

## The Impact of Public-Private Partnerships on Egyptian Economic Growth: A Comparative Study

اثر المشاركة بين القطاعين العام والخاص علي النمو الاقتصادي المصري  
دراسة مقارنة

Alyaa Hamed Sallam

### Abstract

Since the early 1990s, Egypt has adopted public- private partnerships (PPPs) to finance and manage infrastructure projects to overcome deficits in the provision of services and promote growth and investment. This paper aims to explain the main prerequisites and objectives- by using the international experience- needed to successfully develop and implement PPPs in Egypt. Further, the study attempts to address important empirical questions regarding the relationship between PPPs and economic growth.

It examines the United Kingdom experience of PPPs to provide practical insights into what is needed to be considered and done to minimize the risk of failure and realize the benefits of PPPs, analyzes the Egyptian experience with PPPs and sheds light on the policies, practice and strategies used before and after the Revolution of 25 January. Moreover it provides an insight into the existing literature of PPPs. The literature covers features of PPPs including the attractive factors, the negative factors and the types PPPs. Furthermore, the study applies panel data analysis to test empirically the impact of PPPs on economic growth in Egypt and the United Kingdom during the period of 1992-2012.

The results showed that PPP investments have positive and significant influence on the growth of GDP per capita in Egypt and the United Kingdom.

**Key Words:** public- private partnerships, Infrastructure, Economic growth, Egypt, United Kingdom.

## الملخص

بدأت مصر بتطبيق مشروعات المشاركة بين القطاعين العام والخاص (الشراكة) لتمويل وتشغيل البنية الأساسية في بداية تسعينيات القرن العشرين لعدم كفاية الاستثمارات العامة لتوفير خدمات البنية الأساسية ولتحفيز النمو والاستثمار. وتستهدف الدراسة توضيح مقومات نجاح نماذج الشراكة وذلك بالاستعانة بالتجارب الدولية. بالإضافة الي تحديد اثر هذه الاستثمارات علي النمو الاقتصادي في مصر والمملكة المتحدة.

وتتناول هذه الدراسة تجربة المملكة المتحدة في مجال مشروعات الشراكة واهم السياسات والاستراتيجيات التي اتبعتها لضمان نجاحها ومواجهة تحدياتها كما يعطي خلفية عامة عن برنامج الشراكة في مصر والتطور الذي حققه البرنامج في مصر حتي الان مع دراسة مجمل الاوضاع والظروف المكونة للمحيط الذي تتم فيه استثمارات الشراكة وتأثير تلك الظروف سلبا او ايجابا علي نجاح هذه الاستثمارات وما يلزم تطبيقه في الدولة لجذبها وضمان نجاحها. كما تقدم استعراضا للتطور في تقديم مشروعات الشراكة في البنية الأساسية وتعرض محدداتها و انواعها المختلفة ومزاياها وعيوبها. ويتم في هذه الدراسة استعراض الدراسات السابقة التي تناولت العلاقة بين مشروعات البنية الأساسية والنمو الاقتصادي. وتم استخدام Panel data analysis لتحليل اثر مشروعات المشاركة علي النمو الاقتصادي في مصر وانجلترا خلال الفترة (١٩٩٢-٢٠١٢).

وتوصلت الدراسة الي ان مشروعات المشاركة بين القطاعين العام والخاص لها أثر ايجابي قوي علي متوسط الناتج المحلي الاجمالي في مصر وانجلترا.

## **1. Introduction**

Recent years have seen a marked increase in cooperation between the public and private sectors for the development and operation of wide range of economic and social infrastructure projects. Such Public-Private Partnerships (PPPs or 3Ps) arrangements were driven by limitations in public funds to cover investments needs and also by efforts to increase the quality and efficiency of public services (Engel, Ronald, & Alexander, 2011).

Although the phrase PPPs was little used before the 1990s, concession contracts have been used for many centuries. They were often used in the 19th century to develop water, gas and electricity systems which involved high capital expenditure (Hall, 2008).

