Regulatory Reform and Competition in the Turkish Telecommunications Industry

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1. Introduction

In the 1980s, Turkey initiated a liberalization and deregulation movement to introduce competition to its domestic markets and to transform the Turkish economy from an import substituting economy to export-based one. The aim was to institutionalize economic change through transition to the economic institutions of capitalism. However, the traditional institutional structure had resisted the process of institutionalization of economic change until the 2000s. Liberalization did not bring about a relaxation in the traditional and statist institutional environment. In the 1980s, institutional structure was not ready for the transition. In the 1990s, Turkey suffered from the loose political structure with coalition governments and the resistance of traditional bureaucracy and judiciary environments to the transition. As a result, the reform initiatives were not able to lead to the transition to the economic institutions of capitalism based on institutionalization in the political, bureaucratic, and legal spheres. Whereas the legal and bureaucratic institutional structure resisted the change, the political process led to a rent-seeking society (Çetin, 2010).

Throughout this period including the 1980s and 1990s, network and infrastructure industries continued to remain heavily monopolies. On the other hand, over the last decade, Turkey has been experiencing a more radical reform process including network and infrastructure industries like telecommunications, electricity, natural gas, and transportation. In general, these reform initiatives have been successful. However, the process came to Turkey with its costs. The reform process has its ups and downs, but the transformation seems irreversible (Çetin and Oguz, 2011). Telecommunications industry is not except from this trend.

Until 1994, telecommunications services in Turkey had been carried out by PTT (Posts, Telegraph, and Telephones), a state-owned company. Establishing Turk Telekom (TT) in 1994, Turkey unbundled PTT. It transferred the introduction of telecommunications services from PTT to TT. Although TT was established as a public-owned company, the aim was to privatize it in the 1990s. However, TT had not been able to privatize throughout the 1990s.

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\textsuperscript{1} See Çetin and Yilmaz (2010) for a more detailed analysis on institutional foundations of the transition to the economic institutions of capitalism in Turkey. This book presents an institutional perspective to understand the process of economic change in Turkey.
due to legal problems and judicial resistance to privatization\textsuperscript{2}. By Law No 4502 enacted in 2000, the Turkish telecommunications market was restructured. The law established Telecommunications Authority as an independent regulatory agency. This law aimed to open the market to competition by terminating the monopoly rights of TT till the end of 2003. 55\% of TT was privatized by a block sale in 2005 and 15\% of its remaining share was privatized through offering to public (Bagdadioglu and Çetinkaya, 2010). A 30\% share is still under ownership of the treasury. Currently, a Cabinet Decision in January 2013 aimed to privatize a 6.68\% share of TT through offering to public till the end of 2013, but it didn’t yet carry out. After privatization in 2005, while TT remained a private monopoly in the fixed-line telephony services, the new firms such as TTNet in fixed-broadband internet services and Turksat in cable TV emerged as a result of the functional separation of TT. Additionally, some new entrants occurred in the different segments of the market.

An important development occurred in the regulatory institutional structure in the post-reform period. In that sense, two regulatory institutions are especially important. They are Law No 4502 enacted in 2000 and the Electronic Communications Act (ECA) adopted in 2008. While Telecommunications Authority (TA, ICTA in 2008) was established by Law No 4502, the ECA gave a full discretion to ICTA to ensure competition in the market. Accordingly, ICTA is responsible to solve interconnection and access issues, determine tariffs, manage spectrum, and other duties defined in the ECA. However, ICTA and Competition Authority share responsibilities for regulation of the market.

