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Impact of Remittances and Foreign Direct Investment on Trade Balance: Panel Data Evidence from West African Countries

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Abstract: Foreign direct investment (FDI) and remittance inflows have been increasing in developing countries over the past two decades, becoming the two largest sources of external finance and foreign exchange earnings. Those inflows have been proved to play an important role in improving various aspects of development. However, there is a few evidence about their impact on the trade balance of the recipient countries. This study empirically examines the issue for a sample of seven West African countries over the period 1975-2017. To that end, it extends the traditional trade balance function to include FDI and remittances as control variables, and employs an estimation method that deals with the issues of cross-sectional dependency and heterogeneity. The results show that trade balance is positively related to remittances only in Burkina Faso, and negatively in Mali and Senegal. The effect of FDI on trade balance was found to be positive only in Mali, and negative in Burkina Faso and Cote d'Ivoire. Furthermore, the results show evidence supporting the validity of the Marshall-Lerner condition for Cote d'Ivoire.

Keywords: foreign direct investment, trade balance, remittances, income, West Africa.

JEL Classification: C23, F10, F21, F22, O55

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1. Introduction

Foreign Direct Investment (FDI) and remittance inflows to developing countries have increased significantly over the past twenty years, becoming the two largest sources of external finance and foreign exchange earnings. These international capital inflows help fill the gap between saving and investment, and have been proved to play an important role in improving various aspects of development including poverty, inequality, education, health, economic growth and environment (Adams and Page, 2003; Edwards and Ureta, 2003; World Bank, 2006; Keho, 2017; Gupto *et al*., 2009; Hoang *et al*., 2010; Cooray, 2012; Nyamongo *et al*. 2012; Adams and Cuecuecha, 2013; Azam *et al*., 2013; Nsiah and Fayissa, 2013; Gui-Diby, 2014; Imai *et al.* 2014; Salas, 2014; Li and Zhou, 2015; Shahzad *et al*. 2015; Nwaogu and Ryan, 2015; Akobeng, 2016; Meyer and Shera 2017; Csanadi, 2018; Eggoh *et al*., 2019; Muhammad Al

and Kameyama, 2019). Accordingly, governments of developing countries are implementing various incentives to attract more FDI and remittances. On the other hand, a strand of the economic literature suggests that FDI and remittances may have negative effects on some macroeconomic variables among which the trade balance. For instance, remittances can increase import demand for private consumption, which may deteriorate the trade balance. Most empirical studies have examined the individual impact of FDI and remittances on the trade balance of recipient countries. Accordingly, few attention has been devoted to the impact of both remittances and FDI on trade balance.

Studying the combined impact of remittances and FDI on trade balance is especially an important topic for developing economies with poorly developed capital markets where external trade flows drive balance of payments accounts. The present study makes an empirical contribution to examine the issue for seven member countries of the West African Economic and Monetary Union (WAEMU) over the period from 1975 to 2017. It contributes to the empirical literature in many respects. Firstly, there is few studies for African countries examining the joint effect of remittances and FDI on the dynamics of their trade balance. Most existing studies examined the effect of remittances and FDI on trade balance separately. The novelty of this study is that we compare the significance of FDI and remittances as determinants of trade balance in WAEMU countries. Secondly, three countries of our panel are landlocked (Burkina Faso, Mali, and Niger). This structural geographical constraint creates additional costs in trade with the rest of the world, making them less competitive. Attracting FDI inflows to those countries is therefore important to acquire technology and thus increase their productivity. This increase in productivity adds value to their exports making them more competitive. Thirdly, existing panel data studies rely on standard panel estimation methods that assume slope homogeneity and cross-sectional independence across countries. The study uses a methodology that, to the best of our knowledge, has not yet been used before for the effects of FDI and remittances on trade balance in African countries. More precisely, we employ the Common Correlated Effect Mean Group (CCEMG) estimator which controls both for panel heterogeneity and cross-sectional dependency.

