thus helping to accelerate the deployment of new technology and services. Although a privatized TTK might compete more vigorously than in the past, it will lose its standing as a state-owned company (a matter of no small importance in Turkey) in regulatory proceedings before the telecommunications and competition authorities. They are likely to be less sympathetic to TTK's explanations for its reluctance to provide competitors with access to its facilities and rights of way (as is generally required by the liberalization program). TTK's appeals and noncompliance with Telecommunications Authority decisions, frequent in the past, are likely to be less favorably viewed by the courts. Nonetheless, it can be expected that TTK will continue to be aggressive in the marketplace as well as in the regulatory process as it tries to maintain its revenues against new competitors.

An unfortunate byproduct of the TTK privatization process has been its impact on cable system investment. The original cable companies were established as joint ventures between TTK and private operators. As part of the liberalization/privatization process, TTK was required to transfer its cable assets to the government entity responsible for communications satellites. However, this is envisioned only as an interim solution and some ambiguity surrounds the ownership claims of the private operators. Such ambiguity and related uncertainty about the delivery of new services are holding back investment in a critical telecommunications pipeline. The delay is especially bothersome because it comes at a time when TTK, as the overwhelmingly dominant DSL broadband operator, should be facing stronger competition.

The Regulatory Environment

Turkey's intention to join the European Union (EU) means that its regulatory framework will have to conform with that specified by Chapter 19 of the EU "acquis" for candidate members. The principles underlying Chapter 19 are driven by the EU's Lisbon Strategy of March 2000, which sought to make the EU "the most competitive and dynamic knowledge-driven economy by 2010." To accomplish this objective, the strategy stresses that "businessmen and citizens must have access to an inexpensive, world-class communications infrastructure."¹⁶ To implement strategy in the telecommunications sector, the European Commission has issued a set of directives which became effective in July 2003.

The directives cover a wide range of subjects, including the elimination of restrictions on competition, simplification of licensing criteria, access to service ("universal service"), personal data protection, and the organization, staffing and powers of the relevant telecommunications regulatory authority.¹⁷ The EU's approach emphasizes that governments should follow a policy of "technical neutrality," e.g., by avoiding favoring one particular "pipeline" over another in the delivery of services, such as voice telephony and internet access.

The 2004 EU report on Turkey's progress in meeting Chapter 19 accession requirements noted that substantial further efforts were needed to complete the regulatory framework, as well as more evidence of effective implementation and enforcement of the Commission's rules.¹⁸ An earlier OECD (2002) Report had similar recommendations, as well as specific suggestions for simplifying the licensing process.¹⁹

A particular concern for both the OECD and the EU is the Turkish authority's tendency to limit entry into telecommunications services that do not involve the allocation of scarce resources, such as radio frequencies or satellite positions. This is accomplished by restrictive licensing. The preferred alternative, as called for in EU directives, is that "electronic communications services or networks should be provided on the basis of a general authorization and not on the basis of a license".²⁰

While the government of Turkey has frequently affirmed the importance of developing the country's telecommunications sector, typically in statements by the Minister of Transportation, the actual priority given to this effort is frequently in question. Too many policy decisions have had the effect of limiting competition, discouraging foreign capital inflows, and looking to the sector more as a "cash cow" for raising tax revenue than as an engine for economic growth.

Turkey has had an independent telecommunications regulator only since 2000. Prior to that time, telecommunications issues (outside radio/TV broadcasting content) were handled by the Ministry of Transportation. Consequently, the Turkish Telecommunications Authority (TA), at both board member and staff levels, is still in the process of gaining experience and issuing basic regulations regarding such areas as infrastructure competition, market definitions, and quality of service standards. Several

important decisions have been challenged in court by TTK. With one exception, board members are chosen from career government civil servants who may have little background in current technology and market issues. Recruitment of qualified staff is hampered by civil service salary caps.