Although the Turkish telecommunications industry was opened to competition through privatization of TT, the reform process has brought about some issues. Regulator followed the different regulatory approaches for mobile and fixed operators in both telephony and broadband internet markets, because their different market structures traditionally mean the different competitiveness levels in each segment. While fixed voice and broadband internet wholesale markets have been regulated by the regulator, mobile voice and internet markets were deregulated. However, the dynamic technological nature of telecommunications markets has led to fixed and mobile convergence (FMC) and fixed to mobile substitution (FMS) in these traditional markets. TA failed to fit its regulatory pattern to this progress, although ECA states that competition is the rule and regulation is the exception in its fourth article. This chapter aims to analyze the effect of regulatory reform in the Turkish telecommunications industry on some market indicators. Focusing on the concepts such as convergence, substitution, market definition, and (de)regulation, the chapter particularly

\textsuperscript{2} See Çetin (2010a) for a more detailed discussion about the resistance of judiciary against almost all privatizations in public services during the 1990s. Moreover, Ardiyok and Oguz (2010) discuss the reasons for the failure of privatization of TT in the 1990s.
considers the implications of FMS on the competition evaluation for traditional fixed voice and broadband internet markets.

2. The dynamic nature of telecommunications

In order to analyze the regulatory process in a telecommunications industry, understanding the dynamic nature of industry is especially important. In telecommunications industries, the main component determining this dynamic nature is technology, because telecommunications industry has a rapid technological change. This technological change leads to dramatic developments in the structure and nature of the industry. Technological improvements in wireless and cellular broadband services bring about alternative to the traditional fixed services. Consumers prefer mobile services including the new technologies rather than the traditional fixed services (Spulber and Yoo, 2009).

Concepts such as convergence, substitution, and market definition are critical to understand the change and to evaluate the effect of this change on the market structure, analysis, and definition. While convergence means introduction of fixed and mobile services that are traditionally different as one service in the same market, substitution refers to usage of mobile services instead of traditional fixed services. The presence of convergence and substitution challenges the traditional structure of telecommunications industry and changes the market definition. Accordingly, an important part of the market analysis and definition in telecommunications is convergence. It is measured by substitution. Understanding the power of FMS also includes two main components. Whereas the first is change in the number of subscriptions and penetration rates, the second is cross-demand elasticities. In this paper, we only use the first one due to the insufficiency of needed data to test elasticities. FMS is based on the observation that the number of fixed subscriptions decreases, while the number of mobile subscriptions increases. Such interaction between mobile and fixed use rates is a clear indicator of FMS (Vogelsang, 2010).

Accordingly, ongoing development of FMC and FMS blur the boundaries between fixed and mobile markets. In particular, the presence of FMS leads to mobile operators taking on roles traditionally provided by fixed incumbents. For example, when more traffic in fixed-line voice market move onto mobile services, the importance of mobile services increases at the expense of fixed-line services. Under such an environment, FMC occurs first and then the dynamics of market give rise to FMS. When FMC and FMS result in new services and entrants, service providers’ shares of subscribers and their market shares increase in favor of mobile operators.
As a result, new services and technologies, blurring boundaries, and changing consumer behaviors force the improvement of traditional business models and bring about convergence and substitution in the markets. Although substitution of traditional fixed telephony services by mobile telephony is the main driver of these developments, broadband industry characteristics also affect the development of convergence and substitution between fixed and mobile services. However, the influence of competition on FMC and FMS varies significantly among countries (Briglauer et al., 2011). For that reason, the regulatory relevance of FMS is an issue that has to be dealt with on a country specific level and market definition is therefore expected to differ among countries (Crandall et al., 2002).

