"The Impact of Worker Remittances on Stability of the Franc CFA Regime[1]"

Julius A. Agbor[2]
&
Maru Etta-Nkwelle[3]

Abstract

The empirical evidence of the impact of remittances on the equilibrium real exchange rate of fixed exchange regime countries, like the CFA Franc Zone remains inconclusive. To the extent that remittance inflows have the most important macroeconomic effect on recipient country's equilibrium real exchange rate; and to the extent that remittances to CFA countries continue to grow; the question as to the impact of remittance inflows on the stability of the CFA Franc regime remain an urgent empirical issue. This paper employes panel data for 14 countries (2000 – 2022), a dynamic specification equation along with the generalized method of moments technique to investigate the fundamental determinants of fluctuations in the real exchange rate (RER) and estimate the magnitude of misalignment. Regressing the real exchange rate determinants along with worker remittances in a pair wise method against the RER misalignment suggests evidence of remittances causing the Dutch Disease problem in CFA Franc Zone countries but the resulting impact on the equilibrium real exchange rate found are marginal. We also find that aid does not have Dutch Disease effects in CFA Franc economies, consistent with numerous prior studies but we found that policies implemented following covid-19 contributed significantly to the misalignment of the real exchange rate. Finally, our findings also reveal strong persistent effects of misalignments in the CFA Franc Zone economies, which could be partly attributed to the notably slow speed of adjustment of the equilibrium real exchange rate to its long-run equilibrium in these economies, especially following shocks like the 2008-2009 financial crisis and the recent covid-19 pandemic.

The implications of these findings are firstly that, policymakers in CFA Franc Zone economies need not worry about the impact of remittances, expected to continue to grow, on the goal of achieving sustainable external trade balance and maintaining a stable fixed exchange regime. Secondly, further research needs to try to uncover the mechanics driving the persistent effects of misalignments of the equilibrium real exchange rate in CFA Franc economies, as an understanding of those drivers could contribute to stability of the fixed regime, in a world of increasing domestic and external shocks.

Keywords: Remittances, Fixed Exchange Regime, CFA Franc, Equilibrium Real Exchange Rate, Dutch Disease
JEL: 024, 040, 053

1. Introduction

Remittances to developing countries have continued to grow and are fast becoming a major source of capital inflows into these economies, exceeding foreign direct investment and development assistance. Although remittance to CFA Franc Zone countries during 2000-2022 only averaged 3.12 percent of GDP, they have grown to over 12 percent of GDP in countries like Guinea Bissau. Defined as "periodic, unrequited, private, nonmarket transfers between residents of different countries, workers' remittances[4] are records of current transfers by migrants who are employed in, and considered a resident of, the countries that host them," (IMF, 1993). They normally involve persons related to one another and increase with worsening economic conditions in the recipient country, thus counter-cyclical and irreversible in nature. Worker's remittances to developing countries have traditionally served to support consumption (e.g., Beja, 2011; Oberai & Singh, 1980; and Durand et. al., 1996) and residential investment (e.g., Alderman, 1996; and Adams, 1998) and also to boosts government revenue through both direct and indirect taxation. Ultimately, the impact of remittances on an economy depends on how

[1] The financial sponsorship of Nkafu Policy Institute (Yaounde, Cameroon) is acknowledged.
[2] Professor of Economics & Finance at Vanguard University of Southern California, and Nonresident Fellow at Nkafu Policy Institute, Julius.agbor@vanguard.edu, corresponding author.
[3] Associate Professor of Finance & Economics at Howard University, metta@howard.edu
[4] We follow the convention to exclude from our definition of worker's remittances, migrant transfers classified as "re-classification of assets" and employee compensation in international organizations.

those remittances are utilized; whether to finance consumption or asset accumulation and whether the goods demanded are in the traded or nontraded sectors.

As far as sub-Saharan African (SSA) economies are concerned, the empirical evidence of the impact of remittances on the equilibrium real exchange rate (henceforth, ERER), particularly whether such inflows have Dutch disease effects on the recipient economies, is inconclusive. The first strand of literature finds evidence of the Dutch disease effect, concluding that remittances may not be helpful in promoting the goal of maintaining sustainable external trade balance in selected SSA economies, although these studies agree that remittances do have short term welfare benefits in the recipient economies. Studies in the strand have included notably, Ratha & Moghaddam (2020); Combes et al., (2011); Amuedo-Dorantes & Pozo, (2004); Lartey et al., (2008); Opoku-Afari et al., (2004); Bourdet & Falck, (2006); Acosta et al., (2009); Okodua & Olayiwola, (2013); Roy & Rahman, (2014); and Olubiyi, (2014), who find evidence of the Dutch disease effect on SSA and developing countries[5] although those effects generally tend to vary from country to country (see notably, Nikas & Blouchoutzi, 2014). The country-specificity nature of remittances effects on the ERER poses empirical challenges for studies that relied on time series methods of analysis. We follow Combes et al., (2011) by utilizing panel data analysis of CFA Franc countries, allowing for sufficient observations and consequently, more sample variability, less collinearity, more degrees of freedom, and therefore more accurate inferences.

