ESI Preprints **Not Peer-reviewed**

Public-private partnership and economic growth in Morocco: An empirical análisis

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Doi: 10.19044/esipreprint.12.2024.p563

Approved: 26 December 2024
Posted: 28 December 2024

Cite As:
Loukili Z. & El Hamma A. (2024). *Public-private partnership and economic growth in Morocco: An empirical analysis.* ESI Preprints.
https://doi.org/10.19044/esipreprint.12.2024.p563

Abstract

Public-private partnerships (PPPs) have emerged as an innovative investment model for infrastructure projects. Introduced in Morocco during the 1990s, PPPs have since become an important element of the country's economic development strategy, in order to stimulate economic development and address infrastructure challenges. Our paper aims to study the impact of investment in public-private partnerships on economic growth. This study serves to enrich and complement the existing work in this field, thus contributing to the advancement of knowledge and expanding the boundaries of the existing literature. The study uses a time-series dataset from Morocco that includes PPP investments, the number of PPPs, GDP, and other control variables between 1990 and 2020. The dataset was analyzed using the multiple linear regression method. Results indicate that investment in PPPs has a positive and statistically significant impact on Morocco's economic growth, underscoring the effectiveness of this investment model in the national context.

Keywords: Public–Private Partnership; infrastructures; economic growth

Introduction

Over the last two decades, the use of the private sector through PPP arrangements has become increasingly popular as a means of acquiring, renewing and maintaining public sector infrastructure in many sectors such as social infrastructure, transport, public services, etc. Initiated by the United Kingdom with its Private Finance Initiative (PFI) in the early 1990s, the adoption of PPPs has now spread across the world, affecting many countries of all wealth levels and on all continents (Bettignies & Ross, 2009).

> « In a general context, a PPP is a legal contract between a public entity and one or more private entities for the purpose of developing projects, or administering public services, and assigning responsibilities as well as business risks between the partners."

Public-Private Partnership (PPP) is a new practice adopted for the management and financing of public services, they are increasingly presented as the solution to the lack of financing needed to achieve the Development Goals (Loukili and Elhamma, 2024). In this article, we aim to investigate the relationship between public-private partnership and economic growth in the Moroccan context, In other words, **does the upward trend in investments in public-private partnerships have a positive impact on economic growth in Morocco?**

To provide answers to our problem, we will use an econometric study based on the multiple linear regression model, the data on PPPs will be collected from the World Bank database on private participation in infrastructure projects (PPI) for the period 1990 to 2020.

This work will be structured in three parts. The first part will focus on the conceptual framework, and the historical background of PPPs and offer a review of the empirical literature on the effect of public-private partnership on economic growth. The second part will present the methodology adopted and the data used. For the third part, it will be devoted to the estimation of the model and the presentation of the results followed by their interpretation and discussion.

Conceptual framework and literature review

Exploring Public-Private Partnerships: Definition and History

Definition of the concept

The definition of keywords in scientific work is of paramount importance, as it enables readers other than the author to gain a comprehensive understanding of the subject matter addressed in the research from various perspectives.

- According to the **International Monetary Fund (IMF)**, PPPs are presented as an alternative to privatization. For this organization, PPP

"designates arrangements through which the private sector provides infrastructure elements and services traditionally provided by the State" (IMF, 2007).

- For the **European Investment Bank**, PPP refers to "a wide variety of working arrangements, from the most informal to strategic partnerships, in the design of build-finance-and-operate contracts and mixed economy companies" (EIB, 2005).
- According to the **OECD**, conducting a systemic analysis requires first establishing clarity in definitions. For it, "A PPP is an agreement between the State and one or more private partners (which may possibly include operators and financiers), under which the private partners provide a service in ways that reconcile the goals. service delivery objectives pursued by the state and their own profit objectives, the effectiveness of the reconciliation depending on a sufficient transfer of risk to private partners" (OECD, 2008).
- In Morocco, PPPs are defined by Article 3 of **Law No. 86-12** on public-private partnership contracts: "A public-private partnership contract is a fixed-term contract, through which a public person assigns a private with the responsibility for carrying out an overall mission. This mission may include the design, partial or total financing, construction or rehabilitation, maintenance and/or operation of equipment, infrastructure or the provision of services essential to the provision of a public service."[1]