The remainder of this study is structured as follows. Section 2 presents brief review of the empirical literature. Section 3 outlines the empirical model, data and the econometric methodology. The empirical results are presented and discussed in Section 4. Section 5 concludes the study and provides some key policy recommendations.

2. Literature Review

Remittances is the part of a migrant's income that is sent back to his home country. In case of natural disasters, immigrants send remittances to home to

serve the country. These remittances can be spent on consumption, increase imports and investment in the economy. On the other hand, according to IMF, foreign direct investment (FDI) is an international investment in which a resident entity in one economy (the direct investor) acquires a lasting interest in another economy (the direct investment enterprise). A lasting interest is implied if at least 10 percent of the ordinary shares or voting power is acquired by the investor.

The literature on the relationship between FDI, remittances and trade can be divided into two groups. The first group examines the effect of remittances on trade while the second group focuses on the effect of FDI on trade balance. Most of these studies focused on the impact of FDI and remittances on either imports or exports. Accordingly, there is little detailed empirical study of the net impact of FDI and remittances on trade balance of the recipient countries. For instance, Dahal (2004) and Bhatta (2013) find that remittance inflows cause imports and trade deficit to rise in Nepal. Guna (2013) applies cointegration techniques to monthly data covering the period 2001–2011 for Nepal, and finds that remittances exert a significant positive impact on imported goods and services. Hien (2017) finds that remittance inflows have positively influenced on the trade balance of Malaysia. Furthermore, he shows that the real exchange rate had a positive impact on the balance of trade. The evidence obtained by Soana and Olta (2013) show that GDP and remittances exert positive impacts on imports in Albania over the period 1999–2011. Dewan *et al.* (2013) examine the case of Bangladesh by applying the Johansen cointegration approach to monthly data over the period 2005–2011. The findings show that remittances have an insignificant impact on imported goods. Evidence that remittances have a positive and significant impact on imports has been found by Khair and Nazakat (2005) and Munir *et al.* (2007) for Pakistan. Conversely, Tung (2018) investigates the effect of remittance inflows on trade balance in 17 countries in the Asia-Pacific region. The results show that remittances have a negative effect on the trade balance. Furthermore, GDP per capita growth negatively affected trade balance while the impact of exchange rate is positive. Abdel-Halim and Bino (2019) find that remittance inflows in Jordan increase imports and thus worsen trade deficit.

In Sub-Sahara Africa region, the evidence regarding the nexus between remittances, FDI, and trade balance is also mixed. Hailu (2010) determines the relationship between FDI and trade balance of 16 African countries for the period from 1980 to 2007. He reports that FDI inflows have positive effects on both exports and imports. The overall net effect of FDI on trade balance was inferred to be positive. Okodua and Olayiwola (2013) find that remittances have a negative but statistically insignificant impact on trade balance in a panel of 30 countries. Therefore, remittance flows may not be helpful in improving the trade balance in Sub-Saharan African countries. Olubiyi (2014) also finds a negative effect of remittances on the trade balance of Nigeria. Farzanegan

and Hassan (2016) reach the same conclusion that remittances negatively affect trade balance in eleven countries of the Middle Eastern and North Africa (MENA) region, by increasing imported-led consumption expenditures.

3. Model, Data and Methodology

3.1. Empirical Model

To examine the impact of remittances and foreign direct investment on trade balance, we specify the following log-linear model:

$$\ln TB_{it} = \beta_{0i} + \beta_{1i}\ln Y_{it} + \beta_{2i}\ln RER_{it} + \beta_{3i}\ln REM_{it} + \beta_{4i}\ln FDI_{it} + \mu_{it} \quad (1)$$

where ln represents natural logarithm, TB stands for trade balance on goods and services, Y is gross domestic income, RER is real effective exchange rate, REM is remittance inflows, FDI is foreign direct investment inflows, and μ_t is assumed to be a white-noise process.