3. Privatization and deregulation in the Turkish telecommunications industry

The privatization of TT, which was the state-owned monopoly in the fixed line market, was the cornerstone in terms of deregulation and competition in the Turkish telecommunications market. Turkey preferred to privatize TT first and then liberalization and deregulation of the market. The aim was to increase the revenues to treasury from the privatization of TT (Oğuz, 2013; Bagdadioglu and Cetinkaya, 2011; Atiyas and Dogan, 2010). However, the privatization of TT has a long and interesting story. By Law No 4000 enacted in 1994, TT that was unbundled from PTT (Posta Telephone Telegraph), a state-owned company, was restructured as a state economic enterprise. Governments aimed to privatize TT in the 1990s. The initial attempts in the 1990s had been unsuccessful. Law No 4000 aimed to privatize 49% of TT. Some of the articles in this law were controversial in terms of the constitutional review. The law granted the Ministry of Transportation the authority to undertake the privatization of 49% of TT. The related article was annulled by the Constitutional Court, on the basis that such authority to the Ministry amounted to a transfer of legislative authority to the executive and that such procedures had to be specified in law. Then Law No 4107 enacted in 1995 also aimed to privatize 49 of TT (Atiyas and Dogan, 2010). The main reason for Law 4107 was to provide a break-down of how 49% of TT was to be privatized: 10% to the General Directorate of Posts for free, 34% to strategic and institutional investors, and 5% to TT’s employees and small investors (OECD, 2002). Critical articles of this law were also defeated by the Constitutional Court. This time, the reason was to grant too much administrative discretion to the Privatization High Council in determination the valuation and sale conditions of TT (Atiyas and Dogan, 2010).

By another law, Law No 4161, enacted in 1996, government initiated a new privatization strategy with two phased. The first phase that was the so-called Sector Reform and Company Valuation consisted of a detailed analyses of the telecommunications industry and the value of TT. Including representatives of the Treasury, the Ministry of
Transportation, and the Capital Markets Board, a Value Assessment Committee was
established to develop a sale strategy. According to the strategy report presented by the
Committee to the Council of Ministers, 20% of TT were to be privatized via block sale to a
strategic partner. Although this law was not annulled by the Constitutional Court, the
attempts were again unsuccessful due to the lack of interest from international investors for the
block sale of TT. The effects of economic crises in 2000 and 2001 and further pressure from
international organizations like IMF, OECD, and EU forced Turkey to enact a new
legislation, Law No 4673, in 2001. Although this law revised the previous sale strategy,
privatization was not performed again (OECD, 2002).

With the general elections of 2002, the privatization of TT entered a new phase. The
new government was a sole party government contrary to the short-termed coalition
governments in the 1990s. It was decisive in privatization and deregulation of the network
industries like energy, transportation, and telecommunications. In November 2003, the new
government decided to privatize at least 51% of TT through a block sale and the remaining
as public offerings. By Law No enacted in 2004, the upper limit on foreign ownership
insisted in the previous attempts was removed. In October 2004, the block sale of 55% of TT
was decided by Council of Ministers and the tender process for bids began. Oger Telecoms
Venture Group (a consortium led by Saudi Oger and Telecom Italia) won the tender held in
July 2005 and the sale was performed (Atiyas and Dogan, 2010).

4. Institutional framework for the reform

The privatization of TT triggered new developments in the Turkish telecommunications
industry and as a whole in Turkey. One of them was the transformation of public services in
Turkish regulatory framework. It was a breaking point for the transition from the traditional
French understanding regarding public services to a more market-oriented view of the
the Provision of Universal Service, Law No 5369, enacted in 2005 redefined universal
service as ‘‘electronic communications services which are accessible to everyone within the
territory of Republic of Turkey independently of geographical location, and which are to be
offered with a predefined level of quality and minimum set of standards in return for
reasonable prices affordable to everybody’’.

At the same time, this is also part of the accession process to the EU. Since the aim of
the EU Directive is to adjust the telecommunications markets of member states of the EU.
By means of Law No 5369, Turkey initiated to align its-own internal market with the EU
telecommunications market and the related regulations of the EU member states.
Accordingly, the law, in line with the EU Directive, included basic-line telephone services,
public pay phones, telephone directory services to be provided in the printed or electronic media, emergency call services, and communications services distress and safety calls at sea into the definition of universal services in the Turkish telecommunications industry. The law gave government the right to expand the scope of universal services and the current government expanded the scope to include the services of information technologies, computer literacy, digital broadcasting, digitalization of public documents, provision of communications means to handicapped citizens and infrastructure of sea communications (Oguz, 2013).

