Composition effects of public investment on private investment in WAEMU

Effets de composition de l'investissement public sur l'investissement privé dans l'UEMOA

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Abstract: This paper examines the extent to which private investment is affected by public investment, depending on whether the latter is financed by external or internal resources, in the West African Economic and Monetary Union (WAEMU). Using a panel data model, estimated according to the procedure of Driscoll and Kraay (1998), the study concludes that the crowding-out effect occurs when public investment is financed from external resources. When public investment is financed from internal resources, it is the crowding-in effect that expresses itself, supporting the implementation of the golden rule for public finances. In addition, foreign direct investment appears to be one of the determinants of private investment.

Keywords: Public investment; Private investment; Crowding-in; Crowding-out.

1. Introduction

The member countries of the West African Economic and Monetary Union (WAEMU), following the reduction and cancellation of their debt through the Multilateral Debt Relief Initiative (MDRI) and Heavily Indebted Poor Countries (HIPC) initiatives, have been embarked on a frantic drive to invest in the public sector, by re-leveraging.

By following the Monterrey[1] Consensus, they have all committed themselves to the logic that the private market is the main driver for stable and sustainable growth. Thus, public investment must primarily and particularly serve the development of private investment. Between 1980 and 2015, this led to the wholesale privatization of public services. These were the so-called structural adjustment plans, which imposed strict conditions on the management of public finance.

The development of public investment has focused not only on building infrastructure, but also on creating a dynamic entrepreneurial environment. A genuine public investment policy, framed by National Development Plans, has been put in place. This has been possible thanks to funding from donors, the most active of which are the World Bank (WB) and the African Development Bank (ADB), in a context of renewed solvency. But it has also been possible thanks to domestic financing made possible by the relative performance of WAEMU member countries, in terms of improving the business climate, developing the regional financial market, and maintaining a minimum level of economic growth, despite a gloomy global economic environment.

The development of private investment is supposed to be an important lever for the growth of Member States and, consequently, to provide, in the long term, the stable resources necessary for the development of public investment. This has resulted in an influx of Foreign Direct Investment (FDI), a proliferation of businesses (business incubators, start-ups, SMEs and large companies), and the development of public-private partnerships (Plourde, 2006). The FDIs contribute to the monetary financing of the public deficit and government borrowing. The public-private partnerships contribute to the potential increase in the efficiency of public investment.
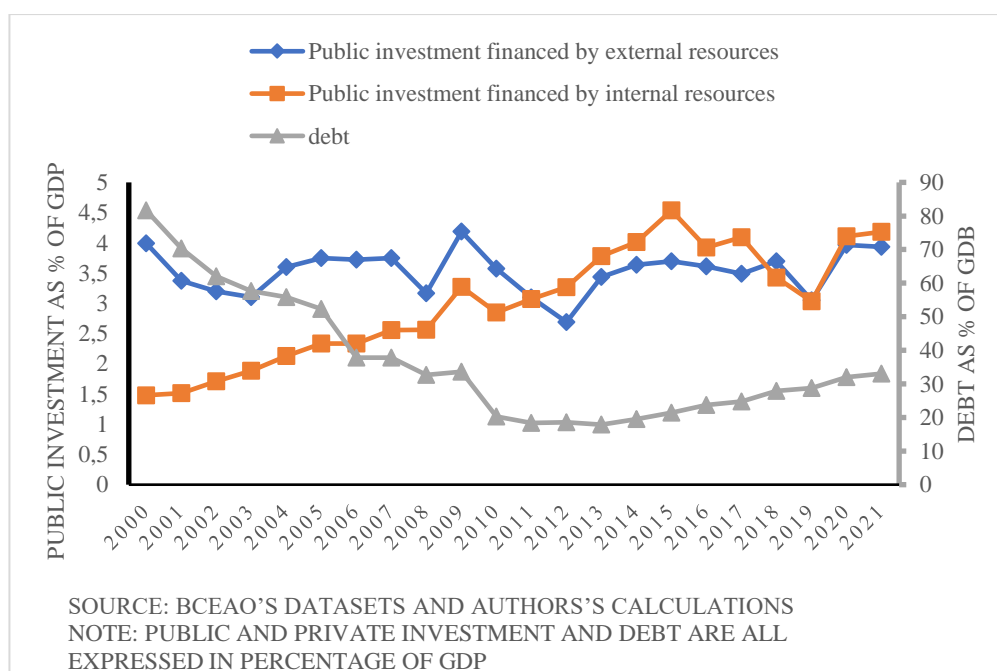
Over and above this virtuous chain of public investment and private investment, there is the problem of the effective use of the source of funding. When public investment is financed by external resources, it can be subject to corruption, misappropriation and misallocation, especially in periods of political instability or economic insecurity. Austerity policies or loan conditionalities can then be used to prevent crowding-out (Lansley, 2023). As for the internal financing of public investment, it benefits from implicit community control, through the application of the golden rule of public finance,