Another strand of literature suggests that there is either no (or weak) evidence of remittances[6] appreciating the equilibrium real exchange rate[7] or the opposite effect of remittances (and grants) depreciating the ERER, (see notably, Mongardini & Rayner, 2009; Sy & Tabarraei, 2010; Ouattara & Strobl, 2004; Ojapinwa & Nwokoma, 2018; Rajan & Subramanian, 2005; Berg et al., 2007; Lane & Millesi-Ferretti, 2004; Li & Rowe, 2007; Ogun, 1995; Sackey, 2001; and Lee, Haaker & Singh, 2008). Our concern with this second strand of literature is two-fold: first, with the exception of Lee, Haaker & Singh, (2008), a majority of these studies focus primarily on grants (with aid surpassing the data) not remittances. Second, following Chami et al., (2008), it matters how remittances are measured; previous studies have included migrant transfers classified as "re-classification of assets" and employee compensation in international organizations in their measures of workers' remittances, which do not exactly fit into the conventional understanding of remittances, thus affecting the results of whatever estimations made. We rectify that measurement issue by employing the definition proposed by the IMF (2003) as described in Chami et al. (2008).

The impact of remittances on fixed exchange regime economies, particularly those of CFA Franc Zone countries have not yet been fully understood, especially in regard to their potential overall stabilizing effects on fixed exchange regimes. An influential study by Singer (2010) found evidence of remittances increasing the likelihood for developing country policy makers to adopt or maintain fixed exchange rates, due to remittance's ability to mitigate the political costs of lost monetary policy autonomy and also serve similarly to cross-border government transfers that allow the domestic economy to adjust to a fixed exchange rate. Further, as Conrad et al., (2018) have shown, remittances represent a sizable inflow of foreign exchange which could help insulate countries with fixed exchange regime from shortages in foreign reserves thereby contributing to the stability of fixed exchange regimes, although they find that increases in the tax rate reduces the impact of the remittance multiplier.

In the context of the above literature, an empirical investigation of the potential impact of remittances on the stability of the CFA Franc Zone, which has been in existence for over 80-years, warrants consideration. More so, given the data suggesting that remittances to the CFA Franc Zone, would continue to grow over the foreseeable future. Also, scholars and policymakers in the CFA Franc Zone would be interested in understanding the effects

[5] Consistent with Keynes (1929)'s framework that assumes inflexible prices (including wages) in the non-tradable sector, resulting in potential deviations of the ERER from its long-run level, that in turn create competitiveness and balance of payments problems.

[6] To be fair, these studies concern themselves with capital flows in general, and not specifically with remittances, which as we know are different from traditional capital flows.

[7] As postulated by Ohlin (1929) which assumes fully flexible prices, and thus the possibility of the real exchange rate adjusting to a new steady-state equilibrium with full employment.

of remittances on their fixed exchange rate regime, particularly whether those behaviors suggested by Singer (2010) continue to be relevant. In this paper, we propose to empirically investigate the impacts of remittance inflows to CFA Franc countries on the stability of the exchange regime, particularly, on the propensity of misalignment of the equilibrium real exchange rate in these countries during 2000-2022.

A cursory look at the data in Figures 1-3 suggests that a clear pattern of overvaluation of the real effective exchange rate (REER) with growth in remittances in Cameroon, Cote d'Ivoire, and Togo.