History of Public-Private Partnerships

a. The emergence of PPPs in the world

The concept of public-private partnership was first used in the United States in the late 1970s and refers to the fact that local public authorities entrust private sector companies with the task of carrying out investments necessary for certain collective services, thus granting the disengagement of the federal government in the financing of urban development programs. However, the State has placed these types of contracts "under surveillance" following a certain distrust of PPP practices in the United States.

In Europe, it was in the 1990s that the United Kingdom became a favorable ground for the development of PPPs (under the name Private Finance Initiative PFI) and currently represents an inspiring tool for several countries. It is important to emphasize that this concept is not entirely a novel invention in Europe since the formula was used under the old regime in France in the form of a "concession contract", in many sectors, as a model

[1] Dahir No. 1-14-192 of 1st Rabii I 1436 (December 24, 2014) promulgating Law No. 86-12 relating to public-private partnership contracts.

of cooperation between the public and private sectors.

PPPs subsequently expanded, in a context of globalization that first affected the field of economy. This phenomenon then impacted the laws and policies of the states. The reasons that motivated the use of PPPs are the financial need to carry out public projects, whether it is energy, public services, or transport infrastructure. Public-private partnerships (PPPs) were thus encouraged due to two main factors: the abundance of global financial sources and on the other hand, the expectations of governments to promote infrastructure investments, without resorting to higher tax burdens.

b. Public-private partnerships in the Moroccan context

The objective of this research is to assess the impact of Public-Private Partnerships (PPPs) on economic growth in a developing country, specifically Morocco. Morocco is located in North Africa. Historically, the country was under Spanish and French protectorates, which influenced Moroccan companies to adopt numerous management practices based on the French system (Elhamma and Moalla, 2015). However, in recent years, Moroccan businesses have progressively adopted modern tools, including international accounting standards (Elhamma, 2023, 2024, 2025), advanced management control techniques (Elhamma, 2012, 2023; Snoussi, and Elhamma, 2024), and new sources of financing, such as participative finance (Bennani and Elhamma, 2015).

The origins of public-private partnerships in Morocco date back to the beginning of the 20th century, but this phenomenon has developed in recent years. This new means of financing has become preferred for major structuring projects in several sectors, including public infrastructure projects.

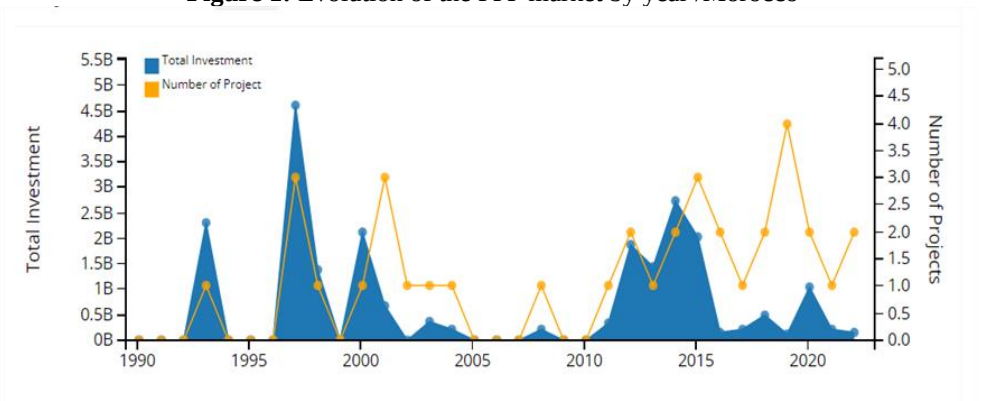
According to a report by the United Nations Conference on Trade and Development (UNCTAD) in July 2016, "Morocco is the 2nd African country in terms of PPPs for infrastructure with a total amount of 27.5 billion dollars, behind Nigeria (37.9 billion dollars), and ahead of South Africa (25.6 billion dollars)" (UNCTAD, 2016).

