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THE CHALLENGES OF FINANCING INFRASTRUCTURES

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ABSTRACT

The successful development of infrastructure is vitally important for economic growth in developed and developing countries alike. Consequently, ensuring that infrastructure projects are successfully undertaken and completed should be a top economic priority for the governments of all countries. However, infrastructure development cannot succeed without adequate financing, and it is clear that infrastructure development in developing economies, especially large-scale projects such as power plants, roadways, dams, bridges, airports, and telecommunications networks, requires substantial amounts of technology and capital. Finance matters for infrastructure development not only for the usual reason of allocative efficiency, but also because of certain distinctive economic characteristics of infrastructure -high capital intensity, elements of natural monopoly, and location-specific investments- all of which affect private sector incentives to commit long-term capital. Currently, there exist two main approaches to financing infrastructure. The first approach is one that I will call the *State-Build-Own-Operate (SBOO)* approach. The second approach is widely known as the *Public-Private-Partnership (PPP)* approach. In Turkey like many countries, the first approach has been preferred generally, and most of infrastructure projects, have built, owned, and operated by the government, have been funded by public budget or foreign debt, especially in 1980s. Then, the governments in Turkey started to use new financing methods, such as establishing a special fund and issuing securities. After recognition of funding gap has resulted in a nearly universal acceptance that the private sector can and should play a larger role in the financing of infrastructure in partnership with the public sector, the new models such as BOT (Build Operate Transfer), which have been created have begun to be

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more popular in Turkey. However, it has been faced with some problems, while using the new methods.
In this paper, the developments in infrastructure financing in Turkey will be examined after 1980 and some of the shortcomings existing approaches to infrastructure financing will be discussed. Finally, the problems and the benefits of infrastructure financing by using PPP or BOT models and issuing project securities through the global markets will be evaluated.

Key words: Infrastructure financing, public-private partnership, securitization of infrastructure projects.

Introduction

Infrastructure establishments available at a level sufficient enough to be able to meet the needs of the economic decision units have very positive effect on the economy being able to bring down production costs, increase the level of production, support economic development and enhance the welfare of the society. The fact that infrastructure investments are very high cost investments have to a great extent, led to investments made by the public sector (local administrations, central government) in all the developed or developing countries for years.

The fact that infrastructure investments are very high cost investments, and the fact that public resources are inadequate in the financing of infrastructure have pushed all the countries to the search of new resources since 1980's, and have created the widely-used models based on private-public participation (PPP) and have resulted in developing new models with the effect of the liberal economy, starting in the 1980s, models in the same years. In this study, new methods started to be used in the financing of infrastructure establishments since 1980s and the results of the implementation of these methods will be discussed.

The Financing of Infrastructure in Turkey

Almost all of the infrastructure investments in Turkey, as they are in the other countries, have been realized by the public sector (local administrations and central government), and the source of financing has been the budget. Responsibility in the development of urban infrastructure has been substantially left to the municipalities. However, "… parallel to the increasing service demand, the incomes of the municipalities could not been increased and adequate resources could not be realized… Most of municipalities haven't been able to allocate adequate resources to the infrastructure investments which are necessary, but at the same time expensive

with the shares they have got from the government budget. At the same time, having financing problem for the maintenance and repair of infrastructure investment has adversely affected the quality of the service. In the utilization of the foreign credits of the municipalities guaranteed by the Treasury, the load has been put on the Treasury in the recent years."

The fact that the public sources are inadequate in the financing of infrastructure has pushed all the developed and developing countries in search of new quests. In this context, also with the effect of the liberal economy wind starting in the 1980s, models have been developed which are based on private-public participation (PPP), and public-private sector cooperation and which enable the sharing of the financing cost and risk.

The developments in the financing of infrastructure investments display parallelism to the ones experienced in other countries. As a matter of fact, the classical financing models originating from the budget and originating from foreign credits used until 1980s increasingly started to leave their places to the applications oriented towards acquirement of funds outside the budget and to models based on PPP from those years on. In this study, the fund model implemented in our country after the 1980s and the models based on PPP will be emphasized.

Fund Model

In the quest for resources for the infrastructure investments, one of the new methods found in the 1980s is the implementation of which enabled the acquirement of funds outside the budget. Among the funds formed in this context, housing development fund and public participation fund are the foremost. The Law on the Encouraging Savings and the Accelerating the Public Investments, put into effect in the year 1984, and the purpose of which is "…to rapidly implement the public investments with additional financing resources to be provided, by promoting the encouraging savings through the provision of stable and trustworthy income…" has provided the opportunity for the establishment of both funds. As a result, while it is possible to provide financial support for the housing builders only for the housing with the Housing Development Fund (HDF), with the State Participation Fund (SPF), source for the financing of bigger and more expensive infrastructure establishments such as dams and highways has been created.