In Turkey, although liberalization in the fixed line voice market started with the introduction of mobile telephone services into the market by mobile operators Turkcell and Telsim, liberalization and deregulation for the industry actually began the establishment of TA as an independent regulator in 2000. Additionally, through Electronic Communications Law (ECL), Law No 5809, enacted in 2008 forced the Turkish regulatory framework to become much more compatible with the 2002 EU framework and changed the title of Telecommunications Authority established in 2001 as Information Communications and Technology Authority (ICTA). The ECL restricted the regulatory power of the Ministry of Transport in the telecommunications industry and gave it ICTA to protect competition, to undertake market analyses for market definition, to determine operators with Significant Monopoly Power (SMP), to regulate operators with SMP, and to approve tariffs and prices, if necessary (Atiyas, 2011).

In short, the Turkish telecommunications industry became compatible with the regulatory framework and market structure of EU. Because TT was de facto privatized and the fixed line voice market was opened to competition, it is possible to de jure say that voice market is also competitive as in internet market. The ECL stipulates a competitive market structure for all segments of the industry. As an independent regulatory agency, ICTA is the sole authority that is responsible for regulation of the industry. Economic regulations such as price controls and licensing or the de-regulatory process are compatible with the EU Directives.

5. The Economic Rationale for Regulation of TT: The Bottleneck Monopoly

In the telecommunications industries, there may be ‘essential bottleneck’ facilities that the incumbents firms control to the temporary or permanent disadvantage of potential competitors. In general, such actions are against competition. If an incumbent firm like Turk Telecom in the fixed-line voice market impedes the access of new entrants to its own infrastructure, it violates competition. This is a bottleneck monopoly. Regulatory agencies
and competition authorities have to address the problems raised by such bottlenecks (Crandall, 2000).

It is possible to say that TT is a bottleneck monopoly in the fixed line telephone market. In spite of privatization and deregulation, there is not yet a new entrance into the fixed line voice market. For that reason, regulator defines TT as a monopoly and strictly regulates it. However, this does not mean necessarily the monopoly power for TT and regulation of its market activities. Since, the reason for the absence of new entrants in the fixed line is FMC in voice services, but exactly not the monopoly power of TT on the fixed line infrastructure. As discussed in detail below, competition in telecommunications occurs through convergence and substitution of traditionally different markets. If fixed and mobile voice markets are substitute, these markets are now defined the same market. The Turkish telecommunications industry has also the same trend.

6. Deregulation and changing market structure in voice market

In that sense, a dramatic change has occurred in fixed and mobile over voice markets in the last decade. While the share of mobile voice has increased, the number of fixed voice subscriptions has increasingly decreased. However, because regulator has defined fixed and mobile voice as the different markets in spite of the change including convergence and substitution among the markets, it has preferred to regulate fixed voice and to deregulate mobile voice. But, developments in the market have showed that competition in voice has brought about convergence and substitution of fixed and mobile voice markets that are defined as traditionally different markets. Figure 1 reflects the number of mobile and fixed subscriptions and their penetration rates. The figure shows that there are currently FMC and FMS in the Turkish voice market. The number of fixed telephony subscriptions that was 18.4 million in 2000 declined to 13.55 million in the end of 2013 with a 26.35% decrease. Similarly, while penetration rate for fixed telephony was 28.91% in 2000, this rate decreased 17.68% in 2013. On the other hand, the number of mobile subscriptions increased from 16.2 million in 2000 to 69.66 million in 2013. Accordingly, penetration rate for mobile voice that was 25.35% in 2000 reached 90.9% in 2013. There are two important results of this finding. First, there is a powerful negative relationship among the numbers of mobile and fixed voice subscriptions, because fixed penetration rate decreased and mobile penetration rate increased while population in Turkey increased during the same period. This means a clear FMS in voice. Second, there is a positive relationship between disconnect rates in fixed voice subscriptions and the number of mobile subscriptions. This means a more powerful FMC and FMS in voice.
Figure 1. The number of subscriptions and penetration rate in voice

Source: Market Analyses of ICTA.

