The effect of Systematic Risk Determinants on Domestic Investment in West African Economic Monetary Union (WAEMU)

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Abstract
Using panel data for eight West African Economic Monetary Union (WEAMU) nations spanning 12 years from 2005 to 2017. We investigate the impact of systematic risk variables on domestic investment from 2005 to 2017. The empirical data reveal that the currency rate and inflation have a considerable influence on domestic investment in these WEAMU nations. The exchange rate has a positive coefficient, which implies that other factors remain constant; a one-unit increase in the exchange rate increases domestic investment in WEAMU by US$3.79 million; and inflation has a negative coefficient, which implies that other factors remain constant; a one-percentage-point increase in the inflation rate decreases domestic investment in WEAMU by 62.56 percent. Political unrest and interest rates are insignificant. This requires the governments of the individual nations to stabilize inflation and currency rates in order to reduce the systemic risks that the financial industry faces.

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1. INTRODUCTION
1.1Background to the Study
The WAEMU economy is endowed with both people and material resources. The motivation to explore these potentials through investment might be attributed to a low human development index and poor political strategy. WAEMU's economy, like many others throughout the globe, aims for macroeconomic goals such as full employment, price stability, optimum economic growth, and an equilibrium balance of payments through policy change.

The role of the financial system in achieving these macroeconomic aims cannot be overstated. McKinnon and Shaw (1973) emphasized the significance of financial institutions in economic growth in their seminar work. They demonstrated that the development of the financial sector might serve as a stimulus for growth. According to McKinnon's (1973) model, investment cannot be created until adequate savings are mobilized in the form of bank deposit liabilities. Feldstein and Horioka (1980) clearly shown in the case of industrialized nations a substantial link between domestic saving and national investment. In the case of emerging nations, where low domestic savings are a source of worry for investment and growth, the link should be much closer. Indeed, the less developed globe, notably African nations, has historically done badly in terms of saving; the average domestic savings to GDP ratio in 2013 was 16.6 percent, compared to 46.4 percent in East Asia and the Pacific. However, given the limits to access the capital markets for African nations in an environment of imperfect capital mobility, domestic savings and lending to the private sector remain their most reliable sources of funding for domestic investment.

1.2 Problem statement
The nature and stability of domestic investment in advanced market economies have sparked several discussions in the economics literature. While the economic growth strategy of certain nations, such as China, is primarily reliant on domestic investment, this is not the case all emerging countries. The majority of WAEMU nations base their investment policies primarily on foreign direct investment (FDI).

It is obvious that FDI has a good influence on economic growth, but growth brought about by domestic investment in the context of financial development may be the key to WAEMU economic success and that of other emerging nations. Many studies have found a substantial positive association between economic growth and domestic investment and financial development. Bencivenga and Smith (1991) demonstrated that the degree and efficiency of financial intermediation in the economy is a critical requirement for the success of the links between domestic savings, loans to the private sector, and domestic investment. The WAEMU economy, with the primary goal of improving the financial system and increasing monetary union area investment, has historically done badly in terms of saving. Rising inflation and negative real interest rates hampered the effective mobilization and deployment of financial resources for domestic investment, discouraging saving and, as a result, the allocation of an investment fund. As a result, it is necessary to evaluate the systematic risk effect of this monetary union on domestic investment. Our research questions are: Does systematic risk diminish domestic investment in WAEMU countries? The following questions will be addressed in this paper: Is domestic investment in WAEMU hampered by financial constraints? In other words, can systematic risk have a detrimental impact on WAEMU domestic investment? Given the continuation of poverty in the WAEMU zone, as well as the lower rate of domestic investment, this inquiry is especially pertinent. It is critical to understand the causes of systematic risk since it gives information about the hazards connected with an investment and insights into the risk-return relationship in WAEMU nations. Furthermore, we propose to

bridge a theoretical and empirical gap in the literature by conducting a complete theoretically grounded examination between the financial system and domestic investment. Thus, the goal of this research is to look at the impact of systematic risk on domestic investment. Improving investment returns requires a better knowledge of systemic risk in domestic investment.

The research findings should be of great interest to policymakers, governments, NGOs, and assistance organizations. This investigation is divided into five chapters. The first chapter serves as an overview of the entire project. The definition and literature review are illustrated in the second chapter. The Methodology and Data Chapter is the third chapter. The fourth chapter discusses the findings and their interpretation. Finally, the final chapter contains the research's findings and suggestions.

