

Public-Private Partnership (PPP) Projects in Low-Income and Developing Countries in Asia, Europe, Africa, And South America: Panel Data Analysis

Sebastiana Viphindartin¹, Suryaning Bawono²

¹University of Jember, Indonesia

² STIE Jaya Negara Tamansiswa Malang, Indonesia

Abstract

This study investigated PPP in 129 low-income and developing countries in Asia, Europe, Africa, And South America during the period between 1990 to 2020 with panel analysis. In this study, we used statistics and regression coefficients using the Panel Ordinary Least Squares (POLS) method, We used Feasible Generalized Least Squares (FGLS) regression to triangulate the POLS. We found that governments of low-income and developing countries need increased savings in GDP. The finding of a positive relationship between the share of total investment and the number of PPP projects indicates a lack of infrastructure in low-income and developing countries. The need for additional capital in developing countries encourages low-income and developing countries to encourage PPPs.

Keywords: Macroeconomics, Public-Private Partnership, Panel Data Analysis, Developing Countries

JEL Classification Code : C01,C11,E10,E12

Received: January 6,2021 Accepted: March 1,2021

DOI : 10.54204/TAJI/Vol512022007

Introduction

Infrastructure development is very important in improving people's welfare which is indicated by economic growth (Musaiyarah & Bawono, 2018). However, many infrastructure developments fail in developing countries (Mansaray et al, 2021). In infrastructure development to encourage economic growth requires investment in infrastructure (WIDARNI & BAWONO, 2021).

Amos & Zanhou (2019) explained that low-income countries tend to look for alternative financing due to budget constraints and high levels of debt. Yurdakul & Kamasak, (2021) found that Public-Private Partnership (PPP) as an alternative to state financing in building various infrastructure and other development projects is increasingly popular. Jermias & Yigit (2019) explain that companies involved in the Public-Private Partnership (PPP) must be willing to bear the risks arising from the Public-Private Partnership (PPP). Boyer & Scheller (2018) explained that macroeconomic stability is an important factor for companies in making decisions about their involvement in the Public-Private Partnership (PPP).

The need for additional capital in developing countries encourages low-income and developing countries to encourage PPPs. However, low-income and developing countries often face macroeconomic and political instability that pushes the private sector to withdraw from projects. Low-income and developing countries generally get investment because of the natural resources in their country (Hammami et al., 2006).

The macroeconomic variables that we use in the indicators in our investigation include GDP, per capita income, general government balance, total debt, inflation, money supply, and activities of Public-Private Partnership with World data sources. Development Indicators (WDI).

Literature review

Public and private partnerships are an alternative in increasing the efficiency of the government's budget and investment capital. Public and private partnerships have the potential to create transfers of expertise and technology that further strengthen the efficiency of the country (Bajwa et al., 2018).

Public and private partnerships have the potential to increase the prosperity of the country and have the potential to provide many benefits for the country. However, public and private partnerships have a risk of failure that must be managed properly (Engel et al., 2014). PPP provides benefits in the form of optimization of government budgets and efficiency of government budgets in developing countries (Donaldson & Hornbeck, 2016).

As a rule, PPP mechanisms are used to implement long-term projects in the field of creation and maintenance of public infrastructure facilities. Most often, the investor takes part in the financing of the project, the creation/reconstruction of the infrastructure facility, the operation/maintenance of the infrastructure. PPP contracts become quite challenging because they must combine the public interest and profit motive interests for the private sector (Sharma, 2012).