On the other hand, the effects of convergence and substitution are more obvious in terms of voice traffic volumes. Figure 2 depicts change in traffic volumes for fixed and mobile voice services by years. The rate of mobile traffic volume exceeded the rate of fixed in 2005 and a gap between the rates has occurred in favor of mobile volume so far. In spite of population increase, calls from fixed voice decline, whereas calls from mobile telephony services dramatically increase. This means that consumers in voice market prefer mobile voice services by giving up the traditional fixed telephone services.

Figure 2: Change in Fixed and Mobile Traffic Volume (Billion Minutes)

Source: Data are taken from market analyses of BTK. See www.btk.gov.tr
In particular, it is clear that there is a strong substitution relationship from fixed to mobile after 2006. This change also affects the market shares of fixed and mobile services. Figure 3 shows the market shares of fixed and mobile services by years. Accordingly, whereas the rate of fixed voice calls in total traffic volume declined from 86.4% in 2003 to 6.5% in the end of 2013, the rate of mobile increased from 13.6% in 2003 to 93.5% in 2013. This clearly means FMS in voice. Competition and technological improvements motivate consumers to prefer mobile voice services instead of the traditional telephone services.

Figure 3. Change in Market Shares of Fixed and Mobile (Traffic Volume-Billion Minutes)

Source: Data are taken from market analyses of BTK. See www.btk.gov.tr

The dispersion of traffic volume between mobile and fixed calls in the call origination segment of voice market is more important to reveal FMC and FMS in voice. Figure 4 shows this situation. As depicted in the figure, from mobile to fixed calls began to exceed from fixed to mobile call in 2009. After 2009, this rate has developed in favor of mobile call origination. We estimate that some changes initiated in the regulatory structure between 2008 and 2010 led to this situation. Regulator sharply reduced interconnections rates three times in 2008, 2009 and 2010 as illustrated in Figure 8. Also, mobile number portability became in effective in November 2008 and mobile internet through 3G was released in August 2009 (Atiyas, 2011). Those developments in the regulatory setting encouraged consumers to use mobile services rather than fixed telephone even in call originations. Again, this development means that the Turkish telecommunications market has experienced significant FMS in voice market. Clearly, such a relationship in the call origination market of voice refers to stronger evidence for FMS.
Eventually, all those developments have caused a change in prices in favor of mobile voice services. Figure 5 depicts change in prices by years. As shown in the figure, prices sharply drive down after 2008 because of decline in interconnection rates. Decrease in prices is compatible with increase in mobile calls and decline in fixed calls as mentioned above. Because technological improvement in mobile voice market and change in the regulatory structure accelerate the access of consumers to mobile services, consumers prefer to use mobile services instead of the traditional fixed voice services. As expressed by Crandall et al. (2002), because the decline of fixed line voice services and the increase of mobile voice are evidence for FMS, those developments mean that there is a smooth FMC and FMS in voice. Regulator has to define fixed and mobile voice services as the same market. They are not different services and markets in Turkey.

Source: Market Analyses of ICTA.

Figure 5. Change in Prices for Mobile and Fixed Voice Services

Source: BTK and Analysis Mason.
Under these conditions, the duty of regulator is to deregulate the individual operator in the fixed voice market as in the mobile voice market. Conversely, while regulator in Turkey defines the individual operator in fixed voice as firm with the SMP and regulates it, the individual firm in mobile voice is not being regulated by regulator. This regulatory structure causes an unfair institutional environment for the market players and improvement of competition. We can also analyze fixed and mobile voice market structures as both same markets and different markets through concentration ratios. We first measure concentration ratio in mobile voice. We employ Herfindahl-Hirschman Index (HHI). Accordingly, if we define fixed and mobile voice markets as different markets, we have to accept that fixed voice market is a monopolistic market because TT has %100 of market share. On other hand, mobile voice market also has high concentration with a high ratio of HHI, as of 2013. Figure 6 illustrates the change in HHI for mobile voice market by years. Ratio includes the market shares of three companies (Turkcell, Avea and Vodafone) in the mobile voice market. Although HHI is below 4000, mobile voice market is still a market with high concentration. In this scenario, if we define fixed and mobile services as the different markets, regulator can justify regulation for both mobile and fixed, because the markets have monopolistic market structures. However, if we define them the same market, we can come across a different case.

