ROLE OF PUBLIC PRIVATE PARTNERSHIP (PPP) MODEL IN ENERGY INVESTMENTS

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Abstract
The public-private partnership model (PPP) has been met with concern by the community because the privatization model can be confused with itself. PPP models have been used in many sectors around the world and the disadvantages that have emerged with their advantages have been examined. In the energy sector, the contributions of the relevant models were assessed along with the new developments and the results were tried to be found together with the sub-results.

Key words: *Build-Operate-Transfer; Build-Rent-Transfer; Energy Sector; PPP; Privatization Model*

JEL Classification: *M13; M21; M38*

I. INTRODUCTION

As a result of changes in social, political and economic contexts and interactions, the role of the state in the context of public services has undergone some changes over the past two decades, transforming from an understanding, policymaking and regulating the understanding of service creation and operation. The Public Private Partnership (PPP) method has become widespread in terms of financing investments when public resources are scarce (sub-investments require advanced technology and high material resources) or those resources are directed to non-revenue public services. In particular, the need for financing to make infrastructure investments in developing countries has increased the interest in Public Private Partnership, which has become more widespread in recent years. In this way, the public sector is at least able to make investments that can not be realized due to financial difficulties. However, in order for PPP to be able to realize its real benefits, the private sector must adopt a competitive procurement process based on transparency, proportionality and equity principles in collective purchasing. The state is making public expenditures in order to provide goods and services that can meet the needs of the people. Public spending at this point is expected to be at the level of public incomes. When an unexpected situation is encountered, it is difficult for public revenues to finance public expenditures, and it is inevitable to find new ways of financing. The main objective is to ensure that public expenditures are financed by public revenues.Policies in the state monopoly have put all responsibility on the state, and in the privatization policies, concerns about the loss of the state's power have come to light. Apart from these two concepts, a new financing model emerged; Public Private Partnership Model. PPP is a common pattern in recent times. They are often modeled to provide infrastructure services that require advanced technology and high capital. Within this scope, infrastructure investments, energy sector, health and education services are preferred as application areas. It is known that there are investments especially in terms of health and education in Turkey (Uygun, 2013). The public private partnership model serves as an umbrella for many models in international practice, enabling public services to be viewed in the private sector. In more detail, the PPP Model has been developed in order to overcome the problem of finding financing, which is the main problem of the state, to provide private sector participation and services that the state does not want to be completely out of the business and that the private sector is willing to offer alone (Klein, 1998). The most important feature, that differentiates the Public Private Partnership Model from classical methods, is that the cooperation with the private sector continues both in the construction phase and in the operation phase and the private sector construction and operation synergy emerges. Public service and the public production of certain goods have traditionally been dominated by the market, which has gained momentum in recent years as private sector participation has gained momentum. It is known in this model that the private sector contributes to the production of goods and services of the public under various headings. PPP projects have investment, operation, financing and property rights. For example, in the concession agreements in France, the private sector is responsible for the investment, financing and operation of the project and ownership is under the control of the public sector. Several partnership arrangements are intended to convey an activity that would normally be under the control of the state. A few of the reasons for this kind of cooperation between the state and the private sector are the demand for knowing how the projected productivity gains, financing needs and the private sector can have. With the PPP model, an economy financed and operated by the private sector arises, and the role of the

state is to ensure the functioning and reliability of the system. While the PPP model is a model to provide the financing needed to meet the infrastructure investments of the countries in the first place, it is a model that will be used in the 21st century to make use of the private sector productive management skills and the public will concentrate on investments, general planning, supervision and policy setting.

Table 1: PPP Projects Linking to the Covenant in Developing Countries, 2009 (Current Million USD)

Sector	License Fee Payment Guarantee to Governments	Physical Investment Guarantee	Total Investment Guarantee
Energy	101,268	270,235	371,503
Telecom	154,174	450,637	604,811
Transportation	39,030	171,242	210,272
Drinking Water and Sewerage	9,306	47,165	56,471
Total	303,778	93,279	1,243,057

