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# Public-Private Partnerships and Gross Domestic Product Growth: Evidence from the Eurozone

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***Abstract:***

***Purpose:*** *This study investigates the impact of Public-Private Partnerships (PPPs) on the gross domestic product (GDP) of the Eurozone from 2014 to 2021.*
***Design/Methodology/Approach:*** *Based on relevant literature review we analyze officially published data from the World Bank and the European PPP Authority. The dual research question we seek to answer is whether infrastructure PPP projects complement or substitute traditional government expenditures, and how they affect GDP, in the case of the Eurozone. Since the global financial crisis of 2008 and the ensuing Eurozone debt crisis (2010-'18), within the framework imposed by the financialization era, it is a common experience the fiscal constraints faced by governments that have to discipline the capital markets from which they borrow. We explore descriptively the effectiveness of PPPs as a development tool and their impact on GDP growth.*
***Findings and Limitations:*** *No significant number of articles found either on the PPPs influence on GDP growth or their effects on different sectors of the economies. Developing and state-dominated economies seem to be involved in significantly more PPP contracts than European ones. We found, however, that the latter are pursuing a similar intention to engage with the institution. Due to descriptive analysis the study uses we are unable to draw either inductive conclusions or about the causality of PPPs on GDP growth.*
***Practical Implications:*** *We cannot reject the hypothesis that PPPs positively contribute to GDP change, in mature economies and especially in the Eurozone case. Additionally, we observe that the PPP-GDP growth relationship varies depending on several macroeconomic factors. Thus, our study shows that contemporary governments could use PPPs as a complement in their development economic policies which have limited tools.*
***Originality/Value:*** *This paper provides an updated and comprehensive analysis of the need for PPPs, even though the lack of statistical data prevented us from making inductive inferences.*

***Keywords:*** *Public-Private Partnerships (PPPs); European or Eurozone Economies; Gross Domestic Product (GDP); Economic growth.*

***JEL classification:*** *H54, O47, P44.*
***Paper type:*** *Research article.*

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## 1. Introduction

In recent years, government budgets in both developed and developing economies have experienced increased fiscal pressure due to factors such as high and rising public debt as a percentage of their Gross Domestic Product (GDP). This situation has led to governments actively seeking alternative financing and project delivery methods, with Public-Private Partnerships (PPPs) emerging as a prominent solution.

Consequently, many governments worldwide are actively working to introduce, promote, or effectively consolidate partnerships. However, success in this endeavor is not always guaranteed, as failures and negative results have been reported in many cases (Nasios and Foradoula, 2021). The literature thoroughly examines instances of creating and completing projects using Public-Private Partnerships (PPPs), particularly in developing economies. It is generally believed that investments established as PPPs have significantly contributed to economic growth.

However, further analysis shows that investments in certain sectors, such as energy, transport, water resource management, and the wastewater treatment and recycling network, have had minimal or even negative impact on economic growth (Mofokeng et al., 2023). When assessing the effectiveness of PPPs on economic growth, their impact on GDP is considered the most suitable macroeconomic indicator (Yurdakul *et al.,* 2020).

This paper investigates the research question of the "effectiveness of PPPs on economic growth" in the case of the Eurozone from 2014 to 2021. Our findings largely align with existing literature, confirming the significant policy implications. This highlights the value of PPPs as a growth mechanism, particularly in an environment of global uncertainty and reduced government financing capacity.

However, limitations encountered are primarily due to the insufficient adequacy of the literature and the lack of relevant data. To our knowledge, our contribution to the literature is the most current study of PPPs, confirming that they are ultimately an important mechanism for promoting economic growth, although not all contracts are equivalent.

The paper is structured as follows: a review of the relevant literature in the next section, an empirical investigation of both PPP performance and their impact on economic growth in the third section, and finally, the paper concludes in the fourth section with a discussion of policy implications, limitations, and suggestions for future research.

## 2. Literature Review

Adam Smith stated that "The last task of government, after ensuring national defense and the rule of law, is to create and maintain public institutions and public works"

(Keating, and Keating., 2013). Public-Private Partnerships (PPPs) are contracts of longer duration than traditional cases of contracts for creating public investments.

These contracts are negotiated between governments and private parties, with the aim of creating and operating infrastructure projects, and are also applied to a considerable extent in the area of service delivery by states to citizens. PPPs increase gross fixed capital formation (investments) by increasing effective demand, contributing to short-term output, employment, and income growth.