according to which the budget deficit must only be used to finance public investment. It is likely to support a crowding-in effect, unless this is counterbalanced by the effect of an accumulation of unpaid internal debts.

This paper analyses the extent to which private investment is affected by public investment, depending on whether it is financed by external or internal resources. It clarifies the source of the crowding out/in effects of public investment, often mentioned in the literature. Ultimately, the aim is to study the compositional effect of public investment on private investment in the WAEMU zone.

2. Stylized facts

Since at least 2000, WAEMU member countries experienced an increase in public investment paired with a fall in debt as a percentage of GDP. The reduction or cancellation of debt from which these countries have benefited has contributed to a rise in public savings. This easing of the budget constraint may explain the increase in internal financing of public investment, through internal borrowing from the regional financial market. Figure 1 shows a net increase in public investment financed by internal resources, rising from 1.5% of GDP in 2000 to 4.2% of GDP in 2021. Public investment financed by external resources has remained stable, falling from 4% to 3.9% of GDP over the same period.

SOURCE: BCEAO'S DATASETS AND AUTHORS'S CALCULATIONS
NOTE: PUBLIC AND PRIVATE INVESTMENT AND DEBT ARE ALL
EXPRESSED IN PERCENTAGE OF GDP

Figure 1 : Public investment composition and debt in WAEMU.

These public investments consist in building transport, electrification or water supply infrastructures, on one hand and also improving borrowing conditions on the other hand. Overall, there has been a significant improvement in all areas of governance. For example, the score for debt policy has risen by 5 points since 2005. In the same vein, the score for transparency and the fight against corruption

improved by 1 point. All these improvements have helped to increase the attractiveness of the area for foreign direct investment (FDI) and encouraged private investment.

**Tableau 1 :** Institutional borrowing conditions

	Variation in scores between 2005 and 2021						Average scores in 2021
	QAP	TRC	NPB	NDP	NPS	DRG	
Benin	0	0	0	1	0	0.5	3.58
Burkina Faso	-0.5	0	-2	-0.5	-0.5	-0.5	3.17
Côte d'Ivoire	1	1.5	1.5	2.5	0.5	1.5	3.42
Guinée Bissau	-0.5	-1	0	0	0	-0.5	2.08
Mali	-0.5	-1	-0.5	-0.5	-0.5	-1	3
Niger	0	0	0.5	0.5	0	0	3.25
Sénégal	0	0.5	-0.5	0	0.5	0	3.58
Togo	1	1	2	2	0.5	1	3.33
WAEMU	0,5	1	1	5	0,5	1	3,17