Source: World Bank PPI Project Database

II. COLLABORATION MODELS

The complexity of such models, together with the specific legislation for PPP projects, as well as the challenges associated with funding sources and operations, makes it necessary to establish a significant work infrastructure in the decision-making and implementation phases of public sector management. Contracts for PPP projects, including privatization models in underdeveloped countries, have steadily increased in the 1990s, according to World Bank data. In 2002, when the annual amount fell, it started to rise again. It reached its highest level in 2012 (US $ 196.3 billion) and dropped to US $ 156.6 billion in 2013 and reached US $ 51 billion in the first half of 2014. Looking at the number of projects in underdeveloped countries, the energy sector took the first place with 2724 (42%) projects in the period 1990-2004, while the road was the second place with 915 (14%) projects, water and sewage with 885 (14%) while the sector ranked 4th with 861 projects (13%. According to the information from the World Bank database, the Caribbean and Latin America region in 1990-2014 had the biggest share in terms of project size and number of projects in terms of PPP in developing countries, followed by the Pacific and East Asia regions, respectively. Asian and Latin American countries have been more inclined to privatize public goods, often calling them Greenfield initiatives (independent energy producers) to meet rising energy demands. Electricity energy accounted for 70% of the total investment, and 88% of energy-oriented PPP investments in East Asia were carried out as green energy investments as independent energy producers (World Bank PPI Database). Infrastructure-specific investment models in less developed countries have been implemented since 1990. Table 2 has emerging and transition economies. It provides information on the 25 countries that most support PPP implementations. Related countries such as the world's developing economies have 90% of their PPP investments.

Table 2: List of Countries with Major 25 Emerging and Transitional Economies Supporting Public-Private Partnerships in 1990-2003 (Million Euros, Percentage)

Countries	Million Euros	Percentages
Brazil	157,098	%19.7
Argentina	72,858	%9.1
China	61,170	% 7.7
Mexico	59,753	% 7.5
Malaysia	36,695	% 4.6
India	33,108	%4.2
Phillipines	31,017	%3.9
Indomesia	29,210	%3.7
Tailand	23,662	%3.0
Chile	22,003	%2.8
Poland	18,025	%2.3
Turkey	17,719	%2.2
Hungary	17,415	%2.2
Czech Republic	16,388	%2.1
South Africa	15,959	%2.0
Russia	14,784	%1.9
Colombia	13,779	%1.7
Peru	13,762	%1.7
Morocco	13,762	%1.7
Venezuella	11,858	%1.5
Pakistan	7,487	%0.9
Slovakia	5,837	%0.7
Egypt	5,689	%0.7

Romania	5,321	%0,7
Bolivia	4,848	%0.6
25 as Total No of Countries	708,257	%0.6

Source: OECD, 2005

III. PPP MODEL IN EUROPE

Initially, the way in which infrastructure services are made private is started in the United States. It was formed in the United States in the beginning of the nineteenth century that the economic activities could be carried out by the markets (Grimsey and Lewis, 2004) that privatization in the United States would be a more appropriate tool for public benefit and market efficiency. In Europe, such a thought did not occur and constitutionally the public institution; health, education, transportation, communication, defense and energy services. In the European Union, public benefit is ahead of profit optimization (Bovis, 2007). It has allowed competition between the public and private sectors to form partnerships with public administration. In the early 1980s, public services in European countries had a more active role in private sector businesses. Public-private initiatives are widely used in areas such as health, education, transport, telecommunications and energy. PPP partnerships are increasingly at the forefront of local governance, such as electricity, water distribution and waste management (European Commission, 2004). As a result of the increasing trend of PPP models in Europe in the 1990s, the EU commission has taken a decision to overhaul the community law. In recent years, applications of public-private partnership model have been going towards investments in buildings, equipment and investments such as hospitals, schools and prisons. In England, Spain, Ireland, France, Italy and Germany, Public-Private partnership market has been diversified. Between 1990 and 2011, the number of PPP projects in the European Union totaled 1,536 and the total project size was 290 billion Euros. The definition of Public-Private Partnership for use in national accounts is that "the public is paying a private partner to cover a large part of the property by paying all or part of the fees, including depreciation for the related service under a long-term contract". Under the EU framework, PPP contracts do not make regular payments to the public or private partner, while clearing them from the concession, or the amount paid constitutes a small fraction of the fees that the private partner will receive (EC, 2012). Between 1990 and 2014, 1,766 projects were carried out in Europe and the average annual project size increased to 70. The total project size was 337 billion Euros in 24 years and the average project size was 191 million Euros (European PPP Market in 2014). When we look at the sectoral distribution of PPP projects in Europe by 2014, the transport sector has been the most active sector with 23 projects in terms of project numbers. Looking at the 2011-2014 data, it is seen that there is an increase every year in the health sector and in the energy and telecommunication sectors; PPPs are not given much importance. The United Kingdom ranked first in terms of project size in terms of PPP project size in the European Union countries with 24 projects in 2014, France with 10 projects, Germany with 7 projects and Greece with 4 projects. The Green Paper on Community Law distinguishes the differences between the two types of public-private partnerships and public contracts and concessions that exist between the two types of PPP models:

1. Contract PPPs.

The implication is that the relationship between the public and the private sector is entirely contractual.