The Minister of Transportation remains responsible for overall government telecommunications policy, proposes names for TA board members to the Cabinet, and exercises veto power over changes in license fees proposed by the TA. Prior to TTK's privatization, the Minister exercised oversight over that company's operations. He also oversees Turksat, the government operator of Turkey's three communications satellites and presently the holder of TTK's former cable company assets. (A prompt and pro-competitive transfer of these assets to the private sector should be a high priority for the Ministry.)

Effective January 1, 2004, the legal monopoly of TTK over fixed line telephony was abolished. However, in the absence of implementing regulations from the Telecommunications Authority and due to the uncertainties surrounding the privatization of TTK, no alternative fixed line suppliers have emerged as of early 2006. However, new firms have entered the telecommunications sector as resellers of TTK capacity (calling card and long distance services, for example) or as suppliers of equipment for managing corporate communications more efficiently. Interviews with industry sources emphasized the increasingly competitive conditions in these areas.

The Turkish Competition Authority, functioning since 1997, performs functions similar to that of the Federal Trade Commission or the Antitrust Division of the Department of Justice in the United States. It has been involved in several important issues within the telecommunications sector, such as requiring TTK's disposal of its cable company interests. At times, friction between the Competition and Telecommunications authorities has been a problem, although this is not an unusual situation in most countries.

Despite the problems discussed above, there is no doubt that the EU, along with the OECD and the IMF, has played an important role in encouraging Turkey to liberalize its telecommunications sector. The EU "roadmap" for telecommunications regulatory reform, plus financial and technical assistance²¹ to help implement it, have been particularly helpful. The "roadmap" was an important stimulus behind legislation revising the licensing regime and other aspects of the regulatory regime that was pending in the Turkish parliament in early 2006.

The Overall Investment Climate

The rapid deployment of telecommunications technology depends above all on the environment for investment and risk-taking. Easy entry by investors into the sector is a function not only of the regulatory regime, but also of the overall investment climate. In this respect, Turkey has earned a rather mixed reputation. In addition to substantial telecommunications-specific "regulatory uncertainty," Turkey's overall investment

climate has high levels of uncertainty, particularly with respect to the legal system. This affects all investors, large or small, foreign or domestic.

In The World Bank's "Doing Business" comparative evaluation system, as of 2004, Turkey was rated a lowly "1" and "2" respectively (out of a possible 10) in the Bank's "Legal Certainty" and "Disclosure" evaluation systems.²² In the Global Economic Forum's 2006 Global Competitiveness rankings, Turkey ranked 59th out of 125 countries. A still unresolved bitter, multibillion dollar lawsuit involving the mobile phone company, Telsim, and its Turkish partner and two foreign investor-suppliers has not helped the attractiveness of Turkey's climate for foreign investors.

Foreign investors, particularly those considering controlling investments in existing, high-profile Turkish-controlled firms, are likely to face opposition from Turkish nationalists. Such nationalism was openly stated to be the reason for a Turkish owner of Turkcell (the dominant cell phone provider) reneging on an agreement to sell its stake to the Nordic telecommunications provider TeliaSonera in May 2005.

A very "thin" capital market, a lack of venture capital, and a commercial banking system with little experience in innovative lending are further deterrents to new entrants. The high rates of inflation and extremely volatile financial markets of the recent past were important factors in creating this climate. What new investment did take place tended to be by existing firms, typically units of large holding companies. Progress over the last several years in bringing inflation under control and in sustaining healthy economic growth has been encouraging. This raises the possibility, despite a foreign exchange mini-tempest in the first half of 2006, that the financial system will evolve in a healthier direction. Substantial investment in Turkish banks by foreign financial institutions in the past two years has been encouraging.

Despite the deterrents to investment discussed above, a number of start-up companies, encouraged by the liberalization program, have recently entered the telecommunications sector. In most cases they are headed by Turkish entrepreneurs with experience in the sector gained working in either the United States or Europe. In several cases they have obtained backing from foreign investors – either venture capital funds or telecommunications companies.