PPPs approach was pioneered in Europe by the Private Finance Initiative (PFI), which was launched in 1992 in the United Kingdom. It wouldn't be incorrect to say that the PFI practice developed in the UK raised the world's attention to the alternative option for delivering infrastructure assets and services (Tieman, 2003). Other developed countries have also invested in PPPs especially Australia, the United States, the Netherlands, Spain and Ireland (Istrate & Robert, 2011).

In developing countries, PPPs agreements have grown steadily since the 1990s and during the period from 1990 to 2012, these countries implemented 5781 private infrastructure projects compressing total investment commitment of US\$ 2,026,257 million (World bank, 2014).

PPP projects in Egypt started in the last century- e.g., the Suez

Canal, electricity, and water supply projects. These projects were operated according to concession agreements under the Egyptian laws but after 1952 and the implementation of nationalization policy, these projects were transferred directly to the governmental administration and infrastructure industries became monopolies, owned and operated by the public sector. Although this model initially produced some desirable results, it ultimately led to serious problems including under-investment caused—to a large extent- by under-pricing, low productivity and poor service delivery. These problems have motivated the Egyptian government to use PPP approach as alternative or complementary way to finance and manage infrastructure projects in the early 1990s. The private sector invested US\$23,061 million in 25 PPPs in Egypt over (1990 – 2013) (The world bank, 2013).

### 1.1 Research Problem

Egypt opened up to private participation in infrastructure after adopting economic reform and structural adjustment program in the early 1990s to fill the so-called infrastructure gap between what the government can afford and what people need using the private-sector Financing (Anton & Katharine, 2005).

When the Egyptian government launched PPPs, the expected flood of PPP projects did not materialize and the share of PPPs in the Egyptian GDP was limited due to many reasons. Problems occurred during the implementation of the projects- both at earlier and later stages discouraged both private investors and public authorities from considering the PPP model.

Therefore, the government launched a long-term policy in 2006 to encourage public-private partnerships for infrastructure. A specialized entity was created called the Public Private Partnership Central Unit (PPPCU). Its mission is to create a favorable regulatory national framework with a view to standardizing procedures, and then to develop financial mechanisms to facilitate setting up credit and stimulate local banking networks to obtain competitive financial conditions (OECD, 2010). Also a specific PPP law was adopted by the Egyptian parliament in May 2010 (Aoun, Gonnet, & Chevreau, 2011).

After 25 January revolution in 2011, the Egyptian government has shown its active attitude to promote and increase PPPs to compensate the decline in infrastructure projects. In Feb 2012, Egypt amended its rules for public private partnerships (PPP) to allow disputes to be resolved through arbitration rather than through Egyptian courts to encourage the private sector to pour money in the Egyptian economy in infrastructure projects aimed at reducing the increasing budget deficit.

It's expected that the share of PPPs in infrastructure investment in Egypt will increase to become the largest single source for infrastructure projects in forthcoming period. Since PPPs impacts the employment and the productivity of private sector, Egypt's economic performance and expected economic growth is influenced by private participation in infrastructure (Hussein, 2012).

While PPPs can present number of advantage, such relationships aren't an unqualified success and there are many requirements that are needed to develop and implement

successful PPPs (Engel, Ronald, & Alexander, 2011). **The objective of this study** is twofold: first, to examine the British experience with PPPs to provide practical insights into what needs to be considered and done to minimize the risk of failure and realize the benefits of PPPs; and secondly, to determine the effect of PPPs on economic growth in Egypt and the UK.

### **1.2 Research Hypotheses:**

This research addresses important empirical questions regarding the relationship between public-private partnerships and economic growth. The main research hypothesis to be tested is that Public private partnerships have no effect on Egypt and UK economic growth.