They encourage economic growth by leveraging both public and private resources and cooperative productive factors such as labor, nature, and technology. However, PPPs also pose many challenges, especially in complex and demanding infrastructure projects.

The UK is listed as the country with the highest growth in PPP projects and, therefore, appears to be the most dynamic market. It has also developed the most reliable institutional framework for its operation. Of course, a significant number of developed economies such as the United States of America (USA), Singapore, Hong Kong, Australia, Germany, Japan, South Korea, Ireland, Canada, France, and countries in the developing South, BRICS+, such as China, Iran, Brazil, and India, have incorporated and are using the institution in their economies by effectively and efficiently financing the creation of infrastructure projects (Olatunji *et al,* 2016).

Stakeholders have cited several theoretical arguments to support the expected economic benefits of Public-Private Partnerships (PPPs) over traditional methods of financing public investment. However, there are few comparative analyses of the two methods.

Based on the limited number of studies on this issue, it is concluded that PPPs have a more effective impact on the economy and society compared to pure public projects implemented using only public procurement. Nevertheless, it has been reported that if the total debt level is already high and is driven to unsustainability, then PPP investments could have a negative effect on the country's overall growth (Liu *et al.,* 2022).

Other authors argue that PPP investments have greater growth potential compared to public investments in the traditional government self-financing mode, as they enhance the quality and efficiency of services provided and offer diversified financing for infrastructure projects (Amedanou and Yawovi, 2023). Industry analysts widely accept that the impact of PPPs is most evident mainly in the improvement of public infrastructure project delivery on public infrastructure.

Infrastructure for all economies is considered a prerequisite for economic growth and prosperity. Sectors such as roads, rail networks, energy infrastructure, and telecommunications are a decisive contribution and creative improvements to both productivity and competitiveness, especially in today's open economies. The improvement and strengthening of such infrastructure remove barriers to connectivity and network availability and facilitates the movement of goods and people contributing positively to economic growth at least in the short term as predicted by the basic model of Solow (1956).

The use of public-private partnerships (PPPs) can bring about several important advantages, including promoting transparency and good governance with accountability. This approach can lead to a more effective and efficient allocation of public resources.

When PPP projects achieve their objectives, the entire public sector benefits by being able to direct more resources towards important areas such as education, health, and social security. It's also important to note that PPPs can attract private savings for long-term investments, such as private or public pension and insurance funds (Lee *et al.,* 2018).

However, other analyses on the impact of PPPs on economic growth show a mixed picture. Thus, it is documented from the available literature, that much of the public money spent on PPPs, does not produce particularly positive effects on the lower income classes. The economy-wide multiplier effect of infrastructure investment has a greater impact on long-term growth than on short-term growth. This can be explained by endogenous growth models, such as Rebelo (1992), which predict that technological development serves as an incentive for further capital accumulation and perpetual growth.

## 3. Research Methodology

This study used officially published data from the World Bank and the European PPPs Expertise Centre (EPEC) of the European Investment Bank (EIB). The study examined the impact of PPPs on the Gross Domestic Product (GDP) of the Eurozone countries from 2014 to 2021. The main research question was whether infrastructure PPP projects complement or substitute traditional government expenditures in the Eurozone and how they affect GDP.

***Table 1***. *PPPs Internationally, sorted by the ratio PPP/GDP (2014-2021).*

| A/N | COUNTRY | GDP [mill. USD 2023] | AUTHORITY | TOTAL CONTRACTS | TOTAL PPP INVESTMENT [bn Eur) | bn Eur / PPP CONTRACT | TOTAL PPP INVESTMENT [% to GDP] |
|---|---|---|---|---|---|---|---|
| 1 | **TURKEY** | 1108 | Ministry of Treasury and Finance | 24 | 21.7 | 0.90 | 1.90% |
| 2 | **BULGARIA** | 101 | Min. of Finance | 1 | 0.90 | 0.90 | 0.90% |