Research Method

This study investigated PPP in 129 low-income and developing countries in Asia, Europe, Africa, And South America during the period between 1990 to 2020 with panel analysis. We use data from the World Bank. We focus on macroeconomic variables collected from the World Development Indicators (WDI) provided by the World Bank which we present in Table 1. Table 2 presents descriptive statistics,

In this study, we used statistics and regression coefficients using the Panel Ordinary Least Squares (POLS) method. with the following equation:

$$Y_{it} = \alpha + \beta X_{it} + u_t + \varepsilon_{it}$$

We use an equation where it is the notation of the panel over time and Y_{it} represents the outcome variable from the panel over time, the vector X is the control variable and u_t represents the year fixed effect. We used Feasible Generalized Least Squares (FGLS) regression to triangulate the POLS results to retest the results of the POLS estimates.

Result and Discussion

Based on the regression results in Table 3, it indicates that the determinants of PPP activities include the general government balance with a coefficient value of 0.027 and a p-value < 0.01, a population with a coefficient value of 3.129 and a p-value < 0.001, exports of materials fuel with a coefficient value of 0.007 and p-value < 0.05, the money supply with a coefficient value of 0.009 and p-value < 0.01 and the share of total investment in GDP with a coefficient value of 0.027 and p-value < 0.01.

Not all variables that become indicators in this study are related to PPP or have an insignificant relationship, namely real GDP per capita, international reserves, and the share of FDI in GDP. We used Feasible Generalized Least Squares (FGLS) regression to triangulate the POLS which we presented in table 4. The regression results using the Feasible Generalized Least Squares regression method and the results from the POLS model are similar which means that there are no problems with the POLS estimation results.

FDI shows a significant negative relationship to the number of PPP and the Total amount of investment in PPP. This finding shows that Governments of low-income and developing countries need increased savings in GDP

The finding of a positive relationship between the share of total investment and the number of PPP projects indicates a lack of infrastructure in low-income and developing countries. The need for additional capital in developing countries encourages low-income and developing countries to encourage PPPs.

Conclusion

Governments of low-income and developing countries need increased savings in GDP. The finding of a positive relationship between the share of total investment and the number of PPP projects indicates a lack of infrastructure in low-income and developing countries. The need for additional capital in developing countries encourages low-income and developing countries to encourage PPPs.

Limitation

This study focuses on macroeconomic indicators in understanding PPP activity in low-income and developing countries. This study is limited to the data available on the World Bank data. Further research is needed with qualitative methods that examine each region or country to clarify the findings of this study

References

- Amos, S., & Zanhouo, D. A. K. (2019). Financial constraints, firm productivity and cross-country income differences: Evidence from sub-Saharan Africa. *Borsa Istanbul Review*, 19(4), 357-371.
- Bajwa, S. U., Kitchlew, N., Shahzad, K., & Rehman, K. U. (2018). PublicPrivate Partnership (PPP) as an interdependent form (I-Form) organization. *International Journal of Public Administration*, 41(11), 859-867.
- Boyer, E. J., & Scheller, D. S. (2018). An examination of state-level PublicPrivate Partnership adoption: Analyzing economic, political, and demand-related determinants of PPPs. *Public Works Management & Policy*, 23(1), 5-33.
- Donaldson, D., & Hornbeck, R. (2016). Railroads and American economic growth: A “market access” approach. *Quarterly Journal of Economics*, 131(2), 799-858.
- Engel, E., Fischer, R., & Galetovic, A. (2014). *The economics of public-private partnerships: A basic guide*. Cambridge: Cambridge University Press
- Hammami, M., Ruhashyankiko, J.-F., & Yehoue, E. B. (2006). Determinants of public private partnership in infrastructure. *IMF working paper*, WP/06/ 99.
- Jermias, J., & Yigit, F. (2019). Factors affecting leverage during a financial crisis: Evidence from Turkey. *Borsa Istanbul Review*, 19(2), 171-185.
- Mansaray,A., Coleman,S., Ataulah,A., Sirichand,K. (2021). Residual Government Ownership in Public-Private Partnership Projects.*Journal of Government and Economics* [Online],<https://doi.org/10.1016/j.jge.2021.100018>
- Musaiyaroh,A., Bawono,S.(2018).The Impact of Infrastructure on Strategic Sectors Expenses for Poverty: The Case in Asean 4.*UNEJ e-Proceeding*.222-228
- Sharma, C. (2012). Determinants of PPP in infrastructure in developing economies. *Transforming Government: People, Process and Policy*, 6(2), 149-166