Figure 1: Cameroon: Remittance vs Actual and Equilibrium REER, during 2000-2022

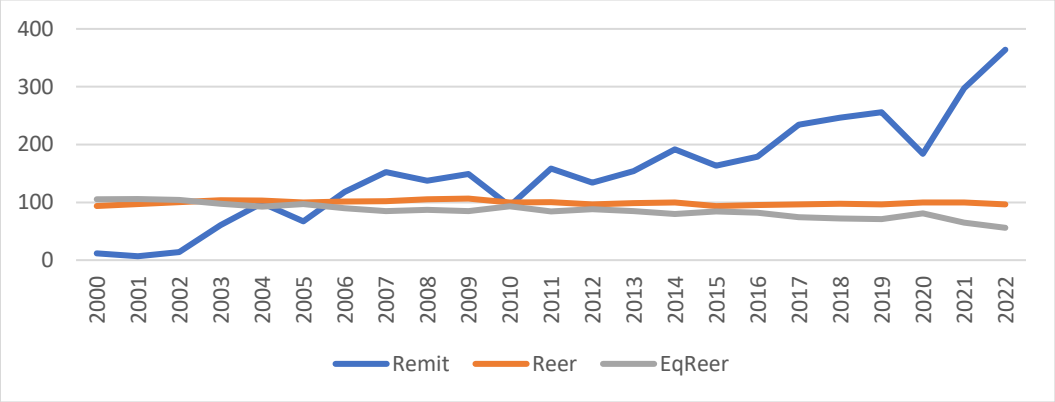


Figure 2: Cote d'Ivoire: Remittance vs Actual and Equilibrium REER, during 2000-2022

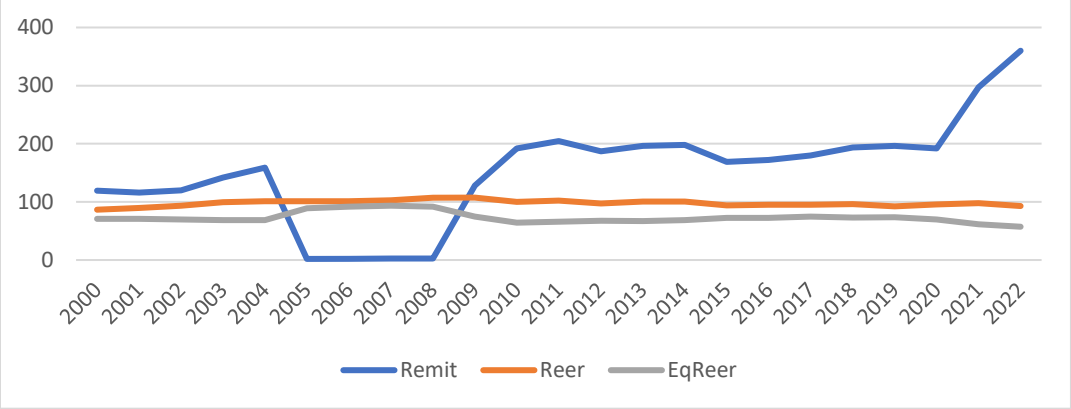
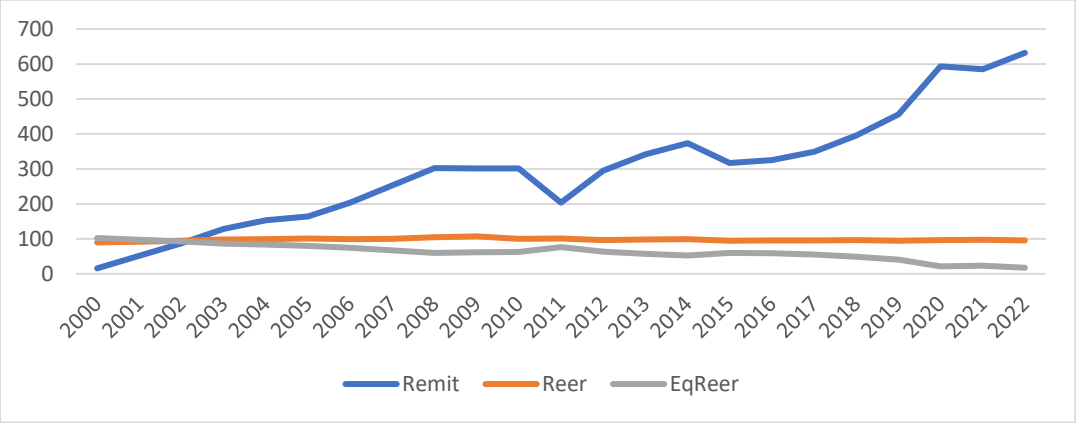


Figure 3: Togo: Remittance vs Actual and Equilibrium REER, during 2000-2022



2. Why Remittances matter for the Equilibrium Real Exchange Rate

One of the most important macroeconomic effects of remittance inflows is on a recipient country's equilibrium real exchange rate, Chami et. al., (2008:69). Their impacts on an economy depends on a number of factors namely: whether the remittances are utilized to finance consumption or asset accumulation and whether the goods demanded are in the traded or nontraded sectors and also whether remittances are taxed and how the government utilizes those revenues.