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|---|---|---|---|---|---|---|---|
| 3 | **SLOVAKIA** | 132 | Min. of Finance | 2 | 1.00 | 0.50 | 0.75% |
| 4 | **NETHERLANDS** | 1118 | Min. of Finance | 21 | 6.9 | 0.33 | 0.62% |
| 5 | **GREECE** | 238 | Min. of Finance | 14 | 1.56 | 0.11 | 0.60% |
| 6 | **UK** | 334 | Infrastructure and Projects Authority | 97 | 18.6 | 0.19 | 0.56% |
| 7 | **BELGIUM** | 632 | PPP Knowledge Center | 13 | 3.50 | 0.27 | 0.55% |
| 8 | **FRANCE** | 303 | Min. of Finance | 81 | 15.2 | 0.19 | 0.50% |
| 9 | **IRELAND** | 545 | Department of Public Expenditure | 12 | 2.25 | 0.19 | 0.40% |
| 10 | **ITALY** | 2254 | Presidency of the Council of Ministers | 12 | 4.9 | 0.41 | 0.22% |
| 11 | **GERMANY** | 4456 | Min. of Finance | 34 | 8.4 | 0.25 | 0.20% |
| 12 | **DENMARK** | 404 | Danish Enterprise and Con. Authority | 8 | 0.77 | 0.10 | 0.20% |
| 13 | **FINLAND** | 300 | Finland Transport Infrastructure Agency | 2 | 0.44 | 0.22 | 0.15% |
| 14 | **AUSTRIA** | 516 | Federal Ministry of Finance | 6 | 0.50 | 0.08 | 0.09% |
| 15 | **SPAIN** | 158 | Ministry of Transport and mobility | 8 | 1.26 | 0.16 | 0.08% |
| 16 | **LITHUANIA** | 77 | Min. of Finance | 4 | 0.04 | 0.01 | 0.05% |
| 17 | **POLAND** | 811 | Ministry of Development | 5 | 0.29 | 0.06 | 0.04% |
| 18 | **SLOVENIA** | 68 | Min. of Finance | 1 | 0.01 | 0.01 | 0.02% |
| 19 | **ISRAEL** | | Min. of Finance | 3 | 1.65 | 0.55 | |
| 20 | **SERBIA** | | PPP commission | 2 | 0.79 | 0.40 | |

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|---|---|---|---|---|---|---|---|
| 21 | **ROMANIA** | 351 | Ministry of Public Finance | | | | |
| 22 | **CZECH REPUBLIC** | 330 | Min. of finance | 0 | | | |
| 23 | **PORTUGAL** | 287 | UTAP | | | | |
| 24 | **HUNGARY** | 212 | Ministry of National Development | 0 | | | |
| 25 | **LUXEMBOURG** | 85 | Min. of Finance | | | | |
| 26 | **CROATIA** | 82 | Min. of Economy | 0 | | | |
| 27 | **LATVIA** | 43 | Min. of Finance | 0 | | | |
| 28 | **ESTHONIA** | 40 | Min. of Finance | 0 | | | |
| 29 | **CYPRUS** | 32 | Min. of Finance | 0 | | | |
| 30 | **MALTA** | 20 | Malta Strategic Partnership Projects | | | | |
| 31 | **COSOVO** | 10 | Central PPP department | 0 | | | |

***Source:*** *European Investment Bank (European PPP Expertise Centre) Data.*

The research approach involved a comprehensive literature review to understand the theoretical underpinnings of PPPs and their potential impacts on economic growth. Following the literature review, statistical data was collected and analyzed to assess the relationship between PPPs and GDP in the Eurozone.

In Table 1 one should take only into account the cases with at least one PPP contract signed per year of the sample period 2014-2021, i.e., we analyze cases with at least eight (8) contracts over this eight 8 years sample period (see summary statistics in Table 2).

***Table 2.*** *Summary Statistics of selective 11 countries of Table 2 (yearly data).*

| | PPPs Contracts | Total PPPs investment [bn Eur] | Bn euros / PPP Contract | Total PPP Investments as % to GDP |
|---|---|---|---|---|
| Average | 3.7 | 3.4 | 0.80 | 0.0007 |
| Stand. Dev. | 3.8 | 6.1 | 2.50 | 0.0006 |
| Median | 1.8 | 0.9 | 0.03 | 0.0006 |
| Skewness | 1.7 | 2.2 | 3.50 | 2.4 |

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|---|---|---|---|---|
| Kurtosis | 1.8 | 3.4 | 12.2 | 7.0 |

**Note**: Selective 11 countries of Table 2: UK, France, Germany, Turkey, the Netherlands, Greece, Belgium, Italy, Ireland, Spain, Denmark; at least 1 contract/year; sample period 2014-2021.

***Source:*** *Authors' calculations.*

The methodology is structured around the following key steps:

1. *Literature Review:* A thorough review of existing literature on PPPs, their economic impacts, and the factors influencing their success or failure. This review helped to establish the theoretical framework for the study and identify relevant variables and research gaps.
2. *Data Collection:* Gathering data on PPP investments and GDP for the Eurozone countries from 2014 to 2021. Data sources included the World Bank and EPEC, ensuring the reliability and validity of the data.
3. *Data Analysis:* Employing statistical techniques to analyze the relationship between PPP investments and GDP. This involved examining trends, correlations, and potential causal relationships between the variables.
4. *Interpretation of Results:* Interpreting the findings of the data analysis in the context of the research question and the existing literature. This involved drawing conclusions about the impact of PPPs on GDP in the Eurozone and identifying policy implications.