QAP= Quality of Public Administration, TRC= Transparency and corruption in the public sector score, NPB= Score linked to the exercise of budgetary policy, NDP= Score linked to debt policy, NPS= Social protection score, DRG= Score linked to respect for human rights and quality of governance.
Reading: There has been no improvement in the quality of public administration (QAP) between 2005 and 2021 in Benin(-0.5).
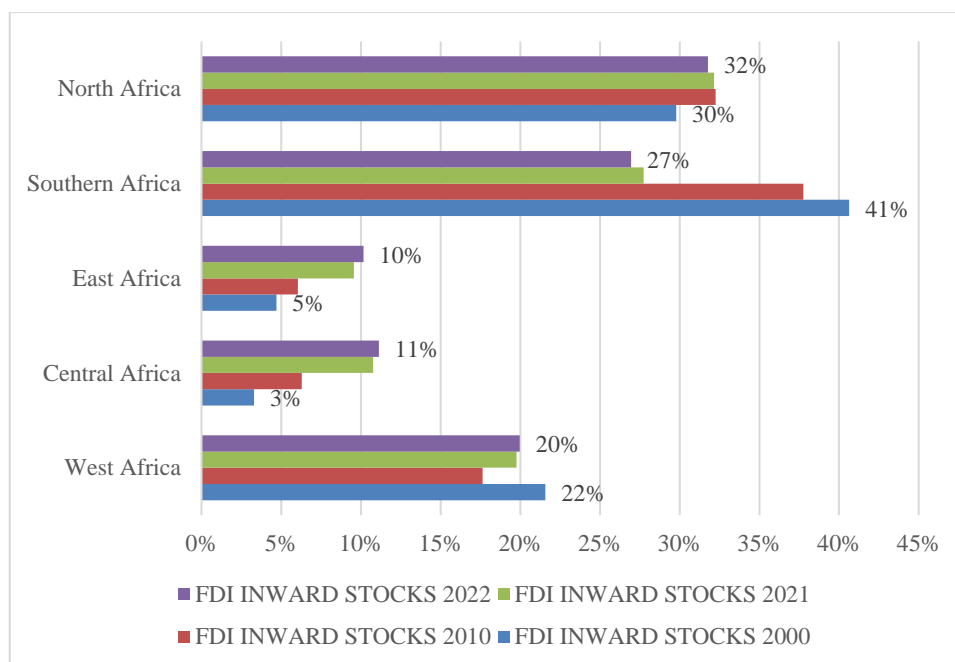Source: Author's calculations based on CPIA 2022 data

Figure 2 shows an increase in private investment in the Union. It has risen from 12.7% to 17.8% of GDP, representing annual growth of 1.6% over 21 years.
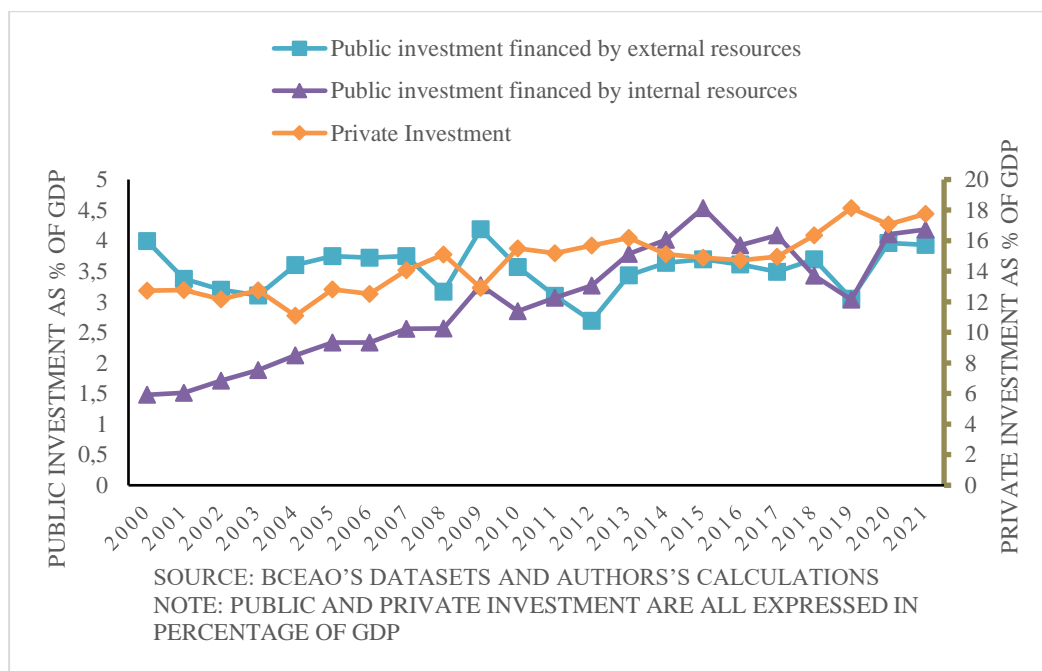
Figure 2: Private investment and public investment composition.

The level of private investment in WAEMU remains relatively low. In the absence of substantial national savings, foreign direct investment can have a significant impact on private investment. Unfortunately, FDI to West Africa is still relatively low compared to other African regions such as

North Africa and South Africa (Figure 3). West Africa attracted only 20% of inward FDI to Africa in 2022, down from 2000.