Policies to Remove Barriers to Growth

Given the findings and analysis above, and assuming that the government of Turkey wishes to see the speedy deployment of telecommunications technology and services as an important factor in economic growth, several policy suggestions emerge. In particular, the government should:

1. Re-affirm its commitment to a pro-competitive policy for this sector. Such a re-affirmation would give direction to the various ministries and agencies involved in the telecommunication sector, in much the same manner as the Clinton Administration's 1997 White House statement, "The Framework for Global Electronic Commerce," did for the extraordinary expansion of internet commerce in the United States.
2. Reduce the level of ownership and regulatory uncertainty. The extended history of attempts to privatize TTK and the current "limbo" involving control of cable company assets have drastically increased investment-detering uncertainty and slowed the expansion of telecommunications services. Delays on the part of the Telecommunications Authority and the Minister of Transportation in issuing regulations and licenses have had a similar impact.
3. Strengthen the Telecommunications Authority board and staff. A stronger authority will enjoy greater respect and credibility, and will be less likely to have its decisions appealed. Specific steps to accomplish this would be the appointment of individuals with more background in the industry and upward adjustment of staff salary caps.
4. Ask the Telecommunications Authority and the Ministry of Transportation to review policies with respect to the scope and cost of licenses, as both the EU and the OECD have recommended. If the intent is to encourage experimentation and investment in new services, licenses should be as general as possible. The fees charged should be designed to do no more than cover the expenses of administering the licensing regime. (Pending legislation in the Parliament would apparently accomplish these objectives.)
5. Redouble its efforts to improve the investment climate, with particular attention to the legal system, in light of its importance for the telecommunications sector.

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INTERVIEWS IN TURKEY

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ENDNOTES

¹ Many studies and country comparisons combine “information technology” with “communications” investment as the relevant sector (“ICT”). While it is clear that, from an operational perspective, telecommunications and information technology are highly dependent upon each other, the issues of deploying telecommunications are generally separate from policy issues in information technology.

² The European Commission recently noted “the vital role the electronic communications sector plays in nearly all other economic activities, and ... as a potent driver of labour productivity” (Europe. 2004b, p. 2).

³ Norton, p. 192.

⁴ Ibid., p. 919.

⁵ Burnham (2003).

⁶ Demonstration projects for BPL (broadband over power lines) are already underway in San Diego, CA and Manassas, VA (Wallace, 2005).

⁷ Of particular importance has been Moore’s Law (the number of transistors per square inch on a transistor tends to double every two years) and the increase in optical fiber transmission capacity.

⁸ Europe (2002b).

⁹ International Telecommunications Union database.

¹⁰ For an excellent overview of the mobile phone sector as of 2004, see Evci et al (2004).

¹¹ If the data are expressed as phones per household, Turkey’s relative position would undoubtedly improve, given the significantly higher average household size. However, individuals with subscriptions to more than one mobile phone operator appear to be fairly common, as they take advantage of differences in tariff schedules (e.g. discounts for own-network calls).

¹² OECD (2002), p. 13.

¹³ OECD (2004), p. 31.

¹⁴ McKinsey Global Institute (2003), p. 1.

¹⁵ The table is based on raw data found in tables in the OECD’s Communications Outlook, 2003. Data for 2004 are preliminary. PPP adjusts exchange rates to reflect “purchasing power parity.”

¹⁶ http://ue.eu.int/ueDocs/cms_Data/docs/pressdata/en/ec/00100-rl.en0.htm.

¹⁷ See, for example, the EU’s “Framework Directive,” Europe (2002a).

¹⁸ Europe (2004a), p. 128. The paper by Jordana et al (2005) provides a succinct summary of the evolution of the EU telecommunication regulatory regime.

¹⁹ OECD (2002), p. 23.

²⁰ Europe (2002b).

²¹ For example, its support of conferences aimed at training regulatory staff in EU policies and experiences in EU countries in implementing them.

²² See the web site, <http://www.doingbusiness.org>.

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