### **1.3 Research outline:**

The remaining sections of the paper are organized as follows. Section 2 presents an overview of PPP approach and looks at the PPP experience in the UK and Egypt. Section 3 provides a review of previous studies of the relationship between infrastructure investments and economic growth. Section 4 discusses the methodology followed to draw a minimum set of robust policy implications on the effects of PPPs in economic growth and presents empirical findings. Section 5 reports concluding remarks.

## **2. Theoretical Framework**

This section begins by presenting the channels through which infrastructure is deemed to affect growth. It then turns to presents an overview of PPPs, examine the UK and Egypt experience with PPPs.

### **2.1 Theoretical channels:**

Macroeconomists typically emphasize three “conventional” channels through which infrastructure is deemed to affect

growth, namely; productivity of private inputs, complementarily effect on private investment, and crowding-out effects. In addition to these effects, other channels have been identified by new researches, including an indirect effect on labor productivity and an impact on the durability of private capital (Agénor, 2004, Cohen & Catherine, 2004, Ferreira, 1999, WorldBank, 1994).

## 2.2. Overview of PPPs

According to European Investment Bank “public-private partnership” is a generic term for the relationships formed between the private sector and public bodies often with the aim of introducing

private sector resources and/or expertise in order to help provide and deliver infrastructure assets and services (EIB, 2004).

There are many types of PPPs used around the world, The main types include Operations and Maintenance (O&M), Design-Build (DB), Design-Build-Maintain (DBM), Design-Build-Operate (DBO), Design-Build-Operate-Maintain(DBOM),Design-Build-Finance-Operate-Maintain(DBFOM),Design-Build-Finance-Operate-Maintain-Transfer (DBFOMT), Build-Operate-Transfer (BOT), Build-Own-Operate (BOO) and leasing (ADB 2008;GOA, 1999;Levy, 1996 ).

Actually, PPPs are attractive to both the government and the private sector, for the government: Risk transfer is one of the key reasons for adopting the PPP approach, in PPPs, risks and rewards

inherent in producing and supplying the services are shared between the public and private sector partners (Cheung & Chan, 2009); PPPs can maximize value for money (AECOM, 2007); PPPs can support increased infrastructure investment without

immediately adding to government borrowing and debt (Hemming, 2006). The private sector is also interested in public works projects as they tend to be large and private partners are keen to become players within this circle (Esther and, Albert, & Kajewski, 2010).

However while certain advantages do exist and can be harnessed, PPP should not be regarded as representing a miracle cure or indeed a quick fix to infrastructure and service development (European Commission, 2003). (Chan, Lam, Chan, Cheung, & Ke, 2010) Identified six obstacles for PPPs including the following: High transaction costs and lengthy lead time, political/social obstacles, misallocation of risks, lack of well-established legal framework and non-conducive financial market.

### 2.3. Overview of PPPs in the UK

The first private financing proposals for public sector investment projects in the United Kingdom date back to the early 1980s. These were part of the Thatcher government's initial moves to reduce the role of the public sector in the economy (IMF, 2004). However, private financing did not subsequently pick up. The Private Finance Initiative (PFI) was launched in 1992 by the Conservative government (Butler & Stewart, 1996).

When the British government launched the PPP/PFI in 1992, the expected flood of PPP/PFI projects did not materialize. The response was first to establish a number of government agencies to promote the scheme, and then to put in place a 'universal testing rule' requiring consideration of private financing for all public sector projects (IMF, 2004).

The number of new PPP/PFI projects began to increase after 1995. From 1992 to 2013, more than 700 PPP/PFI projects



reached financial close1 at a total capital cost of approximately £54.7 billion (HM.Treasury, 2014).