The expected sign of the coefficient of domestic income is ambiguous, because an increase in domestic output may increase both imports and exports. Under the Keynesian view, income is expected to carry a negative sign as domestic income increases, the country propensity to import will also increase and consequently trade balance will be worsened. The effect of real effective exchange rate is also ambiguous. However, under the Marshall-Lerner condition, a real depreciation or devaluation of the domestic currency is expected to improve the trade balance because it will increase exports and reduce imports. Therefore, the coefficient on RER is expected to have negative sign. Alternatively, exports and imports may not be responsive at initial period of depreciation. The trade balance may continue to worsen before experiencing an improvement in the long term, following a depreciation or devaluation policy. This scenario is known in economic literature as J-curve. Abbas *et al.* (2014) provide a comprehensive theoretical review of the effects of exchange rate on trade balance. The effect of remittances on trade balance is unclear, depending on how remittances are spent. Finally, the effect of FDI on trade balance is also ambiguous. Foreign direct investment may increase import of capital and intermediate goods that are not readily available in the recipient countries and hence deteriorates trade balance. On the other hand, if foreign firms use local inputs to produce exportable goods, they may improve trade balance.

3.2. Data Description

Our empirical investigation is conducted with balanced panel data for seven member countries of the West African Economic and Monetary Union (WAEMU), over the period from 1975 to 2017. The countries under study include: Benin, Burkina Faso, Cote d'Ivoire, Mali, Niger, Senegal, and Togo. The coverage of countries and time period has been determined by the availability of data for at least T=35 observations. These countries share the

same currency, the CFA franc, whose exchange rate is tied to that of the euro and is guaranteed by the French Treasury. The three main variables of the study are trade balance (TB), remittance inflows as a share of GDP (REM) and foreign direct investment inflows as a share of GDP (FDI). The variables remittances and FDI are scaled by GDP to account for the relative economic differences in the selected countries. The control variables are real effective exchange rate (RER) and real GDP in constant 2010 US dollar (GDP). Real effective exchange rate is such that an increase (decrease) reflects a real appreciation (real depreciation) of the domestic currency. Usually, trade balance is measured by the difference of total exports and total imports. In this study, trade balance was defined as the ratio of the value of exports to the value of imports. This ratio or its inverse has been used in a number of empirical studies (e.g., Bahmani-Oskooee, 1991; 2001; Guptar-Kapoor and Ramakrishnan, 1999; Baharumshah, 2001; Onafowora, 2003; Ogbonna, 2016). This measure allows expressing the trade balance variable in logarithm form, regardless of whether exports are greater or lower than imports. An increase in this ratio reflects an improvement in trade balance.

The data for trade balance, real GDP and remittances were obtained from the World Development Indicators of the World Bank. Data on foreign direct investment were extracted from the United Nations Conference on Trade and Development (UNCTAD). Data on real effective exchange rate were sourced from the Central Bank of West African States (BCEAO). All variables are transformed in logarithm. For FDI a transformed variable is used in order to avoid the problem with the log of null and negative values. As all observations are greater than -2 (the minimum is -1.4385), we divided the FDI/GDP values by 2 so that they will never be lower than –1 and thus the transformed variable is ln(1+FDI/2).

The descriptive statistics of the logarithmic transformation of the variables are given in Table 1. As can be seen, there is heterogeneity among the countries under study. For instance, the real GDP in log varies from 27.179 to 30.552 with a standard deviation of 0.846. Similarly, trade balance varies from 3.193 to 4.986 with a standard deviation of 0.352. The vulnerability of WAEMU countries to external trade shocks is evident from the significant share of trade deficit observations, which represents 87 percent of total observations. The correlation matrix shows a negative relationship between remittances, real exchange rate and trade balance. On the contrary, a positive relationship exists between trade balance, real GDP and FDI.