PPPs appeared in Morocco in the form of concession contracts according to the Economic, Social and Environmental Council (CESE) in its opinion on Law 86-12, it was from 1914 that concessions contracts were granted in the fields of production and distribution of drinking water, railway, and port infrastructure. After the country's independence in 1956, the concessions were bought back and the activities of the concessionary companies, as well as the corresponding infrastructure, were entrusted to national authorities.

During the 1990s, the use of private operators for the operation of public services reappeared, but it is especially in recent years that this method of financing has become known with the construction of large-scale

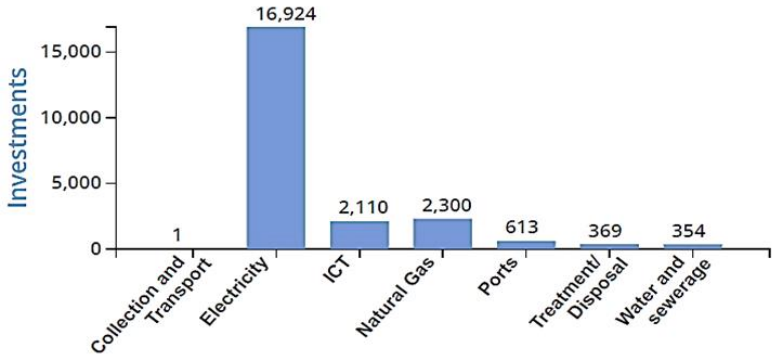
projects, such as the Tangier Med port, the Noor solar power plant, etc. The rise of PPPs on a national scale can be justified by the combination of at least three factors: the fragility of public finances, the questioning of the State's technocratic model and the growing dissatisfaction of citizens with the quality of public services.

Figure 1: Evolution of the PPP market by year /Morocco



Source: PPI Visualization Dashboard - The World Bank & PPIAF

Figure 2 : Distribution of PPP projects /Morocco



Source: PPI Visualization Dashboard - The World Bank & PPIAF

The legal framework governing Public-Private Partnerships (PPPs) in Morocco was initially defined by local government texts or sectoral laws, which remained in force until the adoption of Law No. 86-12. Until 2014, the regulations lacked a comprehensive framework specifically tailored to PPPs. The introduction of Law No. 86-12 aimed to standardize and streamline the legal framework for PPP agreements, thereby ensuring greater clarity, consistency, and effectiveness in promoting infrastructure development and economic growth through these partnerships. The laws and regulations governing PPPs in Morocco are:

- Law 54-05 of 2006 relating to the delegated management of public

services ;
- Sectoral laws providing for concessions/PPPs (water, energy, ports, railways) ;
- Law No. 86-12 relating to public-private partnership contracts (Dahir No. 1-14-192 of December 24, 2014) ;
- Law No. 46-18 amending and supplementing Law No. 86-12 relating to public-private partnership contracts (March 2020) ;

Literature review: Impact of public-private partnerships on economic growth

In this sub-section, we will explore the studies that have examined the impact of these PPPs. However, despite the recognized importance of PPPs for economic development, empirical research on this relationship remains relatively limited, particularly in developing countries.