2. LITERATURE REVIEW
2.1 Conceptual framework
Return maximization remains the primary goal of all businesses and investors. However, systemic risk has always been the primary worry of both scholars and corporations in this area. Because the emphasis in this research will be on the risk effect on investment, the concepts that are well-known in addressing this connection must be introduced before investigating the link between financial systematic risk and domestic investment in WEAMU in depth. WAEMU systemic risk and domestic investment are two of these notions. WAEMU, or the West African Monetary Union, is characterised by the recognition of a common monetary unit, the African Financial Community Franc, or CFA Franc, issued by the BCEAO. WAMU's present membership includes Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo. Domestic investment is an investment in one's own country's enterprises and goods rather than in those of other countries. The risk inherent in the entire market or market sector is referred to as systemic risk. Systematic hazards are also known as market risks. This sort of risk is both unpredictable and hard to entirely prevent because it is caused by macroeconomic factors such as inflation, recession, interest rates, political instability, exchange rate, conflict, and confidence.

2.2 Theoretical framework
Various theories have been examined, with arguments presented that influenced this research. Inflation, recession, interest rates, political instability, currency rate, conflict, and confidence are all considered investment risks. In general, interest rate volatility is caused by commercial banks' poor financial performance. Domestic investors, like international investors, will remain away if interest rates do not stabilize, and resources will be moved elsewhere. Econometric evidence of investment behavior shows that, in addition to traditional determinants such as historical economic activity growth, real interest rates, and private sector credit, uncertainty and macroeconomic instability have a considerable and negative impact on private investment (Sayedi, 2013).

Sharing the same thought according to Schumpeter economic cycle theory, recessions and periods of economic growth are an efficient response to exogenous changes in the real economic environment, and that declines in profitability result in non-performing loans, asset price declines lower borrowers' financial capacity, and collateral value declines as a secondary means of servicing debts. The interest rate charged as a cost for keeping or lending money. Banks offer interest on savings in order to entice depositors, and they also get interest on money lent from their accounts. When interest rates are low, businesses and people tend to request more loans. As a result, investment has increased. In a fractional reserve banking system, an increase in bank loans increases the money supply. According to the quantity theory

of money, a rise in the money supply leads to an increase in inflation. As a result, low interest rates tend to increase inflation while high interest rates tend to decrease inflation.

Inflation is a hazard to investors since it decreases real savings and investment returns dramatically. Inflation jeopardizes the investor's goal of increasing their long-term purchasing power. According to conventional theory, businesses modify their investment spending in response to changes in the cost of capital. The reduced interest rate will encourage more investment. Although proving the direction of the link between interest rates and profitability is challenging, research demonstrate that interest rate volatility impacts commercial banks' financial performance, with studies yielding contradictory results (Gilchris, 2013). A stable environment is the best location to invest, even if the danger of instability might boost the investment return. As a result, it is typical to discover that there is a negative association between investment and political instability. Barro's (1997) the classic research of growth drivers examined the impact of markers of political instability. He cited the average number of revolutions (or coups) and political killings as indicators of violence: Barro believes that between 1960 and 1985, these two factors were adversely and substantially associated to the growth rate and the proportion of private investment in GDP. The evidence on the impact of exchange rate uncertainty on domestic investments is still equivocal. Many academics believe that exchange rate volatility might present a beneficial opportunity for risk-averse investors. In some cases, the shift in the currency rate may be advantageous to the domestic investor. However, some researchers discovered that exchange rates have a detrimental impact on domestic investment due to the low competitiveness of local firms in poor nations. The influence of real exchange rates on domestic investment is determined by trade openness and finance sector growth.

2.3 Hypothesis development
Despite the scarcity of literature on investment risk in the WEAMU zone, various research have been conducted in this area. Khan and Senhadji (2000, 2001) explored the inflation-growth relationship separately for emerging and developed nations, using Hansen's threshold panel data estimate approach (1996, 1999, 2000). They utilized a panel data collection of 140 nations from 1960 to 1998.

Their findings clearly showed that there is a threshold level over which inflation has a detrimental influence on economic growth. The threshold levels for industrial countries were 1-3 percent and 11-12 percent for underdeveloped countries, respectively. For the estimating technique and varied parameters, the negative and substantial link between growth and inflation over the threshold level was fairly robust. According to the findings, the threshold level is lower in developed countries than in underdeveloped countries. In a panel data analysis, Serven (2002) investigates the link between exchange rate uncertainty and private investment for 61 developing nations. He discovers that actual exchange rate uncertainty has a considerable and detrimental influence on private investment. While Lafrance and Tessier (2001) find in their investigations that currency rates and their volatility have little influence on Canadian investment activity. According to Jong-a-Pin (2009), higher levels of political instability correspond to lower levels of economic growth. Political instability, according to Asien and Veiga (2006, 2011), raises inflation and cuts growth rates considerably. Thus, we developed the following hypothesis.

H_0: There is no significant effect of systematic risk determinant on domestic investment in WAEMU countries.