Figure 6. HHI and Market Structure for Mobile Voice Market

Source: BTK and ITU.

Accordingly, we can measure concentration ratio showing the level of competitiveness for the entire voice market. In this scenario, we include the market shares of TT, Turkcell,
Avea, and Vodafone to the index by accepting them in the same market. Figure 7 shows that HHI is lower as per the previous scenario. When fixed and mobile voice markets are defined in the same market, HHI approaches to 2500 that means moderate concentration. Although the ratio is still above 2000 as in mobile voice market, the trend of change in HHI means that the entire voice market will have a competitive market structure through technological developments and the pressure of competition between fixed and mobile voice services. But, for this, fixed and mobile operators have to operate under the equal and fair competitive conditions. Under these conditions, regulator has to define fixed and mobile voice services as the same market and to deregulate the individual operator in the fixed voice market as in the mobile voice market. The anecdotal evidence suggests that they are not different services and markets in Turkey. However, while regulator in Turkey defines the individual operator in fixed voice as firm with the efficient market power and regulates it, the individual firm in mobile voice is not being regulated by regulator. This regulatory structure impedes the introduction of competition in the market.

Figure 7. HHI and Market Structure for Voice Market

Source: Data are taken from market analyses of BTK. See www.btk.gov.tr

7. Deregulation and competition in broadband internet

As mentioned above, in order to understand the presence of FMS in an industry, we have to consider the number of subscriptions. In that case, figure 11 depicts that FMS in broadband internet is currently obvious. As shown in the figure, especially after entry of mobile internet into the broadband internet market was deregulated in 2009, the number of internet subscriptions from mobile phone and PC sharply increased and it exceeded the number of fixed internet subscriptions in 2011. After the third quarter of 2012, the number of
mobile internet subscriptions sharply increases one more time. As of today, as the number of mobile internet subscriptions continues to increase, the number of fixed subscriptions has a stationary trend. On the other hand, the number of cable TV and fiber internet subscriptions also increases. This situation suggests that the traditional fixed internet is substituted by internet through new technology tools, because fixed internet reached a maturity in Turkey and the internet connection of new technologies such as mobile, fiber, and cable TV is more popular. As a result, we can infer that the analysis of change in the number of internet subscriptions and the changing consumer choices affirm there is FMS in the Turkish broadband internet market.

Figure 8. The Number of Internet Subscriptions

Source: Data are obtained from ICTA.

On the other hand, in order to understand better the substitution effect of change in the subscription numbers, we have to analyze how this change influences the market shares of firms. Since the main criteria that regulators take into consideration in the market analysis of telecommunications sector is the market share of incumbent firm and new entrants. Almost all regulators over the world define and regulate firms having high market share as operators with market power (Baker, 2007; Carlton, 2007). In particular, technological change in the mobile services decreases the market shares of individual firms in the traditional fixed telecommunications services. Although the number of fixed mobile subscriptions relatively increases as shown in Figure 8, the technological developments in mobile internet accelerate the access of internet users to mobile tools and thus give rise to a dramatic decline in the market shares of fixed operators, because population also increases simultaneously.
Figure 9 depicts the market shares of mobile, fixed, cable TV, and fiber operators in broadband internet. As seen in the figure, the share of fixed operator in broadband internet has dramatically decreased after the first quarter of 2010, although the number of fixed internet subscriptions has generally increased after that date (see Figure 11). On the other hand, the market share of mobile operators has increased. This means that the share of mobile internet rapidly rises as per the fixed market, while the whole broadband internet market grows. In terms of market shares, we can infer that there is currently a strong FMC in broadband internet. Mobile and fixed internet markets converged in a short time like two years after deregulation of mobile 3G internet in 2009. It also means FMS. Although the market follows such a development trend, the problem is that regulator in Turkey still defines fixed operator as individual firm with the SMP. Conversely, while the market share of fixed operator was over 90% in 2008, it declined to 50% in the second quarter of 2011 and to 20% in the second quarter of 2013. On the other hand, while the market share of mobile internet operators was 1.7% in the third quarter of 2009, it reach 33% in the second quarter of 2011 and 75% in the second quarter of 2013 rapidly. It is clear that there is a strong and speed change from fixed internet to mobile internet in terms of consumer preferences. Obviously, the introduction of competition to the market has changed the market structure in broadband internet.