Source : Authors's calculations based on UNCTAD, FDI/MNE database (www.ctad.org/fdistatistics)

Figure 3: FDI inward as % of African FDI inward.

Faced with many shortcomings, WAEMU member countries governments have to increase public investment in order to boost private investment. This may involve building infrastructure, introducing an attractive investment code, training young people in entrepreneurship and setting up business incubators.

These government initiatives raise the issue of the effectiveness of public investment, better known as crowding-out. The literature review sheds light on the nature of the impact of public investment.

3. Literature review

The economic literature on the relationship between public and private investment takes two positions, reflecting the disagreement between neoclassicals and Keynesians. The neoclassical view, echoed by Barro (1989), Pradhan & al (1990), Haque & Montiel (1993), Voss (2002) and Narayan (2004), argues that public investment crowds out private investment. For the supporters of this view, public borrowing competes with credit granted to finance private investment. Public deficits lead to an increase in the real interest rate, which discourages private investors. Other arguments, such as the time taken to complete public investments or the time taken to pay domestic loans, can have a negative impact on private investment and lead to the disappearance of businesses.

The Keynesian view, from Enrenburg & Wohar (1995), Pereira (2001), Naqvi (2002) and Hyder (2001), is in favor of a crowding-in effect. Public investment reduces the production costs of private companies and facilitates their investment. Thus, the increase in the marginal efficiency of capital becomes the transmission channel for this crowding-in effect (Cavallo & Daude, 2011). Private-public complementarity abounds in enormous benefits (Pereira & De Frutos, 1999) which can be analyzed in terms of skills creation, technological innovation and productivity improvement.

Today, this debate is far from settled in both developed and developing countries. The study by Créel & al (2015) about four developed countries, namely France, the United States, the United Kingdom and Germany, shows divergent results. Crowding-in is observed in France while crowding-out prevails for United States. The results for United Kingdom and Germany are not conclusive. The authors used a VAR model and quarterly data from 1966 to 2014, except for Germany where the study period began in 1991.

The study by Shen & al (2018) analyses the predominance of the crowding-out effect over the crowding-in effect in low-income countries. Using a New Keynesian model for a small open economy, it highlights the crowding-out effect of public investment. However, it shows the positive impact of external financing in mitigating this effect, by increasing the resources available. The prevalence of crowding-out is explained by the weakening of the virtuous impact of public investment in these countries. The authors highlight the perverse effects of the imports needed for public investment, explaining the negative impact of the real exchange rate on demand, and consequently on private investment.

Studies in sub-Saharan Africa are new and they show mixed results. The study by Ouédraogo & al. (2019) of Sub-Saharan Africa 44 countries, covering the period from 1960 to 2015, highlights a general spillover effect. Only 21 of the 44 countries have a knock-on effect from public investment. There are significant differences in the impact of public investment on private investment. The larger the private sector, the greater the impact. They use a panel model that takes into account observable and unobservable heterogeneities, as well as individual interdependence, in order to guarantee robust and contingent results.

Previous studies on West Africa rarely take account of the compositional effect of public investment on private investment. Yet this distinction, unlike in developed countries, remains crucial (Akanni, 1998, Guillaumont & Guillaumont J, 2024) for a better understanding of the sources of crowding out/in of public investment. Our study complements previous studies by highlighting the impact on private investment of public investment financed from internal resources and that financed from external resources.

4. Methodological aspects

4.1 Methodology

To assess the effects of the composition of public investment on private investment in WAEMU countries (Benin, Burkina Faso, Côte d'Ivoire, Guinée Bissau, Mali, Niger, Sénégal, Togo), we use panel data analysis for the period 2000 to 2021. The equation to be estimate is:

$$PrINV_{it} = \beta_{0i} + \beta_1 PuINVfe_{it} + \beta_2 PuINVfi_{it} + \beta_3 Cex_{it} + \beta_4 FDI + \mu_{it} \qquad (1)$$

Where $\mu_{it} = \delta_i + \varphi_t + \varepsilon_{it}$

All the variables are taken in logarithm

$i = 1$ to 8 (cross sectional unit)

$t = 1$ to 22 (time series unit)

$PrINV_{it} =$ private investment as a percentage of GDP

$PuINVfe_{it} =$ public investment financed with external resources as a percentage of GDP