(Public Accounts Committee, 2011) analyzed the performance of PPP/PFI in the UK and found the following: although PPP/PFI has delivered many new public buildings and services, it has been far too easy for the Government to use it as the only form of financing available without clearly proving whether it is value for money and without adequate comparisons with conventional procurement method; the public sector has insufficient information on the returns made by PPP/PFI investors and no mechanism for sharing in gains when the investors sell their shares; transparency on the full costs and benefits of PPP/PFI projects to both the public and private sectors has been obscured by departments and investors hiding behind commercial confidentiality; tax revenue is being lost through the use of off-shore arrangements by PPP/PFI investors. and finally public sector has failed to make best use of commercial skills.

#### **2.4. Overview of PPPs in the Egypt**

The 1990s ushered in a major change for Egyptian infrastructure projects. Prior to this period, Egypt relied primarily on government funding together with soft loans from multi- and bilateral agencies to build and operate infrastructure projects. By the beginning of the decade however a consensus was growing among donors, which advocated that both the private and the public sectors should finance and operate infrastructure projects. World Bank, among Egypt's foreign funders, championed this new change in resource allocation, backing an exit from infrastructure. Therefore Egypt opened up to private participation in infrastructure after adopting economic reform and structural

adjustment program in the early 1990s (Antonand & Gratwick, 2005)

The PPP program in Egypt wasn't successful in attracting private participation in infrastructure sectors for various reasons. Problems occurred during the implementation of the projects- both at earlier and later stages compounded- discouraged both private investors and public authorities from considering the PPP model. For instance; after contracting to build an airport in Ras Sudr, the government found that the private investor doesn't have the capabilities required to establish the project and this led to broke the contract, causing damage to the aviation industry business, with estimated losses of LE6 billion (Askar & Gab-Allah, 2002).

Therefore, the government launched a long-term policy in 2006 to encourage public-private partnerships for infrastructure. More than

three years after Egypt has announced its new PPP strategy, a first project was finished. In mid-2009, Orascom Construction Industries, the Spanish group Aqualia and Aqualia Infrastructure formed a partnership to build and operate a wastewater facility in New Cairo. The project costs E£2.646 billion with a 20-year concession (Francis & Engwall, 2010).

After 25 January revolution in 2010, many PPP initiatives have been stopped or delayed due to political instability in the country. But in August 2011, the PPP unit started to receive approaches from Egyptian banks like Banque Misr and the National Bank of Egypt and NSGB. Banks said they were ready to finance the PPPs and that they no longer required political risk guarantees (Hassan, 2011).

The government thus decided to go ahead with PPP programs, started with the Alexandria hospitals project and in April 2012, the government signed a 20-years concession contract with Siemens company to design, build and operate two university hospitals in Alexandria (IFC, 2012) .

In Feb 2012, Egypt amended its rules for public private partnerships (PPP) to allow disputes to be resolved through arbitration rather than through Egyptian courts. After introducing the new rule, the Egyptian government has proposed three PPP projects in the Cairo area worth a total amount of LE11 billion (Hussein, 2012).

Table (2) : Comparison between PPP program in the UK and PPP program in Egypt:

<p><b>Policies and governmental units</b></p>	<p>There are (i) Partnerships UK that works with both public and private bodies on specific PPP transactions to improve the process of planning, negotiating and completing PPPs, (ii) OGC that it's stated aim is to modernize procurement throughout government and represents the UK on procurement matters in Europe, at the World Trade Organization (WTO) and in other international for a and (iii) HM Treasury Private Finance Unit that carry the responsibility for developing and promoting PPP policy for public bodies.</p>	<p>There is a Private part- tnership Central Unit (PPPCU). Its mission is to create a favorable regulatory national fra- mework with a view to standardizing procedu-res and then to develop financial mechanisms to facilitate setting up credit and stimulate local banking networks to obtain competitive financial conditions</p>
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<p><b>Legal and regulatory framework</b></p>	<p>There is no a "PPP law" that applies to all PPPs. However, there is sufficient flexibility and certainty within the statutory and common law framework to recognize and permit PPPs. The typical process of disputes resolution is: (i) direct negotiation between the parties, (ii) adjudication, and (iii) arbitration/litigation or maybe subject to the civil courts</p>	<p>There is a PPP law that focuses mainly on big infrastructure projects as it was concerned with contracts exceeding LE100 m and a concession period of between 5 and 30 years. It clarifies a number of issues, such as the way the tendering process is conducted, the role of the government in supporting PPP projects. disputes is allowed to be resolved through arbitration rather than through Egyptian courts</p>
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### 3. Literature Review