3. METHODOLOGY
3.1 Data and model specification
The study employs panel data from eight West African Economic and Monetary Union (WEAMU) nations from 2005 to 2017. Inflation, interest rate, currency rate, political stability index, and capital creation statistics are gathered from secondary sources, namely World Bank Indicators. The World Bank Indicators were used to get all other control variables, such as GDP per capita and savings. As a result, the economic model may be defined as follows:

$$gcf_{it} = \alpha_0 + \alpha_1 exrate_{it} + \alpha_2 inflation_{it} + \alpha_3 inrate_{it} + \alpha_4 pstability_{it} + \alpha_5 savings_{it} + \alpha_6 lngdp_{it} + \varepsilon_{it} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . \ldots (1)$$

Where **gcf** is the gross capital formation a proxy for domestic investment, **exrate** is the exchange rate, **inflation** represents the annual inflation growth rate, **inrate** is the interest rate, **pstability** is the political stability index, **savings** means the national domestic savings and **gdp** is the Gross Domestic Product per capita a proxy for economic growth, **i** and **t** represent countries and time (years) respectively. ε_{it} represents an error term that consists of all other factors that affect gross capital formation but are not included in the model. Some of the variables are in logarithmic form to make sure that they are normally distributed.
The fixed effect model is used to account for the country's distinctive features, while OLS does not. As a result, the model is defined as follows:

$$gcf_{it} = \alpha_0 + \alpha_1 exrate_{it} + \alpha_2 inflation_{it} + \alpha_3 inrate_{it} + \alpha_4 pstability_{it} + \alpha_5 savings_{it} + \alpha_6 lngdp_{it} + \mu_i + \varepsilon_{it}. \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . \ldots (2)$$

Where, μ_i represents the unobserved time-invariant effects of a specific country.

3.2 Estimation results
The summary statistics for all variables utilized in this empirical investigation are shown in Table 1. Beginning with gross capital formation in current US dollars, the overall average is US$2221.5 million, with a low of US$59 million and a maximum of US$27.3 million. The overall average interest rate in percentage is 2.5percent, with a minimum value of -7.6percent and a high value of 9.01percent. The overall average exchange rate in CFA is 531 CFA, with a low value of 446 CFA and a high value of 593 CFA. The total average rate of inflation is 2.3 percent, with a low value of -2.2 percent and a maximum value of 11.3 percent.

Table 1: Summary statistics of the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
gfc	104	2221.541	1628.152	59.12906	6971.331
inrate	104	2.52752	3.379441	-7.695814	9.019544
exrate	104	513.9365	46.15275	446	593.0082
inflation	104	2.314312	2.785141	-2.248021	11.30511
pstability	104	-.6734951	.7681634	-2.734627	.6127188
gdp	104	764.0344	338.4805	249.9279	1559.387
savings	103	1479.838	1831.45	-80.93999	8703.271

Source: AFBD;WDI Author Computation using STATA 15.0

Starting with the first column of Table 2, the results show that the exchange rate has a significant impact on WEAMU countries' domestic investment, and the positive coefficient implies that, with all other factors held constant, a one-unit increase in the exchange rate increases WEAMU domestic investment by US$3.79 million. Moving on to the second column, the results show that inflation has a significant impact on WEAMU countries' domestic investment, with the negative coefficient implying that other factors remaining constant, a one

percent increase in the inflation rate reduces WEAMU domestic investment by 62.56 percent. This conclusion is consistent with the study's preceding scenario and premise. Moving on to the third column, the data demonstrate that interest rates have no substantial influence on WEAMU nations' domestic investment. This is likewise true for the fourth column's political stability index. The diagnostic test shows that the p-value for the heteroskedasticity test in the first column is 0.06, which is greater than 5%, therefore I fail to reject the null hypothesis of no heteroskedasticity. To cope with the heteroskedasticity problem in the other columns, I employed the robust standard error. The vif test for Multicollinearity is significantly below 10, indicating that there is no concern with Multicollinearity.

Table 2: OLS Regression between systematic risks components and domestic investment

	(1)	(2)	(3)	(4)
VARIABLES	gfc	gfc	gfc	gfc
exrate	3.791*			
	(2.102)			
inflation		-62.56*		
		(37.24)		
inrate			38.61	
			(27.57)	
pstability				122.0
				(131.7)
savings	0.497***	0.506***	0.508***	0.538***
	(0.0660)	(0.0667)	(0.0656)	(0.0636)
lngdp	1,182***	1,119***	1,169***	1,098***
	(272.3)	(294.0)	(288.5)	(289.1)
Constant	-8,189***	-5,692***	-6,269***	-5,666***
	(2,098)	(1,871)	(1,831)	(1,825)
Diagnostic Tests				
Heteroskedasticity	0.0655			
vif	1.40	1.39	1.39	1.39
Observations	103	103	103	103
R-squared	0.658	0.657	0.653	0.650

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source : AFBD;WDI Author Computation using STATA 15.0