$PuINVfi_{it} =$ public investment financed with internal resources as a percentage of GDP

$Cex_{it} =$ Current expenses of the Government

$FDI_{it} =$ Foreign direct investment as a percentage of GDP

$\beta_{0i} =$ intercept may be common or individual

β_1 to $\beta_4 =$ coefficients of Independent variables

$\mu_{it} =$ error term for country i at time t

In order to carry out such assessments, we need to specify the appropriate model for our data, choosing between the Pooled OLS model and the individual effects models (Breusch-Pagan Lagrange multiplier test) on the basis of various tests. In the event of the individual effects model choice, we will then have to choose between the fixed-effects model and the random-effects model (Hausman specification test) (Pirotte, 2011). Once this choice has been made, we can now carry out tests to adjust the quality of the estimation.

This procedure has both econometric and important economic meanings. The choice of the Pooled OLS model means that there is no particularity in the private investment behavior of the different countries making up the WAEMU. The rejection of this model reflects the need to take into account the specific characteristics of each country in terms of private investment. Once the existence of the individual effect has been tested, it is important to determine whether this individual effect is fixed only when moving from one country to another (fixed-effects model) or whether this individual effect depends on the country and time, so that it ultimately becomes random (random-effects model).

4.2 Data and model selection

The data used come from WAEMU area's central bank called BCEAO for the variables $PrINV$, $PuINVfe$, $PuINVfi$ and Cex. Only the variable FDI was taken from WDI 2024.

All the variables were taken in their logarithmic form, except for that of which has negative values, as shown in Table 2 (FDI). Analysis of the panel data increases the number of observations to 176. The variables appear less volatile overall, in terms of standard deviation.

Table 1: Statistical description of variables

Variable	Obs	Mean	Std.Dev	Min	Max
$PrINV$	176	14.56665	4.668465	4.29	28.45
$PuINVfe$	176	28.39526	23.25333	1.85194	133.2069
$PuINVfi$	176	3.002314	2.036181	0.0182458	12.67376
CEx	176	11.69819	2.316208	6.707778	11.30511
FDI	176	2.154071	2.261951	-2.574579	13.4388
Source : Author's calculations					

Stationarity

The importance of studying stationarity in estimating the real relationship between variables cannot be over-emphasised. Our variables were subjected to stationarity analysis. We used the Im, Pesaran and Shin (IPS) test, with and without a trend. The particularity of our analysis was to distinguish between a variable following a TS (Trend-stationary) process, representing a deterministic non-stationarity, and a variable following a DS (Difference stationary) process, representing a random non-stationarity.

Several authors have shown the harmful consequences of confusing process types (Chan, & al. (1977), Nelson & Kang (1981) and Bourbonnais & Terraza, (2016)). Treating a TS process as a DS process leads to the introduction of an artificial disturbance when the difference filter is applied to make it stationary. Applying the ordinary least squares method to make a DS process stationary artificially accentuates the autocorrelation of the residuals (Bourbonnais & Terraza, 2016, p.158). Table 3 presents the results of the stationarity test. It shows that variables $PrINV$, Cex and FDI are trend stationary. The other variables are stationary with or without taking the trend into account.

Table 2:IPS unit test root for variables

Variables	Level		First difference		Stationarity	Integration order
	no trend	with trend	no trend	with trend		
$PrINV$	-0.5381 (0.2952)	-3.4617*** (0.0003)	-	-	TS	I(0)
$PUINVfe$	-3.2249*** (0.0003)	-5.4204*** (0.0000)	-	-	-	I(0)
$PUINVfi$	-2.1631** (0.0153)	-4.0907*** (0.0000)	-	-	-	I(0)
Cex	0.4461 (0.6722)	-4.2365*** (0.0000)	-	-	TS	I(0)
FDI	-1.2733 (0.1015)	-2.1036** (0.0177)	-	-	TS	I(0)
***Significance at 1%, ** Significance at 5%, * Significance at 10%						
NB : the numbers are the test statistics and those in parentheses are the Mackinnon p-value .						
Source : Author's calculations						

Model selection for panel data analysis

Table 4 provides the results of the Breusch-Pagan Lagrange multiplier test used to choose between the Pooled OLS model and the individual effect model. According to the results, the Pooled OLS model is rejected at 5% significance level. We therefore apply the individual effect model, where a choice must be made between the fixed effects model and the random effects model.