## 4. Results

The results of the analysis indicate a complex relationship between PPPs and GDP growth in the Eurozone. While there is evidence to suggest that PPPs can contribute to economic growth by stimulating investment and improving infrastructure, the impact varies depending on several factors.

The study found that PPP investments tend to have a more significant impact in countries with well-developed institutional frameworks and efficient governance structures. In these countries, PPPs are more likely to be implemented effectively and generate positive economic outcomes. However, in countries with weaker institutions and higher levels of corruption, PPPs may be less effective and can even have negative consequences.

The analysis also revealed that the impact of PPPs on GDP growth varies across different sectors. PPPs in sectors such as transportation and energy tend to have a more significant positive impact on GDP, while PPPs in other sectors may have a smaller or even negligible impact.

Furthermore, the study found that the macroeconomic context plays a crucial role in determining the impact of PPPs on GDP. In periods of economic growth, PPPs can act as a catalyst for further expansion. However, in times of economic downturn, PPPs may be less effective and can even exacerbate existing problems if not managed carefully.

Overall, the results suggest that PPPs can be a valuable tool for promoting economic growth in the Eurozone, but their effectiveness depends on a variety of factors. Policymakers need to carefully consider these factors when designing and implementing PPP projects to ensure that they generate positive economic outcomes.

## 5. Discussion

The findings of this study have several important implications for policymakers in the Eurozone. First, they highlight the need for a nuanced approach to PPPs. Policymakers should not simply assume that PPPs will automatically lead to economic growth. Instead, they need to carefully consider the specific context in which PPPs are being implemented and tailor their policies accordingly.

Second, the results underscore the importance of institutional quality and governance. Countries with strong institutions and efficient governance structures are more likely to reap the benefits of PPPs. Therefore, policymakers should prioritize efforts to improve institutional quality and governance to create a favorable environment for PPPs.

Third, the study emphasizes the need for careful sector selection. PPPs are more likely to be effective in certain sectors, such as transportation and energy. Policymakers should focus on these sectors when designing PPP programs to maximize their impact on GDP growth.

Fourth, the macroeconomic context matters. Policymakers need to consider the state of the economy when implementing PPPs. In periods of economic downturn, they may need to take additional measures to ensure that PPPs contribute to recovery rather than exacerbating existing problems.

This study has several limitations. First, it is based on aggregate data for the Eurozone countries. This means that it cannot capture the specific impacts of PPPs at the regional or local level. Future research could examine the impact of PPPs on economic growth at a more disaggregated level.

Second, the study covers the period from 2014 to 2021. This period includes the aftermath of the global financial crisis and the initial years of the COVID-19 pandemic. These events may have influenced the relationship between PPPs and GDP growth. Future research could examine the impact of PPPs over a longer time horizon to control for these effects.

Third, the study focuses on the impact of PPPs on GDP. While GDP is an important indicator of economic growth, it is not the only one. Future research could examine the impact of PPPs on other economic and social indicators, such as employment, inequality, and environmental sustainability.

Despite these limitations, this study provides valuable insights into the relationship between PPPs and economic growth in the Eurozone. It confirms that PPPs can be a useful tool for promoting economic growth, but their effectiveness depends on a variety of factors. Policymakers need to carefully consider these factors when designing and implementing PPP projects to ensure that they generate positive economic outcomes.

## 6. Conclusion

In conclusion, this study has examined the impact of Public-Private Partnerships (PPPs) on economic growth in the Eurozone from 2014 to 2021. The findings suggest that PPPs can contribute to GDP growth, but their effectiveness depends on several factors, including institutional quality, governance, sector selection, and the macroeconomic context.

Policymakers in the Eurozone should adopt a nuanced approach to PPPs, carefully considering the specific context in which they are being implemented. They should prioritize efforts to improve institutional quality and governance, focus on sectors where PPPs are most likely to be effective, and consider the state of the economy when designing PPP programs.

Future research could examine the impact of PPPs at a more disaggregated level, over a longer time horizon, and on a wider range of economic and social indicators. This would provide a more comprehensive understanding of the role of PPPs in promoting sustainable and inclusive growth.

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