Housing Development Fund

A big part of the source for the Housing Development Fund (HDF) under the care of Turkish Central Bank in the year 1984 was provided from various taxes (taxes obtained from alcoholic drinks and tobacco products, all kinds of non-alcoholic drinks, fuel consumption taxes), and the deduction from the funds (such as funds from the importation of crude oil and petroleum products and cigarette products).

The utilization areas of the HDF, which is formed with an understanding that takes the housing as a whole, not only as a building but as an infrastructure with its environment, have been determined as giving loans to the house builders (including the municipalities) for individual and collective housing, providing building plots for collective housing building areas, giving investment and operational loans for research, tourism infrastructure, housing infrastructure, social establishments, and thus promoting the housing industry. Two kinds of infrastructure loan are utilized from the HDF. The first one is the infrastructure loan allocated to the housing allowed loans from the HDF, and the second is the technical infrastructure loan made available to the municipalities.

The collective house builders who have been given housing development credits since 1984, have been offered credits up to the 60% of contract amount given by the banks intermediating for the credit use for the infrastructure investments, and the return of these credits is performed with the main loans. The minimum sum which can be given as infrastructure investment is approximately 770 American dollars (1.000 Turkish Liras.) as of the end of 2007. The term of the credit varies between 5 and 10 years in accordance with the size of the house. Once in 6 months, interest rates which are adjustable and which are determined in accordance with the government official's wages are applied to this credit. In the period from 1984 to 2007, the share of the infrastructure credit among the credits given has been 2.5%. (Figure 1)

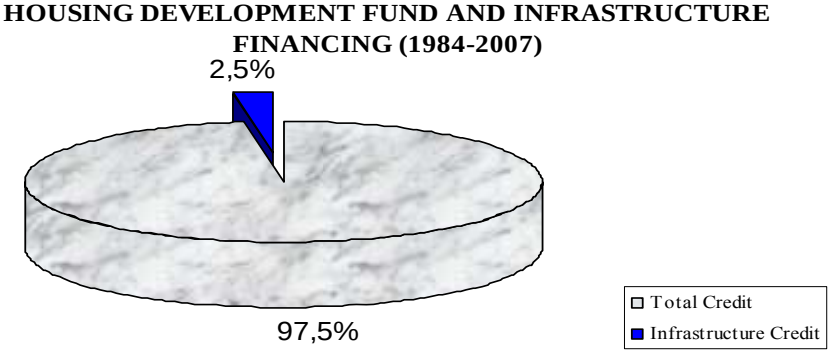

Figure 1 : Housing Development fund and infrastructure financing (1984-2007) (Source: HDA)

Another support from the HDF for the infrastructure is the technical infrastructure credits opened for the municipalities since the year 1992. Under the context of technical infrastructure are the structures with the aim of roads, transportation, water, electricity, sewage system coming in the first place, communication, central heating and the like structures and all of the construction, equipment and buildings which those bring and the amount of credit varies according to the project. Credit term changes between 4 and 9 years in accordance with the project being in a preferential

area or in a big city and the credit interest is the adjustable interest rate changing every 6 months according to the CPI (on January and July).

State Participation Fund

Among the quest for search for the infrastructure investments in the country, another application used is the State Participation Fund (SPF) which has a source outside the budget like HDF. The sources of the fund can be listed as: income from the operational rights, income from the issuance of Revenue Sharing Certificates (RSCs), income from the operation of infrastructure establishments, shares taken from the fuel consumption tax. The areas of usage of the SPF are:

a) Meeting the operational, service, maintenance and all kinds of costs for the infrastructure establishments for which revenue sharing certificates will be issued.
b) Infrastructure establishments to be included in the issuance of the RSCs and equities and the operational rights, and the financing of these establishments.
c) Financing of the investments to be made to the preferential areas in development
d) RSC are the securities issued for the participation of real and legal persons in the incomes of the infrastructure investments financed by SPF (bridges, dams, power plants, highways, railways, telecommunication systems and sea and air ports oriented towards civilian usage). The characteristics of the RSCs can be listed as follows:
e) They can be issued as "Group Certificates" to enable the participation of unified incomes of more than one infrastructure establishments.
f) They can be issued as individual certificates to enable the participation in the income of a single infrastructure establishment.
g) RSCs can be quoted in the security exchange market.
h) Income shares to be paid to the RSCs and methods to figure out this income are determined and announced beforehand.
i) Income share payments are exempted from the income tax (graduated exemption).