Figure 9. Change in the Market Shares of Internet Companies by Years (%)

Source: Data are obtained from ICTA.

In order to understand better development in the Turkish broadband internet market, we can observe change in the market structure by employing HHI again. Figure 10 illustrates change in the market structure as per concentration ratios in the period between the first
quarter of 2008 and the second quarter of 2012\textsuperscript{3}. As depicted in the figure, broadband internet market has a monopolistic market structure until the second quarter of 2009, because mobile internet was not yet free. After mobile internet was deregulated in 2009, market structure rapidly started to change and evolved from monopoly to monopolistic competition with high concentration in the last quarter of 2011. The most important result this rapid change in the market structure means is that the deregulation of mobile internet in 2009 led to decrease in the market share of fixed internet and increase in the market shares of mobile internet. Clearly, mobile and fixed internet markets converged and thus, FMS ensued within two years. This change shows that how technological change in telecommunications rapidly affects consumer preferences and market structure. However, the position of regulator concerning regulation of the industry is not compatible with change and developments in the markets. Regulator continues to define TTNet as operator that has efficient market power. Conversely, developments suggest that internet users prefer mobile internet instead of fixed internet and FMS has rapidly occurred in the broadband internet markets.

![Figure 10. HHI for Broadband Internet](image)

Source: Market Analyses of ICTA.

**Conclusion**

Over the last decade, Turkey has been tracking a regulatory reform in its network and infrastructure industries. The aim is to institutionalize competition in the related industries in

\textsuperscript{3} In order to calculate HHI, we used the market shares of XDSL supplied by TTNet, Cable TV internet supplied by Turksat, mobile internet supplied by mobile operators, and fiber internet operators. Data are gathered from the market analyses of BTK.
parallel to the process of economic change initiated in the 1980s. Although the 1980s and 1990s witnessed a failure story, the last decade has led to a successful process in terms of the political economy of regulatory reform. Whereas the IRAs have been the crucial players of regulatory policy-making processes, privatization, deregulation, and competition have been the prominent components of regulatory reform. It is possible to say that the post-2002 regulatory reform played a vital role in surmounting the global economic crisis occurring in USA and EU in 2008. The restructuring of telecommunications, electricity, natural gas, and airlines has brought about competitive gains for consumers, firms, and the country economy.

In telecommunications, the privatization of Turk Telekom and deregulation of entry to the market has led to competition. The markets such as fixed and mobile internet and voice that are traditionally different have converged. Convergence has brought about a substitution between these services or goods. FMC and FMS emerging through the technological development specifically in the mobile products have caused competition in the Turkish telecommunications market. However, the regulatory process has not followed a change in parallel with the dramatic development in the market conditions. Regulator has continued to define the traditional fixed services and strongly changing mobile markets as the same market. Consequently, it preferred regulation of fixed services and heavily deregulation of mobile services. Instead, the findings and market developments suggest that regulator has to revise its market analysis and definition as per the dramatically changing market conditions and structures.

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