3.3. Econometric Methodology

The empirical examination of the impact of remittances and FDI on trade balance will be performed within a panel data framework. Therefore, the econometric methodology involves the following steps. We start by testing for cross-sectional dependency among countries. With an increasing

Table 1: Descriptive Statistics and Correlation Matrix

Variables	*lnTB*	*lnGDP*	*lnRER*	*lnREM*	*lnFDI*
Panel A: Summary Statistics					
Mean	4.205	28.519	4.778	0.782	1.302
Median	4.227	28.374	4.664	0.865	1.235
Maximum	4.986	30.552	5.413	2.369	3.036
Minimum	3.193	27.179	4.363	-1.485	0.000
Std. dev.	0.352	0.846	0.241	0.933	0.431
Panel B: Correlation Matrix					
lnTB	1.000				
lnGDP	0.551*	1.000			
lnRER	-0.310*	-0.446*	1.000		
lnREM	-0.504*	-0.167*	-0.129*	1.000	
lnFDI	0.145*	0.240*	-0.425*	0.153*	1.000

Note: TB, GDP, RER, REM and FDI denote trade balance, real GDP, real effective exchange rate, remittances as ratio of GDP and foreign direct investment inflows as ratio of GDP, respectively. (*) indicates statistical significance at the 5% level.

globalization of the world, interdependence between countries has become a crucial econometric issue in determining appropriate panel data estimation methods. We test for cross-sectional dependency using the Lagrange Multiplier (LM) statistic test proposed by Breusch and Pagan (1980) and its adjusted version provided by Pesaran (2004).

The Lagrange Multiplier (LM) statistic is specified as follows:

$$LM = T\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{\rho}_{ij}^{2} \tag{2}$$

where ρ_{ij} is the sample correlation coefficient among the residuals obtained from individual OLS estimations of Eq.(1). Under the null hypothesis of no cross-sectional dependence, that is H_0: $cov(\mu_{it}, \mu_{jt}) = 0$ for all t and $i \neq j$, the LM statistic is asymptotically distributed as Chi-square with N(N-1)/2 degrees of freedom. The LM statistic is valid for panels in which N is relatively small and T is sufficiently large. Pesaran (2004) proposed the scaled version of the LM statistic, which is defined for balanced panels as follows:

$$LM_S = \sqrt{\frac{1}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\left(T\hat{\rho}_{ij}^{2}-1\right)\right) \tag{3}$$

This statistic is asymptotically distributed as standard normal when $T\to\infty$ first and then $N\to\infty$. To address the size distortion of LM and LM_S, Pesaran (2004) also proposed a more general cross-sectional dependency tests that is valid for panel where T and N are sufficiently large in any order. This statistic is defined as follows:

$$CD_P = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{\rho}_{ij}\right) \quad (4)$$

Under the null hypothesis of no cross-sectional dependence, CD_P is asymptotically distributed as standard normal.

The second issue examines whether the coefficients of the relationship between trade balance and control variables change from cross section to cross section. The standard F-test is widely used to test the null hypothesis of slope homogeneity H_0: $\beta_i = \beta$ for all *i* against the alternative of heterogeneity H_1: $\beta_i \neq \beta_j$. In this study, we use the delta tilde and adjusted delta tilde slope homogeneity tests developed by Pesaran and Yamagata (2008). Even though WAEMU countries belong to the same geographic area, they are not identical in terms of economic structure, trade openness and FDI. In such a context, the assumption that the long run coefficients are homogeneous is unlikely to hold and standard panel data estimation methods will generate inconsistent estimates (Pesaran and Smith, 1995; Pesaran *et al*., 1999; Eberhardt and Teal, 2008, 2009).

The third step investigates the existence of long run relationships among the variables. For this purpose, we use the second-generation panel cointegration test developed by Westerlund (2007). This test allows for large degree of heterogeneity both in the long-run relationship and in the short run dynamics. To apply this test, Eq.(1) is transformed into the following error-correction model:

$$\Delta \ln TB_{it} = \alpha_{1i} + \sum_{j=1}^{p}\varphi_{1ij}\Delta \ln TB_{it-j} + \sum_{j=0}^{p}\varphi_{2ij}\Delta \ln Y_{it-j} + \sum_{j=0}^{p}\varphi_{3ij}\Delta \ln RER_{it-j} + \sum_{j=0}^{p}\varphi_{4ij}\Delta \ln REM_{it-j}$$
$$+ \sum_{j=0}^{p}\varphi_{5ij}\Delta \ln FDI_{it-j} + \theta_i\left[\ln TB_{it-1} - \beta_{1i}\ln Y_{it-1} - \beta_{2i}\ln RER_{it-1} + \beta_{3i}\ln REM_{it-1} + \beta_{4i}\ln FDI_{it-1}\right] + \mu_{it} \quad (5)$$

where K_i measures the speed of error-correction towards the long run relationship. If K_i =0, then there is no cointegration. Thus, the null hypothesis of no cointegration can be stated as H_0: $K_i = 0$ for all *i*. The alternative hypothesis depends on what is being assumed about K_i. Westerlund (2007) suggested four error-correction based tests including two group-mean tests and two panel-mean tests. The group-mean test statistics G_α and G_τ do not require the K_i'*s* to be equal and allow one to test the null hypothesis against the alternative H_1: K_i <1 for at least one *i*. If H_0 is rejected, it means that cointegration exists for at least one of the cross-sectional units. In the case of the panel-mean test statistics P_α and $P_{\alpha'}$ the alternative hypothesis is H_1: K_i <1 for all *i*. The rejection of H_0 suggests the evidence of cointegration for the panel as a whole. According to Westerlund (2007), P_α and P_α test statistics have the highest power and are the most robust to cross-sectional correlation.

If there is evidence of long-run relationship between the variables, the next step is to estimate the associated long run coefficients. Several estimators for cointegrated panel data have been developed in the econometric literature. The most commonly used estimators are the Fully Modified OLS (FMOLS) developed by Pedroni (2000) and the Dynamic OLS estimator suggested by Kao and Chiang (2000). However, both estimators do not consider the importance of cross-sectional dependency. To deal with both cross-section dependence and slope heterogeneity, we employ the Common Correlated Effects Mean Group (CCEMG) estimator designed by Pesaran (2006). The CCEMG estimator solves the issue of cross-section dependence by augmenting the regression equation with the cross-sectional averages of the dependent variable as well as the regressors:

$$\ln TB_{it} = \beta_{0i} + \beta_{1i} \ln Y_{it} + \beta_{2i} \ln RER_{it} + \beta_{3i} \ln REM_{it} + \beta_{4i} \ln FDI_{it} + d_{1i} \overline{\ln TB_t} + d_{2i} \overline{\ln Y_t} + d_{3i} \overline{\ln RER_t} + d_{4i} \overline{\ln REM_t} + d_{5i} \overline{\ln FDI_t} + e_{it} \quad (6)$$

This equation is estimated by OLS for each cross-section. The consistent mean group estimator is derived as the simple average of the group-specific estimates. The CCEMG estimator was found to be robust to omitted variables bias and endogeneity of regressors (Pesaran, 2006; Coakley *et al*., 2006; Kapetanios *et al*., 2011; Pesaran and Tosetti, 2011). Furthermore, it performs well even when the cross-section dimension is small, when variables are nonstationary, cointegrated or not, subject to structural breaks.

4. Empirical Results and Discussion

Before proceeding with the estimation of the effects of remittances and foreign direct investment on the trade balance, we test for cross-sectional dependency and slope homogeneity. The results are reported in Table 2. They indicate that the relationship among the variables is plagued by cross-sectional dependency. Therefore, there are strong connections among WAEMU countries. On the other hand, the null hypothesis of homogeneous coefficients is rejected. So, we can conclude that the panel data includes cross section dependency and heterogeneity in the relationship between trade balance and its determinants. This implies that inconsistent estimates will be obtained if the constraints of cross-section independence and slope homogeneity are imposed.