Table 3:Breusch-Pagan Lagrange multiplier test

	Variance	Standard deviation (Sd)
Lprinv	0.1174653	0.3427321
E	0.0394544	0.1986314
U	0 .0235209	0.1533653
Null Hypothese: Var(u) = 0, chibar2(01) = 77.08, Prob > chibar2 = 0.0000		
Source: Author's calculations		

Table 5 shows the results of the Hausman specification test. This involves testing the difference between the coefficients of the fixed-effects model and those of the random-effects model. If this difference is not systematic, then we adopt the random effects model. Otherwise, the fixed effects model best fits our data. From Hausman specification test results, the selected model for this study is the fixed effects model at 10% significance level. In our case, we cannot reject the adoption of the random effects model at 5%. However, we could adopt the fixed-effects model with a threshold of 10%.

Table 4:Hausman specification test

	Coefficients			
	(b)	**(B)**	**(b-B)**	**sqrt(diag(V_b-V_B))**
	Fixed	**Random**	**Difference**	**S.E**
Lpuinvfe	-0.27906	-0.2570544	-0.0220056	0.0096785
Lpuinvfi	0.0940474	0.0627305	0.0313169	0.0134535
Fdi	0.0430356	0.045765	-0.0027294	0.0014571
Lcex	-0.1352985	-0.056538	-0.0787605	0.051508
Years	0.0123362	0.0127147	-0.0003785	0.0006364
b = consistent under Ho and Ha;				
B = inconsistent under Ha, efficient under Ho;				
Ho: difference in coefficients not systematic				
chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)				
= 8.05				
Prob>chi2 = 0.0896				
Source: Author's calculations				

Model robustness tests

Several tests are carried out to identify any inter-individual dependence to avoid any distortions in coefficient estimates. The Frees and Friedman tests conclude that there is inter-individual dependence (Table 6). This result is confirmed by the Pesaran (2004)[2] test in Table 7. Spatial effects and common economic transmission channels may explain such dependence. In this respect, we can note that most of the countries border each other, in addition to belonging to a monetary union, implying a common monetary policy.

We performed the autocorrelation test developed by Wooldridge (2002) for panel data. The results attest to the presence of autocorrelation (Table 8).

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Table 5:Testing cross sectional independence

Correlation matrix of residuals								
	c1	c2	c3	c4	c5	c6	c7	c8
r1	1.0000							
r2	-0.1621	1.0000						
r3	0.3941	0.0941	1.0000					
r4	0.1020	-0.0002	-0.5472	1.0000				
r5	-0.1527	-0.3970	-0.4731	0.3483	1.0000			
r6	-0.2451	0.4852	0.2973	-0.0759	-0.4267	1.0000		
r7	0.0063	0.3690	0.3276	-0.4252	-0.3930	0.2842	1.0000	
r8	0.1880	-0.3535	0.0407	0.1975	0.2321	-0.4334	-0.0795	1.0000
Test results of cross sectional independence								
		Statistic		Critical value		P-value		
Frees test		0,485		0,1537		-		
Friedman test		14,792		-		0,0388		
Null hypothesis: cross sectional independence Source: Author's calculations								

Table 6:Pesaran (2004) testing cross sectional independence

Variables	CD-test
Lprinv	2.69*** (0.007)
Lpuinvfe	0.33** (0.013)
Lpuinvfi	10.28*** (0.000)
lcex	14.20*** (0.000)
Fdi	2.04** (0.042)
***, ** ,* indicate that statistics are significant at the 1%, 5% and 10% level of significance, respectively. Null hypothesis: cross-section independence Source: Author's calculations	

Table 7:Wooldridge test for error autocorrelation in panel data

	Coef.	SE	Statistic	P-value
D1.lpuinvfe	-0.2482596***	0.0599399	-4.14	0.004
D1.lpuinvfi	0.0189683	0.0278016	0.68	0.517
D1 ;lcex	-0.1448367	0.1594743	-0.91	0.394
D1.fdi	0.0204269**	0.0078366	2.61	0.035
D1.years	0.0145736*	0.0066221	2.20	0.064
***, ** ,* indicate that statistics are significant at the 1%, 5% and 10% level of significance, respectively				
Wooldridge test	$F_{(1,7)}$-Statistic		P-value	
H0: no first order autocorrelation	30.639		0.0009	
Source: Author's calculations				

5. Estimation results

The various tests carried out enabled us to take into account the autocorrelation of errors and individual interdependence. Our model is estimated using the procedure of Driscoll and Kraay (1998)[3] in order to obtain robust coefficients. The results are shown in Table 9. Model 2 is the one selected by the Hausman specification test. It is a random effects model which comes in two variants: the first estimated without trend (1) and the second estimated with trend (2).