2. Corporate PPPs.

The partnership is a contract with an independent dealer.

The state is responsible for meeting the basic needs of society. It is a basic necessity to have a sufficient income to carry out service delivery. As budgetary incomes and expenditures can not meet each other, budget deficits are occurring. In this case, financing models are considered to alleviate the burden of spending to prevent budget deficits or to deepen existing budget deficits. In the project financing models, the state monopoly followed the privatization process ahead of time.

Financing the Public Private Partnership Model

The new right-wing impressive marketing strategy has been a financing model in itself (Linder, 1999).When it comes to the financing of public services and the principles and values of organization, it is seen as market friendly (Karasu, 2011). It is known that the PPP Model is regarded as "win win" in terms of the implementing parties (Gerard, 2001, Miraftab, 2004). In the broad sense, all of the Build-Own-Transfer-Build-Operate-Transfer, Build-Transfer-Operate, Build-Operate-Transfer, Build-Own-Operate-Transfer, Build-Own-Transfer and Build- It are evaluated as PPP Models. It is known that in 1994, the Build-Operate-Transfer initiated electricity production and construction of highways (Yılmaz and Karakaş, 2011). In the PPP model, private sector contribution to management and risk sharing are different. (Teker, 2008). We may list the risks involved in the Private Sector as follows:

1. Design risk:
   Designing the institution to provide the most efficient service to the public
2. Construction risk
3. Performance risk

4. Operating cost risk
5. Risk of technology and aging
6. No more value risk

The list of risks that are not transferred to the private sector is as follows:

1. Design risk:
   Transfer of responsibilities in private sector as a result of detailed transfer of public requirements to private company
2. Legal Risks
3. Operating cost risk
4. Demand risk
5. Risk of value no longer

The explanations of Article 1 for inherent and non-transferable risks were born because of the difference between the requirements.

It is expected that private sector will be able to make use of idle capital efficiently and quickly, financing desired level and quality service provision. In order for these positive effects to be sustained, the contracts and conditions must be clear and simple for PPPs, for example in order to ensure the safety of workers in the energy sector.

Structure of Public Private Partnership Model

PPP can be viewed in six stages. The steps are as follows:

1. Determination of project content

It is decided that the coverage area is based on the need and what kind of activities can be supported to enable it to be realized.

2. Strategy Construction

After the tender strategy, the outcome of the tender group and the realization of the risks are realized.

3. Determination of the Electoral Process

It is observed how much the companies that submitted the preliminary conditions performed.

4. Making Negotiations

After negotiations with successful firms at the front row, an agreement is reached with the winner of the tender.

5. Decision of the Contract

Once the risks are transferred and the financing resources are assessed in the best possible way, the contract is awarded to the winning firm.

6. Service Delivery

The process explains the related activities in detail.

Evaluation of Advantages and Disadvantages of Public Private Partnership Model

If we look at the advantages of the PPP Model:

a. The delivery of public services together with maximum efficiency.

b. Providing the financing at the appropriate time ensures that the requested services are performed in the most efficient time.

c. The private sector can make effective and fair use of the capital.

d. The relevant model ensures that international capital is transferred to infrastructure projects. This prevents the state from entering the path of borrowing.

Disadvantages of PPP Model

The risks and disadvantages can be summarized as follows:

i. It is important that the sketch design is well understood.

ii. The lack of funding resources in the public sector can weaken confidence.

iii. Since the private sector has borrowed money, the cost of the resource can exceed the desired level.

iv. The PPP model with the privatization model is fully understandable in terms of content and practice, and if it can be confused by the public, it can react to the public.

v. Since the contracts made are usually long-term, budget flexibility is reduced.

vi. Mistakes in handling risks and inefficient investments can create serious problems in the long run.

vii. The project dimensions are not clear on the grounds that the payments are shown as expense in public private partnership models.