The public-private partnership is considered as a long-term partnership between public and private actors in order to obtain mutual benefits. This type of partnership is identified as favorable not only for the partners involved but also for the overall economy. According to Sharma (2012), "PPPs offer several advantages and opportunities in terms of fiscal stabilization, flow of funds, and efficiency gains for developing countries."
Macroeconomic theory suggests that the increase in PPP investments leads to significant GDP growth, thus PPP activities are positively associated with GDP growth (Pimentel & al, 2017). The idea is that the use of PPPs allows countries to carry out infrastructure projects, especially in a context where public resources are limited, which can lead to an increase in GDP growth. Although studies on the impact of PPPs on macroeconomic variables remain relatively limited, we will present in this section the main empirical works available that have studied this relationship.

PPPs play an important role in stimulating economic growth and improving public infrastructure. Their success depends on a series of determining factors, including the quality of the institutional framework, and political and economic stability (Hammami & al., 2006). Empirical studies on Public-Private Partnerships (PPPs) show that these partnerships can have a significant impact on economic growth by improving infrastructure; this impact varies according to sectors, geographical contexts, and institutional structures.

In studies such as those of (Jasiukevicius & Vasiliauskaite, 2013) show the positive impact of PPP investment on economic growth (GDP) this result is confirmed for four countries in the sample studied (Belgium, Ireland, France and the United Kingdom). (Lee & al, 2018) also confirm that PPPs bring significant macroeconomic benefits in Asia, the results suggest that an increase in the ratio of PPP investment to GDP improves access to

infrastructure services and their quality. However, (Mapule & al, 2023) show that PPPs have a positive impact on economic growth, but with variations across sectors, PPP investments in energy infrastructure have a more significant impact compared to other sectors, which promotes growth in developing economies.

On the other hand, (Yurdaku & Kamasa, 2020) initiated their study from the observation that PPP investments can boost GDP. However, the results of the study show that there is a weak relationship between PPP activities and GDP growth. Yurdaku & Kamasa, (2020) relate this result to other macroeconomic variables that affect GDP growth as a proxy for economic development. The table below summarizes the results of several research studies on the impact of PPPs on economic growth.

Table 1: Summary table of empirical research

Authors	Year	Title	Results
Yurdaku & Kamasa	2020	*Investment through Public Private Partnership (PPP) : The Impact of PPP Activities on the Growth of GDP*	The results of the study indicate that there is a weak association between PPP activities and GDP growth.
Jasiukevicius & Vasiliauskaite	2013	*The Relation between Economic Growth and Public-Private Partnership Market Development in the Countries of the European Union*	The results of the article show that four countries, Belgium, Ireland, France and the United Kingdom (UK) are characterized by a strong or medium correlation between GDP growth and the development of the PPP market.
Pimentel & al,	2017	*The impact of investment in Public Private Partnerships on Public, Private investment and GDP in Portugal*	The article highlights the positive effect on public and private investments in Portugal.
Turan & al.	2011	*Economic Growth Effects of Public and Private Investment : Evidence from Dynamic Panel Estimation for Developed and Developing Countries*	The results of this article indicate that public and private investment have positive and significant effects on growth, more specifically in developing countries.
Mapule & al.	2023	*Public–Private Partnerships and Economic Growth: A Sectoral Analysis from Developing Countries*	The results show that PPPs have a positive effect on economic growth, with variations across sectors.
Lee & al	2018	*Deriving Macroeconomic Benefits from Public-Private Partnerships in Developing Asia*	Confirm that PPPs bring significant macroeconomic benefits in Asia.

Therefore, according to the previous results of these empirical studies, our hypothesis to be tested is:

Hypothesis: Public-private partnership investments have a positive impact on Morocco's GDP, manifesting itself through an economic growth effect.

Methodological framework

Data Sources

To empirically analyze the impact of public-private partnerships (PPPs) on economic growth, we will mainly use the World Bank's database on private participation in infrastructure. This database represents a primary means and tool for measuring and monitoring trends in public-private partnerships (PPPs) worldwide, and more particularly in developing countries. It also provides technical advice and support to help countries improve their regulatory environment and attract private investors to finance and operate infrastructure. The data collected from this database is conducted over a sample period extending from 1990 to 2020, providing a comprehensive time frame to assess trends and patterns over three decades.
Several studies conducted in the context of public-private partnerships such as (Lee & al, 2018) (Mapule & al, 2023) (Hammami & al., 2006) (Yurdaku & Kamasa, 2020) have all used the PPI database.