WAEMU member countries are generally characterized by a significant crowding-out effect of their public investment. The composition effect provides an important clarification. When public investment is financed by external resources, it has a negative impact on private investment: there is a crowding-out effect. If public investment is financed from internal resources, the crowding-in effect prevails. The different variants of the model (1 and 2) lead to the same result shown in table 9.

Table 8:Baseline results

	Model 1		Model 2	
	(1)	(2)	(1)	(2)
	Coef. (P-value)	Coef. (P-value)	Coef. (P-value)	Coef. (P-value)
lPuINVfe	-0.2933327*** (0.000)	-0.27906*** (0.000)	-0.2687077*** (0.000)	-0.2570544*** (0.000)
lPuINVfi	0.1115184*** (0.000)	0.0940474*** (0.000)	0.0783709*** (0.000)	0.0627305** (0.013)
lFDI	0.0485941*** (0.000)	0.0430356*** (0.000)	0.0520302*** (0.000)	0.045765*** (0.000)
lCex	0.1700495 (0.127)	-0.1352985 (0.232)	0.2543451*** (0.003)	-0.056538 (0.698)
cste	2.918879*** (0.000)	-21.15712*** (0.007)	2.653954*** (0.000)	-22.16135** (0.023)
Trend	-	0.0123362** (0.018)	-	0.0127147** (0.011)
Number of Obs	176	176	176	176
F-Statistic	40.84	51.79	-	-
Wald Chi2	-	-	143.87	325.69
P-value	0.000	0.000	0.0000	0.0000
R^2	0.5706	0.5998	0.4075	0.4443

***, ** ,* indicate that statistics are significant at the 1%, 5% and 10% level of significance, respectively
Model 1: fixed effect, Model 2 : Random effect
Source: Author's calculations

This result corroborates the questions raised by Ferry and Raffinot (2016)[4] about the dynamics and relaxation of debt conditions over the last ten years in countries that have benefited from the HIPC and MDRI programs. The conditions imposed to access debt reduction have led WAEMU countries to

improve their public finance management. Today, the effectiveness of public investment, financed by external debt, on private investment seems to be called into question by this result.

According to our results, private external financing, through foreign direct investment flows, seems to have a positive impact on private investment. If we doubled foreign direct investment in the WAEMU zone, we could expect an increase of 4 to 5% in private investment (Table 9, Model 1 and 2, line 6). The current public expenditure variable does not appear to be significant overall (Table 9). Multicollinearity analysis enabled us to detect a significant correlation between public investment financed from internal resources and current public expenditure (see appendix). This test led us to consider other variants of model 1 (variants 3, 4, 5 and 6). The results of these trend/no trend estimates and alternative omission of variables $lCex$ and $lPuINVfi$ are summarized in table 10.

Table 9: Robustness check using alternatives specifications for model 1

	Model 1 : fixed effect			
	(3)	**(4)**	**(5)**	**(6)**
	Coef. (P-value)	**Coef. (P-value)**	**Coef. (P-value)**	**Coef. (P-value)**
$lPuINVfe$	-0.2781598*** (0.000)	-0.2533055 (0.000)	-0.2647044*** (0.000)	-0.2993622*** (0.000)
$lPuINVfi$	0.0839081*** (0.001)	-	-	0.1363848*** (0.000)
FDI	0.0439559*** (0.000)	0.0442652*** (0.000)	0.0512174*** (0.000)	0.0484834*** (0.000)
$lCex$	-	0.0525961*** (0.000)	0.4613653*** (0.000)	-
$cste$	-17.63407*** (0.008)	-25.71422*** (0.000)	2.192911*** (0.000)	3.335122*** (0.000)
$trend$	0.0104208*** (0.002)	0.0143671*** (0.000)	-	-
Number of Obs	176	176	176	176
F-Statistic	51.79	67.25	70.30	43.04
P-value	0.000	0.000	0.000	0.000
R^2	0.5998	0.5739	0.5978	0.5657

***, ** ,* indicate that statistics are significant at the 1%, 5% and 10% level of significance, respectively
Model 1: fixed effect

The previous results are still valid, this time with the possibility of making an adjusted interpretation of current public spending. Our results show a positive and significant impact of current public spending on private investment (0.461). This result can be explained by the development of public-private partnerships, where the private sector is now frequently called upon to manage public services. This is the case, for example, in the management of electricity and water distribution.