Since its introduction in the 1990s in Egypt, there is no quantitative empirical studies test its impact economic growth in local context and a more thorough research is needed to determine the requirements to successfully develop and implement PPPs especially as the experience of the public sector in Egypt with PPPs has not always been positive. Using official PPPs data this study trying to void this gap by providing the main prerequisites and objectives- by using the UK experience- needed to develop successful PPPs in Egypt and the study tests

empirically the impact of PPPs on economic growth in Egypt and the United Kingdom during the period of 1997-2011.

**Table 2: Summary of Empirical Studies on the aggregate output effect of infrastructure investment:**

Study	Data set	Model Specification	Infrastructure capital variable	Conclusion
(Ascheur, 1989)	U.S.; Time series: 1949-1985	Cobb-Douglas production Function and TFP regressions.	Public capital stock; core infrastructures	Positive effects of public capital on output. The elasticity of output with respect to core infrastructures is 0.24
(Berndt & Hansson, 1991)	Sweden ; Time series: 1960-1988	Variable cost labor requirement function	core infrastructures	Increase in infrastructure investment reduces costs and increase private sector productivity
(Shah, 1992)	Mexico; Time series: 1970-1987	Cost function: Translog; log	Core infrastructures	Elasticity of output with respect to infrastructure capital is 0.046. Cost elasticity between -0.915 and -0.866
(Nadiri & Theofani, 1996)	U. S.; Panel Data: 1947-1989	Cost function: Symmetric Generalized MacFadden	Highway capital	Significant positive output effects of highway capital
(Canning , 1999)	57 countries; Panel Data: 1960-1990	Cobb-Douglas production function with different types of infrastructure as separate factor.	Infrastructure capitalstock	Electricity and transportation routes have normal capital rate of return; telephone above normal.
(Canning & Bennatha , 2000)	62 countries; Panel Data: 1960-1990	Cobb-Douglas and translog production function	Infrastructure capitalstock	Elasticity of output with respect to public capital varies from 0.04 to 0.144.
(Trujillo, Martin, Estache, & Campos, 2002)	21 Latin American countries; panel data: 1985-1998	Ordinary Least Squares and panel data models	PPI	private sector participation in infrastructure have some but not impressive positive effects on GDP per capita.

#### **4. Data, Methodology and Empirical findings:**

We employed the reduced form approach inspired by (Trujillo, et al., 2002) and estimated the equations by applying OLS and Fixed Effects Model.

For estimation, the model is specified as:

$$y_{it} = \beta d'_{it} + \delta X_{itk} + u_i + e_{it},$$

Where  $t$  refers to number of years in the sample,  $Y$  refers to dependent variable (GDP per capita),  $d'$  is set of dummies that account for ,  $X_k$  refers to set of  $k$  conditioning variables (It includes:  $X_1$ = indicator of country's institutional framework and  $X_2$ = other variables).  $u_i$  is the individual-specific unobserved effect,  $\beta$  are the coefficients of dummy variables,  $\delta$  are the coefficients of conditioning variables and  $e_{it}$  is the random error term. The coefficients of dummy variables may be positive or negative.

There are two indicators used for measuring the country's institutional framework. (labeled by  $x_1$  in the model). the first indicator is political stability (D), The countries are ranked on a scale of 1 to 100 with the higher the rating, the higher the political stability/absence of violence the second indicator is the corruption (F) and is also approximated by a ranking on a scale of 1 to 100. The higher the rating, the higher the control of corruption. In the 'other variable' category different conditioning variables are used, it includes investment-GDP ratio and inflation rate. The variables are measured in log form.