Table 2: Results of Cross-Sectional Dependence and Homogeneity Tests

	Statistics	*p-value*
Cross-sectional dependency tests		
LM (Breusch and Pagan, 1980)	55.227*	0.000
LM adjusted (Pesaran *et al*., 2008)	5.281*	0.000
CD (Pesaran, 2004)	-0.064	0.948
Homogeneity tests		
Delta tilde	34.167*	0.000
Delta tilde adjusted	40.067*	0.000

Note: * indicates rejection of the null hypothesis at 5% significance level.

The next step of our empirical analysis is to determine the order of integration of the series by means of unit root tests. We first apply the well-known IPS test developed by Im *et al*. (2003), which is less restrictive and more powerful compared to the other first generation panel unit root tests. The IPS test allows heterogeneity in the autoregressive coefficients, but it assumes cross-section independence across countries. Given the existence of cross-sectional dependency, we further employ the Cross-sectional Augmented Dickey-Fuller (CADF) test proposed by Pesaran (2007). The results of these tests are portrayed in Table 3. They indicate that the null hypothesis of unit root cannot be rejected for all variables. However, when applied to the first differences the null hypothesis of unit root can be rejected. Thus, we can regard the variables as being integrated of order one, which suggests that there might be a long-run relationship among them.

Table 3: Results of Panel Unit Root Tests

	Level		*First difference*	
	IPS test	*CADF test*	*IPS test*	*CADF test*
lnTB	-0.834 [0.201]	0.899 [0.816]	-13.364* [0.000]	-1.949* [0.026]
lnGDP	8.451 [1.000]	1.987 [0.977]	-12.328* [0.000]	-5.399* [0.000]
lnRER	-0.320 [0.374]	-0.588 [0.278]	-12.439* [0.000]	-1.696* [0.045]
lnREM	0.880 [0.810]	3.204 [0.999]	-14.671* [0.000]	-4.238* [0.000]
lnFDI	-0.633 [0.263]	0.174 [0.569]	-17.070* [0.000]	-4.005* [0.000]

Notes: TB, Y, RER, REM and FDI denote trade balance, real GDP, real effective exchange rate, remittances as ratio of GDP and foreign direct investment inflows as ratio of GDP, respectively. * indicates statistical significance at the 5% level. The IPS test provides W-t-bar statistic, whereas the CADF test provides z-t-bar statistic of Pesaran (2007) test. Tests are conducted for model with intercept and *p-values* are given in brackets. Optimal lag length was determined using AIC with a maximum of 5. * and ** denote rejection of the null hypothesis of unit root at the 5% and 10% significant levels, respectively.

After checking the stationarity of data, we test whether there is a long run relationship among the variables. To this end, we first employ Pedroni (2004) residual-based test. This test allows for heterogeneity among cross-sectional units but it is limited by the assumption of cross-sectional independence. Results for the Pedroni tests are reported in Table 4. They reveal that six of the seven within and between dimension tests suggest the existence of cointegration relationship among the variables. The results from Westerlund (2007) cointegration tests reported in Table 5 also suggest the existence of a long run relationship among the variables under investigation.

The existence of cointegration relationship explain co-movement between the variables. As argued in the methodology section, we employ the CCEMG method to estimate both the long and short run relationships among the variables. The country-level results are reported in Table 6. As expected, the

Table 4: Results of Pedroni Panel Cointegration Tests

Statistics	*Without trend*		*With trend*	
	Statistic	*Prob.*	*Statistic*	*Prob.*
Within-dimension				
Panel v-Statistic	0.264	0.395	-1.026	0.847
Panel rho-Statistic	-2.273*	0.011	-1.125	0.130
Panel PP-Statistic	-5.696*	0.000	-6.021*	0.000
Panel ADF-Statistic	-5.276*	0.000	-5.235*	0.000
Between dimension				
Group rho-Statistic	-1.400**	0.080	-0.218	0.413
Group PP-Statistic	-7.220*	0.000	-7.173*	0.000
Group ADF-Statistic	-5.826*	0.000	-4.910*	0.000

Note: The asterisks * denotes significance at the 5% level.