Public Private Partnership Model in Turkey

From 1980 onwards, the legal dimension of applications that are distributed according to sectors in Turkey can be seen. The Treasury guarantee is also observed for PPP models under Laws 3996 and 4283.

In the historical sense, the relevant laws in force are as follows:

1. Law No. 576 dated 10.06.1910 with the privilege of the General Directorate of General Affairs

2. Law No. 3096 dated 04.12.1984 on the Under secretariat of the Turkish Electricity Authority to Manufacture, Distribute, Transmit and Trade Electricity

3. Law on Establishment, Maintenance and Operation of Access Controlled Highways of Institutions outside the General Directorate of Highways dated 28.05.1988 and No. 3465

4. Law on the Formation of Certain Investments and Services on the Build-Operate-Transfer Model, dated 08.06.1994 and numbered 3996

5. Law on Customization, No 4046 dated 24.11.1994

6. Law No. 4283 dated 06.07.1997 on the Formation, Operation, Build-Operate Model and Energy Sales of Electricity Generation Sites

Sectors known in Turkey have been implemented with the PPP model given in the table below.

Table 3: Legal Standing of Public Private Sector Cooperation

Law Numbers and Sectoral Distribution	Methods of PPP Model			
	Build-Operate-Transfer	Transfer of Business Rights	Build-Operate	Build-Rent-Transfer
	Law Number: 3096 Energy Sector	Law Number: 3096 Energy Sector	Law Number: 4283 Energy Sector	Law Number:5396 Health Sector
	Law Number:3465 Transportation Sector	Law Number:3465 Transportation Sector		
	Law Number: 3996 Tourism, General Administration, Transportation, Agriculture, Drinking Water, Sewerage, Mining, Energy Sector	Law Number:4046 Transportation Sector		
		Law No:5335 Transportation Sector		

Source:Pehlivan (2009)

7. With the "Bag Law" numbered 6111 dated 25.02.2011 and some regulations made in the law numbered 3996, the approval of the High Planning Council has been abolished.

8. With the Law no. 6288 dated 31.03.2012, a clause no. 3996 was added to the Law and the 'Credit Undertaken' was introduced in the Build-Operate-Transfer Model and amendments were made by Law No. 6428 dated 21.02.2013.

9. With the Law No. 6456 dated 03.03.2013, the content of the Law No. 3996 was expanded to include 'congress center, tourism and culture investments, commercial buildings and facilities, sports facilities, dormitories, fishermen's shelters, silo and storage facilities, facilities based on geothermal and waste heat, heating systems, ski lifts and ski lift facilities and parking areas "were built with the Build-Operate-Transfer model.

10. With the "Regulation on the Implementation of the Debt to be Performed by the Under secretariat of Treasury" published in the Official Gazette dated 19.04.2014 and numbered 28977, the minimum investment amount written in the 8 / A and 16th articles of the Law no. 4749 is 500 million TL, The procedures and principles regarding the borrowing by the Under secretariat of Treasury have been established in the projects with the minimum amount of investment TL 1 Billion in Build-Operate-Transfer model.

11. Regulation dated 23.12.2014 (creation of the inventory of PPP modeled projects) was published in the Official Gazette and it was requested that the inventory of the estimations be made by 15.09.2015. On 08.07.2015, the Communiqué on Accounting Procedures of PPP Models was issued.

Contracts for 198 PPP projects between 1987 and 2015 were signed in Turkey under the laws of 3996 and 6428. It is known that Build-Operate-Transfer model in power plants and highway projects is in one place with a share of 49%. When examining the Public-Private Business Models by sector, the energy sector, which is the

first with 76 projects, ranks second with 33 roads, third with 22 ports, fourth with 18 airports and fifth with 17 hospitals.

Table 4: Distribution of Contracts in Turkey according to Models (no of Projects)

Models	No of Projects	Model Percentage
Build-Operate-Transfer	98	49%
Transfer of Business Rights	78	39%
Build-Rent	17	9%
Build-Operate	5	3%
Total	198	100%

Source:Turkey Development Bank (2013)

The contract size of 164 projects with 2015 prices reached 43.3 billion US dollars and the contract size of 34 projects under construction reached 72.1 billion US dollars. The total contract size of the PPP models at 2015 prices exceeds USD 115 billion. There are Build-Operate-Transfer (81) and Build-Operate (BO) (5) models in the enterprise stage and total investment amounts are 11 billion US dollars; The total investment amounts of the projects [Build-Rent-Transfer (17) and Build-Operate-Transfer (16)] of construction projects are 36 billion USD.