Variable Descriptions

To verify our hypothesis, attention will be paid to the role of Public-Private Partnerships in growth in Morocco; we will develop our analysis by introducing additional variables (control variables). Thus, we will draw inspiration from the endogenous growth model of Barro (1990, 1991, and 1996).

Control variables are included in the analysis to account for variations in macroeconomic conditions. This approach facilitates, to some extent, the isolation of the impact of sentiment from that of economic variables, thus reinforcing the robustness of the results.

Based on existing literature, the model includes investments in Public-Private Partnerships, Population Growth, Money Supply, Inflation, Government Revenue, and GFC as determinants of economic growth.

- **Dependent variable:**

GDP (Y): Gross domestic product (GDP) is the most widely used indicator to assess a country's production of goods and services over a year. It illustrates the importance of a country's economic activity. Macroeconomic theory suggests that an increase in PPP investments leads to significant GDP growth, so PPP activities are positively associated with GDP growth (Pimentel & al, 2017).

- **Independent variables:**

PPP variables: Represents the amount and number of public-private partnerships (PPPs) carried out in Morocco over time. It provides an aggregate measure of the scale and importance of PPPs, taking into account both the quantity (number) and the total monetary value of PPPs.

GCF: Gross Capital Formation represents the total amount of expenditure made for the purchase of capital goods such as equipment, machinery, buildings, etc. It measures investment in fixed capital and is often used as an indicator of economic activity.

Population Growth: It is the growth rate of the population of a country or region during a given year. Population growth can influence the overall demand for goods and services, which in turn can affect the level of economic output (GDP).

Money supply: refers to the total amount of money in circulation in an economy at any given time. It typically includes currency in circulation, demand deposits, and other forms of liquid money. Changes in the money supply can impact inflation and other aspects of economic activity.

Inflation Rate: The inflation rate measures the rate of change in the prices of goods and services in an economy over time. High inflation can affect consumption, investment, and other aspects of economic activity.

Government Revenue: Government revenue consists of taxes, social contributions, grants receivable and other revenue.

Table 2 : Summary of Proposed Variable Description

Variable Name	Abbreviation	Unit of Measurement	Data Source
Dependent variable			
Economic growth	GDP	$ US courants	World Bank's World Development Indicators database
PPP variables			
PPP investment	INV_PPP	US $	World Bank's Private Participation in Infrastructure database
Number of PPPs	NBR_PPP	Number	World Bank's Private Participation in Infrastructure database
Control Variables			
Gross Capital formation	GCF	% GDP	World Bank's World Development Indicators database
Population growth	POP	% annual	World Bank's World Development Indicators database
Broad money supply	M3	% GDP	World Bank's World Development Indicators database
Inflation	INF	% annual	International Monetary Fund's World Economic Outlook data base
Government Revenue	GovRev	% GDP	International Monetary Fund's World Economic Outlook data base

Source: Authors

Econometric model

Formally, the multiple linear regression model is written as a weighted sum of the exogenous variables, where the weighting coefficient measures the influence of the associated variable (Bourbonnais, 2015).