Table 5: Results of Westerlund Panel Cointegration Tests

	Without trend		*With trend*	
Statistics	*Value*	*p-value*	*Value*	*p-value*
G_t	-3.611*	0.001	-3.874*	0.002
G_a	-13.490	0.427	-17.311	0.507
P_t	-8.540*	0.004	-9.570*	0.004
P_a	-14.933*	0.025	-17.742	0.118

Note: The asterisks * and ** denote significance at the 5% and 10% levels, respectively.

results show considerable heterogeneity in the relationship between trade balance and its determinants. A significant positive long run effect of GDP on trade balance was found for Benin whereas a negative effect was reported for Cote d'Ivoire. A one percent increase in real GDP is associated with a long run increase in trade balance of approximately 0.934 percent in Benin. Thus, economic growth is playing a significant role in improving trade balance in Benin. On the contrary, in the case of Cote d'Ivoire, a one percent increase in real GDP is associated with a long run decrease in trade balance of about 0.59 percent. This finding lends support to the "demand as driver" view that income increases encourage people to demand more foreign goods which in turn increases imports and thus worsens the trade balance. This result agrees with Adeniyi *et al*. (2011) who found a negative relationship between domestic income and trade balance in Ghana. The effect of domestic income on trade balance was insignificant in the remaining five countries.

The results also reveal a positive effect of real effective exchange rate on the trade balance of Senegal and Togo while a negative effect was found for Cote d'Ivoire and Mali. Thus, for these two countries, a real depreciation of domestic currency will improve the trade balance as suggested by the Marshall-Lerner hypothesis. We can conclude that real devaluation of domestic currency does not improve the trade balance of all WAEMU member countries. It will favor only Cote d'Ivoire and Mali.

Regarding the two variables of interest, the results show that remittances have a positive long run effect on trade balance in Burkina Faso and a negative effect in Mali and Senegal. Conversely, remittances do not exert any significant influence on trade balance in Benin, Cote d'Ivoire, Niger and Togo. Furthermore, foreign direct investment improves trade balance in Mali while it reduces trade balance in Togo. For instance, estimates for Mali suggest that other things remain the same a one percentage increase in foreign direct investment inflows is associated with a long run increase in trade balance of about 0.124 percent. In the case of Togo, a one percentage increase in foreign direct investment inflows leads to a decrease in trade balance of about 0.074 percent.

Table 6: Long and Short Run Determinants of Trade Balance

Countries	*Long Run Estimates*				*Short-Run Estimates*				
	lnGDP	*lnRER*	*lnREM*	*lnFDI*	*Δln GDP*	*Δln RER*	*Δln REM*	*Δln FDI*	*ECT*
Benin	0.934*	0.032	0.120	0.009	0.307	-0.016	0.038	-0.028	-0.813*
	(1.96)	(0.06)	(1.44)	(0.12)	(0.38)	(-0.03)	(0.39)	(-0.39)	(-4.03)
Burkina Faso	-0.578	0.213	0.209*	-0.101	-1.107**	-0.502	0.124**	-0.165*	-0.639*
	(-1.03)	(0.35)	(3.40)	(-0.97)	(-1.69)	(-1.35)	(1.64)	(-2.73)	(-4.51)
Cote d'Ivoire	-0.590*	-0.635*	-0.064	-0.040	-1.008*	-0.398	0.068	-0.146*	-0.960*
	(-2.85)	(-3.51)	(-0.78)	(-0.50)	(-3.04)	(-1.27)	(1.00)	(-2.58)	(-6.01)
Mali	0.502	-0.838*	-0.375*	0.124**	0.310	-0.822*	-0.100	0.093**	-0.922*
	(1.11)	(-1.98)	(-3.46)	(1.64)	(0.65)	(-2.08)	(-0.95)	(1.62)	(-5.53)
Niger	-0.266	0.206	-0.034	-0.007	0.349	0.510	-0.008	0.026	-0.894*
	(-0.61)	(0.38)	(-0.49)	(-0.09)	(0.70)	(1.03)	(-0.13)	(0.48)	(-5.37)
Senegal	0.312	0.438**	-0.264*	-0.021	0.358	0.340	-0.229*	-0.037	-0.459*
	(0.70)	(1.64)	(-3.17)	(-0.41)	(1.13)	(1.08)	(-3.12)	(-1.40)	(-3.27)
Togo	0.175	0.695*	0.008	-0.074**	0.388	0.680**	0.111**	-0.075*	-1.221*
	(0.59)	(2.33)	(0.19)	(-1.82)	(1.27)	(1.64)	(1.86)	(-2.12)	(-6.77)