Table 1 : Expenditures of State Participation Fund (1984-2000)

	% Share
Infrastructure Finance	**51**
-Highways	40
-Dam, Water, Sewage, Free Zone	11
Other	**49**
Total	100

Source: State Participation Administration and Privatization Administration.

With the application of RSC, which is an important tool in providing considerable resources for the financing of the infrastructure establishments from outside and based on capital markets, it has been possible, to a certain extent, to bring in a new investment instrument to the capital markets, to decrease the load of interest on the Treasury caused by the government bonds with high and fixed premiums during the periods when inflation rates go down.

According to the economic conditions, indexed to Turkish Lira or foreign currency, or to the CPI, RSC have been issued, with the aim of being a co-partner to the income of a single infrastructure establishment in changing terms, or to the unified incomes of more than one infrastructure establishment.

Initially, parallel to the completion of infrastructure establishments, RSC were planned long term and they were given income share much higher than inflation with continuous price increases. This has made RSC a very attractive investment instrument. However, the fact that RSCs have a much higher premium caused the RSC to change their terms from long term to short term and the term was decreased from 5 years to 2 years and later on to 1 year.

After the first RSCs issuances, slipping into short term, predomination of political expectations, but not being able to reach the targets, income shares staying behind the premiums of other investment tools have all caused RSC to lose its attractiveness for the investors. This case, since the year 1991, has started the applications oriented towards giving the RSCs to the contractors in return for monthly payments, and after the year 1994, RSCs which were Treasury guaranteed and indexed to the foreign currency issued within the country were taken into dispensable asset, and caused the RSC to be supplied to the banks and not to the public. As a result, a secondary market for RSC could not be formed.

Additionally, the fact that too many infrastructure projects were started at the same time and going to extremes in the investments has caused the completion period of these projects to be realized way over the period suggested, and has also caused to go into a bottleneck in the income shares planned to be paid to the RSC investors from the income procured from these investments and has also caused the debt load of the Treasury to increase. As a result, providing resources for the infrastructure projects have been given up since 1995. While highways have the biggest share in the expenditures SPF for infrastructure, Dams and hydro-electric power plants have followed.

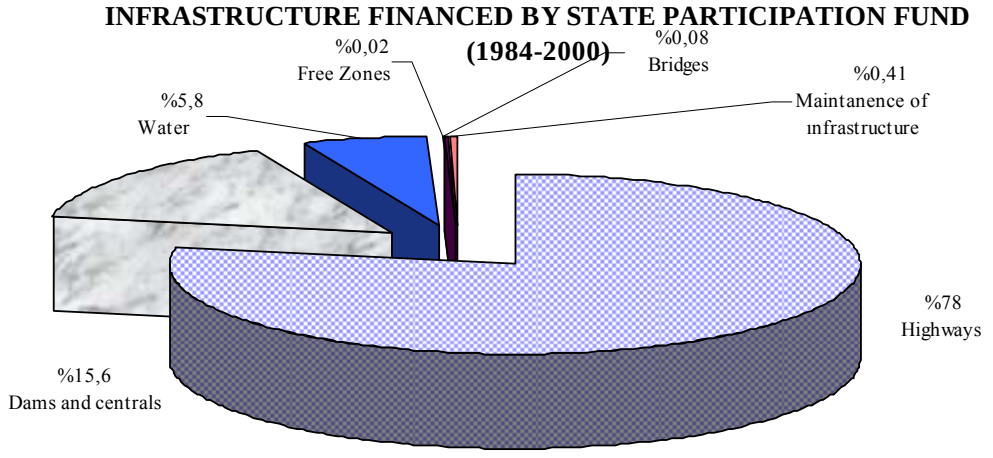

Figure 2 : Infrastructure financed by state participation fund (1984-2000) (Source: State Participation Administration and Privatization Administration).

Public-Private Partnership Model

The economic development targets of the countries, together with the needs of public health and safety, and the infrastructure establishments the demographic structure needs, demands resources much over the already available financial resources. Although this fund gap changes from country to country; and exists in all the countries from the richest to the poorest. The fact that fund gap in the financing of infrastructure establishments is accepted as a problem in all the countries has caused the view that public-private sector cooperation is essential for the solution of this problem and that private sector may participate more in the financing of infrastructure and that it should to be accepted in the international level, either as a project sponsor or project partner or as an institutional security investor. In this context, particularly after the 1980s, a lot of models based on PPP, such as "build-operate (BO) model, build-operate-transfer (BOT) model, build-rent-operate (BRO) model, Build-rent (BR) model" have been developed.