The impact of public-private partnership investments on economic growth will be estimated within the framework of a model as follows :

$$GDP = \beta 0 + \beta 1 \times NBR\_PPP_{t-1} + \beta 2 \times NBR\_PPP_{t} + \beta 3 \times INV\_PPP_{t-1} + \beta 4 \times INV\_PPP_{t} + \beta 5 \times GCF_{t-1} + \beta 6 \times GCF_{t} + \beta 7 \times POP_{t-1} + \beta 8 \times POP_{t} + \beta 95 \times M3_{t-1} + \beta 105 \times M3_{t} + \beta 11 \times INF_{t-1} + \beta 12 \times INF_{t} + \beta 13 \times REV\_GOV_{t-1} + \beta 14 \times REV\_GOV_{t} + \varepsilon$$

Notes:

• GDP is the Gross Domestic Product (endogenous variable),

• NBR_PPP, INV_PPP, GCF, POP, M3, INF and REV_GOV are the independent variables at time t,

• β0, β1, β2, β3, β4 … β14 are the significant coefficients associated with each independent variable,

• ε is the error term.

Result and discussion

Result of the study

Descriptive statistics

Table 3 shows the descriptive statistics of the main variables used in our study over a period of 30 years. For each variable, this table provides the mean, standard deviation, and range of variation of the data. The variables examined include gross domestic product (GDP), gross capital formation (GCF), inflation (INF), investments in Public-Private Partnerships (INV_PPP), money supply (MM), number of PPPs (NBR_PPP), population growth (POP) and government revenues (REV_GOV).

The mean for GDP is $75.52 billion, while the median is slightly lower at $68.85 billion, indicating a relatively balanced distribution with some outliers. For gross capital formation, the mean is 26.01% of GDP, and the median is 25.79%, showing a stable trend in capital accumulation. For inflation, the mean is 1.97%, with a median of 0.89%, suggesting variability in inflation rates over the period.

GDP reached a maximum of $128.92 billion, while the minimum was $30.18 billion, illustrating strong economic growth in some years. PPP investments also varied, with a maximum of $2.75 billion and a minimum of zero, indicating that PPP investments were sporadic. Money supply fluctuated between 46.15% and 128.86% of GDP, reflecting significant changes in economic liquidity.

The standard deviation of GDP is 35.46, indicating considerable

variability around the mean. For GCF, the standard deviation is 2.52, suggesting some stability in capital accumulation. Inflation has a higher standard deviation of 2.89, showing notable fluctuations. PPP investments have a standard deviation of 0.84, highlighting their irregular nature.

Thus, descriptive statistics provide valuable insight into Morocco's economic performance. The variability of indicators such as GDP, PPP investments, and inflation suggests that the country has gone through phases of growth and economic challenges. This information can be essential to guide economic policies and development strategies, with an emphasis on the need to encourage more regular investments in infrastructure through PPPs.

Table 3: Statistiques descriptives

	GDP	GCF	INF	INV_PPP	M3	NBR_PPP	POP	REV_GOV
Mean	75.52154	26.00591	1.970724	0.570399	83.30741	0.967742	1.349242	23.23195
Median	68.85266	25.79361	0.886221	0.141000	83.31918	1.000000	1.309479	24.05021
Maximum	128.9203	31.26829	11.65717	2.746000	128.8631	4.000000	1.735345	28.88084
Minimum	30.17995	21.78203	-1.767599	0.000000	46.15091	0.000000	1.043584	18.96414
Std. Dev.	35.46232	2.523479	2.885556	0.835667	25.24389	1.079626	0.166647	2.690207
Skewness	0.120669	0.162087	1.717723	1.318985	-0.043340	1.033573	0.493674	0.105487
Kurtosis	1.356589	2.055847	5.691627	3.311835	1.494483	3.441256	3.020463	1.938623
Jarque-Bera	3.563765	1.287165	24.60255	9.114161	2.937373	5.770908	1.259730	1.366202
Probability	0.168321	0.525407	0.000005	0.010493	0.230228	0.055829	0.532664	0.505048
Sum	2341.168	806.1831	61.09243	17.68237	2582.530	30.00000	41.82649	650.4947
Sum Sq. Dev.	37727.28	191.0384	249.7930	20.95016	19117.62	34.96774	0.833139	195.4047
Observations	31	31	31	31	31	31	31	28

Source: Authors

Correlation matrix

The analysis of the correlation matrix presented in Table 4 provides valuable information on the relationships between the variables in the model. This matrix, which includes gross domestic product (GDP), gross capital formation (GCF), inflation (INF), investments in Public-Private Partnerships (INV_PPP), money supply (M3), the number of PPPs (NBR_PPP), population growth (POP) and government revenues (REV_GOV), reveals interesting information. Indeed, a significant positive correlation was observed between GDP and several variables.