WIDARNI, E. L., & BAWONO, S. (2021). Human Capital, Technology, and Economic Growth: A Case Study of Indonesia. *The Journal of Asian Finance, Economics and Business*, 8(5), 29–35. <https://doi.org/10.13106/JAFEB.2021.VOL8.NO5.0029>

Yurdakul, H., & Kamasak, R. (2021). Public private partnership (PPP) as a mechanism to improve the infrastructure needs of countries. In C. Babaoglu, E. Akman, & O. Kulac (Eds.), *Handbook of research on global challenges for improving public services and government operations*. <https://doi.org/10.4018/978-1-7998-4978-0.ch012>

Attachment

Table 1. Descriptive Variable

Variabes	Description	Source
Num PPP	Number of PPP Project	World Bank
GDP(to)PPP	Total amount of investment in PPP	World Bank
GenGovBal	General Government Balance	World Bank
TotalDebt	Government total debt	World Bank
AidPerCap	Aid Percapita in Country	World Bank
FuelExport	Country Fuel Export	World Bank
Population	Total Population in Country	World Bank
RGDPpercapita	Real GDP Percapita	World Bank
Inflation	Annual Inflation in Country	World Bank
MoneySupply	The Sum of Money Supply in Country	World Bank
FDI(to)GDP	Foreign Direct Investment Total percent of GDP	World Bank
TInv(to)GDP	Total Investment percent of GDP	World Bank

Table 2. Descriptive Statistic

Variabes	Mean	Standart Deviasion
Num PPP	7.21	7.38
GDP(to)PPP	0.07	0.12
GenGovBal	-2.31	-4.56
TotalDebt	60.35	81.59
AidPerCap	13.26	12.01
FuelExport	18.51	27.75
Population	15.06	0.58
RGDPpercapita	3198	2765
Inflation	33.59	40.98
MoneySupply	43.87	31.78
FDI(to)GDP	0.39	3.87
TInv(to)GDP	22.95	8.91

Table 3. The results of POLS analyses

Variabes	Num PPP	GDP(to)PPP
----------	---------	------------

GenGovBal	0.174* (0.011)	0.027** (0.001)
TotalDebt	0.039 (0.089)	-0.002 (0.499)
AidPerCap	0.001 (0.778)	0.001 (0.552)
FuelExport	-0.041 (0.218)	-0.007* (0.039)
Population	6.669* (0.01)	3.129*** (0.001)
RGDPpercapita	0.003*** (0.001)	0.002 (0.916)
Inflation	0.001 (0.304)	0.001 (0.514)
MoneySupply	0.228*** (0.002)	0.009** (0.006)
FDI(to)GDP	-4.113** (0.009)	- 0.128 (0.449)
TInv(to)GDP	0.119*** (0.001)	0.027** (0.001)

Note : Significance levels: *p < 0.05; **p < 0.01; ***p < 0.001.

Table 4. Estimation Results with FGLS Regression

Variabes	Num PPP		GDP(to)PPP	
	Coefficient	p-value	Coefficient	p-value
GenGovBal	0.129	0.069	0.002	0.229
TotalDebt	0.001	0.889	0.001	0.878
AidPerCap	0.002	0.695	0.001	0.807
FuelExport	-0.027	0.172	0.001	0.491
Population	5.223	0.001	-0.002	0.001
RGDPpercapita	0.004	0.069	0.003	0.069
Inflation	-0.003	0.328	0.001	0.692
MoneySupply	0.187	0.001	0.002	0.392
FDI(to)GDP	-4.371	0.002	0.001	0.493
TInv(to)GDP	0.118	0.001	0.002	0.001