In this study we employ panel data analysis over the period 1992 to 2012 for the United Kingdom and Egypt. For Egypt, All the variables are measured in US \$ at 2000 prices, while in UK variables are measured in pound sterling. The data sources for the study are World Bank PPI database, International Financial

Statistics, IMF database, HM Treasury database and the Egyptian ministry of economic development for various years. In addition, many web sources are also used. The panel used is balanced as for all the variables; information is available for all the sample years.

### Empirical Findings

The following table summarizes the estimates of the model using GDP per capita as the dependent variable, for the panel

Dependent Variable: GDP					
Cross-sections included: 2					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	15.45843	126.5008	0.122200	0.9029	
INV	26.15531	5.515710	4.741966	0.0000	
GDP(-1)	0.961879	0.004616	208.3831	0.0000	
PPPs(-12)	72.07882	12.47036	5.780013	0.0000	
Effects Specification					
			S.D.	Rho	
Cross-section fixed (dummy variables)					
Period random				47.45722	0.3906
Idiosyncratic random				59.27337	0.6094
Weighted Statistics					
R-squared	0.999976	Mean dependent var		13957.27	
Adjusted R-squared	0.999975	S.D. dependent var		12504.23	
S.E. of regression	62.25032	Sum squared resid		484387.8	
F-statistic	1301218.	Durbin-Watson stat		1.850309	
Prob(F-statistic)	0.000000				
Unweighted Statistics					
R-squared	0.999960	Mean dependent var		13957.27	
Sum squared resid	809469.8	Durbin-Watson stat		1.745920	

From the table we find the following results:

The model is

$$Y_t = 72.07 \text{ PPPs}(t-12) + 26.15 \text{ INV}_t + 0.96 Y_{t-1}$$

The P-value for PPPs suggests that PPPs have a positive and significant influence on the GDP per capita (Y).

The P-value for the fixed effect model is 0.902 and the value is greater than the significance level ( $\alpha = 0.05$ ) so we say that the constant has no meaning and we can eliminate it.

## **5. Conclusion**

This study provides empirical evidence on the impact that PPPs has had on economic growth in Egypt and the United Kingdom during the 1992-2012 period. Applying panel data analysis, we found that there is a positive and significant impact of PPPs on growth of GDP per capita. However policy makers should realize that while the benefits of partnering with the private sector in PPPs are clear, they aren't automatic. Rather, earning the positive outcomes depend on the existence of critical success factors (CSFs) for PPPs that can be grouped into five principle factors as following:

### 1- Effective procurement:

This includes the following factors, Transparency in the procurement process, Competitive procurement process, Social support, Good governance and Well organized and committed public agency.

### 2- Project implementability

The components under this group include: Favorable and effective legal and regulatory frameworks, Strong and good private consortium,

Project technical feasibility, Commitment and responsibility of public and private sectors, and Appropriate risk allocation and risk sharing.

### 3- Government Guarantee

Government Guarantee is fundamental in the early stage of PPP development. It's very important factor for achieving successful PPPs. There are two sub-factors in this principal factor:



government involvement by providing a guarantee and multi-benefit objectives.

#### 4- Favorable Economic Conditions

Favorable Economic Conditions are critical for PPP project development in both developing and developed countries. The government must provide credible and Stable and favorable macroeconomic conditions for successful PPP projects. Also sound economic policies important for success. Governments should adopt economic policies to provide a stable and growing economic environment, so the private partner can operate with confidence.

5- Available Financial Market the availability of a suitable and efficient financial market is important to achieve successful PPPs. Also financial risk should be shared between all parties and that need to be done through the procurement stage of the project and when creating the SPV of the PPP. As the SPV will be the main coordinator and driver for the project besides the different stakeholders involved.

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