GCF shows a positive correlation with GDP (0.74), which highlights the importance of capital accumulation in stimulating economic growth. Moreover, the number of PPPs (NBR_PPP) shows also a positive correlation with GDP (0.65), suggesting that increasing partnership projects could have a positive impact on the economy.

PPP investments (INV_PPP) show moderate positive correlations with GDP (0.28) and government revenues (0.27). This indicates that these

investments can contribute to economic growth, but their impact seems less pronounced compared to other variables such as money supply or GCF.

This correlation analysis provides a useful basis for guiding our regression analyses, highlighting relationships that merit further investigation

Table 4 : Correlation matrix

	GDP	GCF	INF	INV_PPP	M3	NBR_PPP	POP	REV_GOV
GDP	1.000000	0.742885	-0.488706	0.277280	0.974229	0.654229	-0.794125	0.838207
GCF	0.742885	1.000000	-0.327459	0.092128	0.740315	0.251336	-0.363937	0.859243
INF	-0.488706	-0.327459	1.000000	0.030832	-0.555879	-0.194893	0.549033	-0.429092
INV_PPP	0.277280	0.092128	0.030832	1.000000	0.235922	0.505891	-0.053441	0.265638
M3	0.974229	0.740315	-0.555879	0.235922	1.000000	0.585500	-0.827754	0.880286
NBR_PPP	0.654229	0.251336	-0.194893	0.505891	0.585500	1.000000	-0.618286	0.363329
POP	-0.794125	-0.363937	0.549033	-0.053441	-0.827754	-0.618286	1.000000	-0.614136
REV_GOV	0.838207	0.859243	-0.429092	0.265638	0.880286	0.363329	-0.614136	1.000000

Source: Authors

Regression results

Table 5 shows the results of the estimated effects PPP investment has on economic growth. First, the coefficient of the constant (C) is 4.463552, with a t-statistic of 11.18 and a probability of $p<0.0001$. This indicates that the constant is significantly different from zero, which is essential to establish a reference point in the model. For PPP investments, the coefficient is 0.038028, but it is not statistically significant ($p=0.1683$). This suggests that the immediate impact of PPP investments on GDP is not obvious. However, when considering the one-year lagged effect (INV_PPP(-1)), the coefficient becomes significant (0.096941, $p = 0.0055$), indicating that PPP investments have a positive effect on GDP with a lag, highlighting the importance of the time dimension that plays a key role in carrying out infrastructure investment studies (whether PPP or traditional infrastructure investments).

Same thing For gross fixed capital formation, the coefficient is 0.007026, indicating that the immediate effect of GCF on GDP is small and insignificant ($p = 0.6564$). However, the coefficient for lagged GCF (GCF (-1)) is 0.044515 and is significant ($p = 0.0354$). This suggests that capital accumulation has a positive impact on GDP growth, but this effect manifests itself after a certain period, which is typical in economic development processes.

Regarding the number of PPPs, the coefficient is negative (-0.029343) and insignificant ($p = 0.1924$), which could indicate that, in the immediate term, an increase in the number of PPPs does not have a positive effect on GDP. However, the lagged coefficient (NBR_PPP(-1)) is significant and negative (-0.095428, $p = 0.0027$), a result that merits particular attention.