Specific analysis by country reveals disparities in the behavior of private investment in the WAEMU (Table 11). The crowding out effect of externally financed public investment is significantly present in

all member countries. The exception is Côte d'Ivoire, where crowding in is significant for public investment financed by internal resources and insignificant when financed by external resources.

Other interesting results can be highlighted. Foreign direct investment was decisive for private investment in countries such as Mali (0.03), Senegal (0.063) and Togo (0.024).

Table 10: Country-specific results

Country	Independent variables				Statistics	
	lPuINVfe	*lPuINVfi*	*FDI*	*cste*	**F(3, 21)**	R^2
Benin	-0.4346897*** (0.000)	0.0816074 (0.675)	0.0452104 (0.307)	3.69817*** (0.000)	10.78*** (0.002)	0.4481
Burkina Faso	-0.4811044*** (0.000)	0.1117516 (0.393)	-0.0076821 (0.731)	3.916418*** (0.000)	27.22*** (0.000)	0.8897
Côte d'Ivoire	0.0917655 (0.172)	0.37228*** (0.000)	0.0571055 (0.662)	2.052534*** (0.000)	20.24*** (0.000)	0.6658
Guinée Bissau	-0.5463616*** (0.000)	0.101586*** (0.002)	0.0676961 (0.144)	4.67487*** (0.000)	18.19*** (0.0000)	0.7457
Mali	-0.1358784** (0.011)	0.1153434 (0.315)	0.0250631** (0.035)	2.78322*** (0.000)	3.10** (0.0489)	0.4475
Niger	-0.7305191*** (0.000)	0.328367*** (0.000)	-0.0267572 (0.152)	4.99141*** (0.000)	64.10*** (0.0000)	0.9126
Sénégal	-0.5909823*** (0.004)	0.2897018 (0.126)	0.062918*** (0.004)	3.9773*** (0.000)	23.05*** (0.0000)	0.7478
Togo	-0.1956881*** (0.000)	-0.0086318 (0.776)	0.024016*** (0.000)	3.2796*** (0.000)	40.68*** (0.0000)	0.7686
UEMOA	-0.2993622*** (0.000)	0.136385*** (0.000)	0.04848*** (0.000)	3.3351*** (0.000)	43.04*** (0.000)	0.5657

***, ** ,* indicate that statistics are significant at the 1%, 5% and 10% level of significance, respectively
Ben=Benin, BF=Burkina Faso, CI= Côte d'Ivoire, GB=Guinée Bissau, Ma=Mali, Ni=Niger, Sen= Sénégal, To= Togo

6. Conclusion

The aim of this paper is to examine the compositional effect of public investment on private investment in the WAEMU area. This study shows the extent to which the effect of externally financed public investment may differ from that of internally financed public investment. Using the panel data model, our results highlight a crowding-out effect for public investment financed from external resources and a crowding-in effect for public investment financed from internal resources. The different variants of the model estimated all converge towards the same conclusion. The model results country by country indicate the crowding-out effect of public investment financed from external resources, except for Côte d'Ivoire. External financing such as foreign direct investment

appears to be a determining factor in explaining private investment in the WAEMU zone, and in particular in countries such as Mali, Senegal and Togo.

In order to boost private investment in this area, it is necessary to give priority to foreign direct investment or to encourage the application of the golden rule of public finance stating that the public deficit must be used solely to finance public investment.

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Endnotes

[1] The Monterrey Consensus is an agreement reached by over 60 countries at the International Conference on Financing for Development, held in Monterrey, Mexico, from 18 to 22 March 2002. This agreement concerns the means by which underdeveloped countries have agreed with rich countries, in view of their precarious situation, to finance their development other than through debt. Measures to attract private investment, such as FDI, are strongly encouraged.

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