Note: Figures in parentheses are t-statistics. * (**) indicates significance at the 5% (10%) level.

With regard to the short run estimates, economic growth is associated with a deterioration of the trade balance in Burkina Faso and Cote d'Ivoire. For the remaining five countries, economic growth does not affect significantly trade balance. The effect of real exchange rate is positive in Togo and negative in Mali. Thus, a real devaluation improves the trade balance of Mali both in the long and short run. Remittances increase trade balance in Burkina Faso and Togo while they deteriorate it in Senegal. Other things remain the same, a one percentage point increase in remittance inflows as a share of GDP leads to 0.124 percent and 0.111 percent increase in trade balance respectively in Burkina Faso and Togo. In the case of Senegal, a one percentage point increase in remittance inflows as a share of GDP is associated with a short run decrease

in trade balance to about 0.229 percent. Foreign direct investment inflows deteriorate the trade balance of Burkina Faso, Cote d'Ivoire and Togo, while they improve that of Mali. The point estimate on the lagged error correction terms is negative and statistically significant in all countries. This provides additional evidence in support of the existence of a long run relationship between trade balance and the control variables.

5. Conclusion

The relationship between FDI, remittances and trade has received a great deal of attention in the empirical literature. Despite the conflicting empirical evidence, the widely shared view is that the trade performance of a country is related to inward FDI and that this is one of the reasons why developing countries seek to attract FDI. However, there is still a research gap dealing with the combined impact of FDI and remittance inflows on the trade balance of the recipient countries. In this study we have investigated the topic for seven West African countries. Our main objective was to assess whether both remittances and FDI worsen or improve the trade balance in those African countries. Investigating the link between the three variables most studies have used standard panel estimation methods assuming that the effect of FDI or remittances on trade balance is homogeneous across countries. In this study, we have employed the common correlated effect mean group estimator, which accounts for both cross-sectional dependency and heterogeneity. The empirical analysis uses annual data covering the period from 1975 to 2017.

We found that remittances positively and significantly influence trade balance in Burkina Faso both in the long and short run, and negatively impact on trade balance in Senegal both in the long and short run. Remittances also worsen trade balance in Mali only in the long run. The dampening effect of remittances flows on the trade balance of Senegal and Mali is derived by the triggered remittance-induced consumption expenditures that are not matched with domestic production. With respect to foreign direct investment inflows, they have the potential of improving trade balance in Mali while deteriorating that of Togo both in the long and short run. Foreign direct investment inflows lessen trade balance in Burkina Faso and Cote d'Ivoire only in the short run. These findings show that FDI may stimulate the growth of exports from host countries but, at the same time, trigger strong import dynamics, leading to non-significant or negative effect on the trade balance of the host countries. Besides, the results of this study indicate that a real depreciation of the local currency improves the trade balance position only in Cote d'Ivoire, implying that the usual Marshall-Lerner condition holds for this country. For Senegal and Togo, a real depreciation of the local currency stimulates the demand for imports of production goods, thereby worsening the trade imbalance.

The fact that FDI inflows may cause the deterioration of the balance of trade should be taken into account when policy makers decide to implement

policies to attract remittances and foreign direct investment. The only way to improve trade balance position is to increase the export outcomes of export-oriented FDI and to reduce the demand for imports by foreign firms. Besides, governments should try to expand the financial system to attract more remittance inflows.

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