Turkey's meeting with the PPY based models in the financing of infrastructure for the first time is in 1984. Build-Operate-Transfer (BOT) was put into application first in the energy sector than in the transportation sector, and later on with the problems encountered in this model, Build-Operate model started to be used and the usage areas of these models has been expanded within time (such as hospital building, and its use by the municipalities).

BOT model can be described as the realization of the financing of a public infrastructure and service by a private company and operating it for a period determined by the public, and the purchase of its goods and services produced within the same period by public entities in accordance with a schedule the parties have

mutually determined, and at the end of the period, handing in the establishments fully serviced, and maintained and in operating condition to the concerned public entity. The main feature of this model, where private sector ownership is out of question, is its realization of the investments by bringing solution to the to the financial problem the infrastructure establishments need, and also private sector's bringing in advanced technology during the operational stage, and increasing the production, service and efficiency of the project with a concept of efficient operation and administration. The operation of the BOT model isn't limited with the new investments. In the foreign loans received for infrastructure projects in Turkey, any undertaking or guarantee from the Treasury is out of question, (except for some bridge credits), but transactions and business of the project to be realized under the context of BOT model has been exempted from special taxes.

The first legal regulation made in Turkey concerned with BOT was realized in the energy sector on 4.12.1984. The monopolistic structure of the Turkish Electricity Administration (TEA) was changed and the possibility to produce, communicate, distribute and trade for the private sector in the field of electrical energy was realized and it was given the right to produce in these areas and at least 99 years was accepted as an operational period.

With the new arrangement made in 1988, BOT model was also allowed to be used in the highway construction and the operation period was kept shorter than the energy sector and was accepted as at least 49 years. With the Law passed in 1994, and the changes made in the regulations in 1994, 2000 and 2005, the models BOT, BRO, and BO models were realized both in the investments of the Ministry of Health, such as the building of health establishments, and in the investments under the context of duty area of local administrations.

Some problems have been experienced in the application of BOT model in Turkey since 1984. Most important of these problems are: not showing adequate accuracy in the contracts made between the parties, during the building of the establishment, changes made in great numbers in the contracts, not taking the supply and demand balance into consideration especially in choosing the location (especially in power plant building) and as a result the increase in costs, the increase in the lost and leakage, ignoring expertise and experience in the selected firms and lack of supervision. In fact, most of these problems can be said to be experienced in other countries which use the model BOT in the construction of their infrastructure. These problems and the risks of this model have been tried to be overcome by establishing a sound infrastructure, going to standardization by the contracts, handling the whole of the project, simplifying the big and complex transactions.

As a result, Turkey, starting to use the PPP model in the year 1984, expanded the area where PPP models can be used, while strengthening its legal infrastructure in relation to PPP model as a result of the need and the defects seen in applications in time.

Today, in the energy sector (electric production and distribution, building dams), transportation sector (building of highways, airports, the establishment of vehicle examination stations), agricultural sector (irrigation), health (establishing hospitals), tourism and mining sector, with the aim of establishing water and sewage infrastructure, legal infrastructure is present for the usage of PPP models. Within the 1984-2007 period, total 37 infrastructure projects were completed in the energy, tourism and transportation sector by means of BOT model, and within 1996-2007, 5 infrastructure projects in the energy sector were completed by means of BO model. 101 projects are going on at the moment by means of BOT model. It was decided that 5 new projects in the transportation sector will be started in the transportation sector by means of BO model in the near future.

Conclusion

Developments in the financing of infrastructure in Turkey show parallelism with the developments experienced in other countries. After the 1980s budget and the classical financing models with foreign origin used in the infrastructure investments, increasingly left their places to applications oriented towards obtaining funds outside the budget and models based on public-private sector cooperation.

Today, with the regulations in effect in Turkey, models based on PPP, BOT, BRO, BO models can possibly be used in the infrastructure investments and the operation of infrastructure establishments. In the applications up to now, the two models outside Build-Rent-Operate have been used. Turkey has successfully put the new financial methods into practice faster than any other country by following the developments in the world on the financing of infrastructure. However, the success achieved in putting the new financial methods into practice wasn't able to be shown in the quality and completion period and in the carrying on the service after the completion, especially because of the reasons stemming from the government authority. This has resulted in the inadequate particularity and attention in forming the legal basis in the applications, in preparation of the contracts between the parties, and in the completion period of the establishment and it has also caused the completion of the investments with even a greater financial cost which is already rather costly already and it has also caused the resources to be used inefficiently.

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