Starting with the first column in Table 3, the results show that the exchange rate has a significant impact on domestic investment in WEAMU countries, with the positive coefficient implying that, with all other factors held constant, a one-unit increase in the exchange rate increases domestic investment in WEAMU by US$5.407 million. Inflation also has a major influence on WEAMU countries' domestic investment, and the negative coefficient implies that a one percent increase in the inflation rate reduces WEAMU domestic investment by 82.67 percent. This conclusion is consistent with the study's preceding scenario and premise. The first column is unaffected by interest rates or the political stability index. Moving on to the second column, the results show that the exchange rate continues to have a significant impact on domestic investment in WEAMU countries, with the positive coefficient implying that, with all other variables held constant, a one-unit increase in the exchange rate increases domestic investment in WEAMU by US$1.974 million. The interest rate has a considerable influence on WEAMU nations' domestic investment, and the positive coefficient implies that, assuming all other factors stay constant, a one percent rise in interest rate raises WEAMU domestic investment by US$31.89 million. The second column is unaffected by the inflation rate or the

political stability index. The diagnostic test reveals that the fixed effect is chosen above the random effect in both the first and second columns since the p-value of the Hausman test is significant. The autocorrelation test results in a p-value of 0.051 in the second column, indicating that I fail to reject the null hypothesis of no autocorrelation.

Table 3: Fixed Effect estimation between systematic risks components and domestic investment

	(1)	(2)
VARIABLES	gfc	gfc
exrate	5.407**	1.974*
	(2.224)	(1.128)
inrate	-29.88	31.89*
	(34.14)	(18.24)
pstability	46.49	-54.25
	(183.1)	(108.5)
inflation	-82.67**	15.06
	(40.40)	(20.69)
savings		0.773***
		(0.0802)
lngdp		2,091***
		(438.6)
Constant	-259.2	-13,765***
	(1,157)	(2,983)
Diagnostic Tests		
Hausman test	0.0205	0.0008
Autocorrelation		0.0516
Observations	104	103
R-squared	0.140	0.813
Number of id	8	8

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source : AFBD;WDI Author Computation using STATA 15.0

4. CONCLUSION

The purpose of this research is to investigate the impact of systematic risk on domestic investment since a better knowledge of systematic risk on domestic investment is critical for improving investment returns. And, of the four components of systematic risks described in this research, currency rate and inflation have a considerable influence on domestic investments in these WEAMU nations. However, the WAEMU nations' exchange rates are set and inflation is managed, which might explain the sluggish growth of domestic investment. This argument has the potential to rekindle the discussion over West African countries' common monetary policy, namely the implications of the fixed regime and the control of the rate of inflation on the economy. This requires the governments of the individual nations to alter their monetary policies in order to better manage the systematic risks component; by questioning whether WAEMU is an optimal currency region. Many studies suggest that floating exchange rates may improve exports through the industrial sector while also increasing domestic investment. Although West Africa is enjoying significant economic growth, which is mostly driven by FDI, policymakers and the government of the WAEMU zone must address the issue of local investment, which is a critical aspect for long-term development.
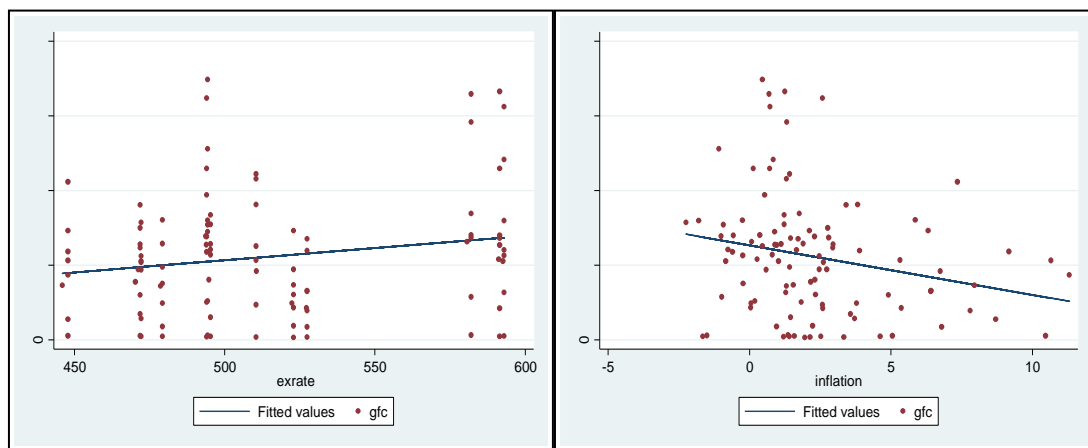
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APPENDIX

Figure 1: Regression line showing the relationship between exchange rate (first diagram), inflation rate (second diagram) and domestic investment

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