Table 5 : Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.463552	0.399211	11.18093	0.0000
INV_PPP	0.038028	0.025601	1.485401	0.1683
INV_PPP (-1)	0.096941	0.027510	3.523877	0.0055
GCF	0.007026	0.015323	0.458520	0.6564
GCF (-1)	0.044515	0.018314	2.430676	0.0354
NBR_PPP	-0.029343	0.020994	-1.397688	0.1924
NBR_PPP (-1)	-0.095428	0.024087	-3.961746	0.0027
POP	-0.012869	0.384247	-0.033492	0.9739
POP (-1)	-1.186382	0.418079	-2.837700	0.0176
REV_GOV	-0.016225	0.019371	-0.837616	0.4218
REV_GOV (-1)	-0.055899	0.015352	-3.641054	0.0045
M3	0.006443	0.004475	1.440004	0.1804
M3 (-1)	0.013904	0.004873	2.853516	0.0171
INF	0.014816	0.006518	2.272971	0.0463
INF (-1)	0.020055	0.005834	3.437817	0.0064

R-squared	0.996654	Mean dependent var	4.323777
Adjusted R-squared	0.991970	S.D. dependent var	0.496484
S.E. of regression	0.044491	Akaike info criterion	-3.103357
Sum squared resid	0.019794	Schwarz criterion	-2.372032
Log likelihood	53.79197	Hannan-Quinn criter.	-2.900519
F-statistic	212.7634	Durbin-Watson stat	2.800807
Prob(F-statistic)	0.000000		

Interpretation and discussion of results

The data analysis for the case of Morocco over the period between 1990 and 2020 highlights several key trends regarding economic growth, investments in Public-Private Partnerships (PPPs) and various economic indicators (control variables). According to our results, we find that both total investment (GCF) and investment in PPPs have positive and significant effects on economic growth (if we take into account the lagged effect). This is consistent with the findings of (Lee & al, 2018) and (Pimentel & al, 2017).

This result confirms that PPP can stimulate economic development, which is consistent with Morocco's policy orientation and the results of current theoretical studies. In recent years, Morocco has actively implemented policies to promote the standardization and rationalization of PPP, which has enabled it to innovate and develop in the direction of improving quality and efficiency.

Our results are also consistent with the findings of (Mapule & al, 2023) who emphasize that PPPs have a positive effect on growth and that

PPP investments in the energy sector play a determining role in economic growth. Indeed, the data analysis for the case of Morocco (Figure 2) shows that the majority of investments in PPPs in Morocco are concentrated in the energy sector, which largely explains the positive impact on growth.

Regarding the impact of the number of PPP projects on economic growth, we can observe in (Figure 1) the existence of a large divergence between the amount invested and the number of projects, an increase in the number of projects does not necessarily coincide with an increase in investments or growth. The periods between 1995-2000 and 2010-2025 are periods with high investments but few projects, which explains the positive impact of investments in value on growth, unlike other periods, and hence the negative impact of the number of projects variable on growth. This result highlights the importance of prioritizing the quality and concentration of resources on strategic projects to stimulate economic growth rather than increasing small projects.

Conclusion

Public-private partnership (PPP) investments are an innovative financing mechanism designed to facilitate projects that generate widespread economic benefits. This approach addresses the constraints posed by limited public resources, enabling the implementation of critical infrastructure projects that stimulate economic growth. By promoting investments in sectors essential to development, and contributing to improving the overall investment climate in a country.

Our empirical analysis of the impact of PPP investments on economic growth in Morocco for the period 1990-2020 reveals a positive and statistically significant relationship between these investments and the country's economic growth. This underlines the crucial role of PPP investments, particularly in infrastructure. The sectoral allocation of these investments, with a strong focus on the energy sector, appears to be a decisive factor in maximizing their impact. In addition, the strategic selection of PPP projects is essential to ensure that resources are allocated to initiatives with the greatest potential for economic and social returns

Conflict of Interest: The authors reported no conflict of interest.

Data Availability: All data are included in the content of the paper.

Funding Statement: The authors did not obtain any funding for this research.

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