Projects of Build-Operate-Transfer (BOT) (1) and Business-Related-Transfer (BRT) (77) projects are in operation stage and the total amount to be paid to the state is 31 billion US dollars. The Build-Rent-Transfer (BDRT) (17) and Build-Operate-Transfer (1) models are under construction; the amounts to be paid to the state from the projects are 8 billion US dollars. The state will pay 36 billion USD through the Build-Operate-Transfer model; the Build-Rent-Transfer model is in the healthcare sector and a total of 27 billion US dollars will be paid to the State for the renting of 17 hospitals.

Table 5: Breakdown of Investment Amount of PPP Projects in Operation According to the Sectors of the Period 1986-2015 (Number - Thousand $)

	Highway Projects		Airport Projects		Port Projects		Yacht Harbor and Tourism Facility Projects		Customs Facility and Customs Gate Projects		Urban Infrastructure Projects		Power Plant Projects		Total	
	No	Total	No	Total	No	Total	No	Total	No	Total	No	Total	No	Total	No	Total
BOT	25	212,454	9	2,107,436	3	51,594	9	223,351	8	229,089	2	1,349,400	25	2,797,251	81	6,970,574
BO													5	4,069,892	5	4,069,892
Sectoral Total	25	212,454	9	2,107,436	3	51,594	9	223,351	8	229,089	2	1,349,400	30	6,867,143	86	11,040,467

Source: T.R. Ministry of Development (2016)

Table 6: Distribution of Payment Amount to be Made in the State by Sectors of PPP Projects in Operation in 1986-2015 Period (Number - Thousand $)

	Highway Projects		Airport Projects		Port Projects		Yacht Harbor and Tourism Facility Projects		Power Plant Projects		Total	
	No	Total	No	Total	No	Total	No	Total	No	Total	No	Total
BOT			1	3,166,299							1	3,166,299
BRT	5	2,625	8	10,431,537	18	2,447,676	1	711,688	45	15,142,758	77	28,736,283
Sectoral	5	2,625	9	13,597,836	18	2,447,676	1	711,688	45	15,142,758	78	31,902,582

Source:T.R. Ministry of Development (2016)

A total of 1,391 million US dollars worth of electricity generation projects were provided by the Energy Market Regulatory Authority in May 2015.

Table 7: Projects with Electricity Generation License by Estimated Investment (As of May 2015)

Fuel / Welding Type	Installed Power to Business	Estimated Realized Investment (Million US $)
Hydraulic	1,353.4	967
Wind	303.6	271
Asphaltite	135.0	72
Natural gas	129.7	46
Geothermal	22.5	17
Coal	22.6	12
Biomass	8.3	6
Total	1,975.1	1,391

Reviews and Recommendations for PPP Models

It appears that interest in public-private partnership models in Europe and underdeveloped countries is increasing and that international firms are taking more risks in finding financing and integrating them into relevant models.

Detailed evaluation of the feasibility studies for the PPP models and the implementation of the PPP models after the discussion will be the most beneficial attitude in terms of the situation in all sectors and countries when a general evaluation is made. Fund sources other than the bank should also be investigated in order to overcome the long term funding source stress. It would be appropriate to conduct analyzes for the risks that may arise for the public sector. Improving the design, strategy and procurement processes of projects will reduce waste of time and enable the closing process of the projects. It is important that the team that does not study PPP projects consists of expert staff, transparency and detailed explanations. The fact that the legal dimension is in European Union standards is important because the grounds of the agreements are reliable and open international gateways.Build-Operate-Transfer and Enterprise-Approach-Revolution Models are more common in Turkey. The fact that the legal dimension is assured and the projects are understandable will ensure that the firm and especially the benefits to be brought to the assembly are understandable.

IV. CONCLUSION

Electricity / natural gas distribution, water transport, road and rail infrastructure; long-distance telephone and mobile phone services, as well as natural monopoly infrastructure services; electricity, gas, retail sales and electricity generation are relatively competitive infrastructure services. For example, electricity generation, which is potentially open for competition and concession agreements, can be made through tenders if competition is insufficient for intra-market competition (Klein et al., 1998). Rather than making long-term contracts for private sector participation in sectors where competition is possible, direct privatization is more appropriate (Gözübüyük and Tan, 2006). All models should aim to increase competition in well-functioning markets.

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