In the most simplified model[8], remittances flow into a country to finance household consumption of both tradable and non-tradable goods, which in turn increases the demand for nontraded goods. The higher demand for nontraded goods must be met by an increase in the production of such goods, which requires a reallocation of the fixed aggregate supply of labor from traded goods production to nontraded goods production. But for the reallocation of labor from the traded goods sector to the nontraded goods sector to happen, the prices of nontraded goods must rise relative to prices of traded goods, in order to attract labor away from the traded goods sector –a phenomenon described as real exchange rate appreciation. Likewise, government taxation of remittances could lead to real exchange rate appreciations if the government spends most of the tax revenues on nontraded goods. To the extent that remittances primarily serve in consuming nontraded goods, and to the extent that the elasticity of substitution in production between traded and nontraded goods is smaller, the resulting real exchange rate appreciation would be greater. However, if the government allocates the additional revenue to public spending on traded goods, and assuming that government's consumption of traded goods has no effect on household utility functions or on firm's production functions, then the increase in remittances would have no effect on the domestic economy. On the contrary, if the government saves all or most of the remittance tax revenues, households behave consistent with Ricardian equivalence, by raising their consumption by the amount of the increase in remittances, which causes real exchange rate appreciations but in scenarios where the country implements a fixed exchange regime that will also contribute to the stability of the fixed peg by boosting foreign reserves. Conrad et al., (2018) argue that remittances represent a sizable inflow of foreign exchange but increases in the tax rate reduces the impact of the remittance multiplier.

3. Data and Methodology

The data for this study is primarily from the World Bank World Development Indicator database (WDI) and the Federal Reserve (Saint Louis) Economic Data (FRED) which spans from 2000 to 2022 for the 14 countries that make up the CFA Zone. Table 1 presents a descriptive statistic of the variables included in the models: real effective exchange rate (REER), aid inflow/GDP (AID), broad money/GDP (M2, i.e. money supply), government spending/GDP (GS), investment spending/GDP (INVEST), remittance/GDP (REMIT), trade openness (TRADE OPEN) and terms of trade (TOT). The highest remittance to the zone is 12.58% of GDP received by Guinea Bissau, with a low of 0.04 percent received by Congo Republic and a mean of 3.12 percent for the region. The top three recipients of remittance in terms of GDP are Guinea Bissau, Senegal, and Togo. In dollar value, the data reports Senegal with the highest remittance at 2.7 billion dollars in 2021.

Table 1: Descriptive Statistics

Variable	Observations	Mean	Minimum	Maximum
REER	**251**	**104.35**	**81.02**	**171.00**
AID	**251**	**633.47**	**-10.92**	**2908.35**
M2	**251**	**24.64**	**6.55**	**53.11**
GS	**251**	**13.69**	**7.12**	**22.79**
INVEST	**251**	**21.18**	**5.88**	**81.02**
REMIT	**251**	**3.12**	**0.04**	**12.58**
Remittance(dollars)	**251**	**304.06**	**0.81**	**2740**
TRADE OPEN	**251**	**61.20**	**30.37**	**156.86**
TOT	**251**	**130.16**	**21.40**	**229.48**

[8] For a more detailed exposition, please see Chami et. al., (2008) and Montiel (2006),

Particularly important to the ordinary least square analysis is the suitability of the data to generate unbiased results. Therefore, several diagnostic tests are performed on the data to identify potential problems. The first test is for multicollinearity which is common in independent variables that tend to be correlated and according to Greene (2003) could overestimate the regression results and render it unsuitable for inference. Anderson and Tathan (2006) suggest that multicollinearity exists if the correlation between two variables is above 0.9. Table 2 presents the correlation results for the variables used in the models. The highest correlation is 0.5962 (59.62%) between money supply and remittance and the lowest is 0.0034 (0.34%) between government spending and remittance. Since all the correlation values are less than 0.9, we can conclude that the multicollinearity problem is not inherent among the variables.

Table 2: Correlation Statistics

Variable	REER	AID	M2	GS	Invest	Remit	Trade open	TOT
REER	1							
AID	-0.2469	1						
M2	-0.2469	0.1917	1					
GS	0.0389	0.2074	0.1248	1				
INVEST	-0.0965	0.0602	0.1076	0.3297	1			
REMIT	-0.0821	0.0926	0.5962	0.0034	-0.1805	1		
TRADE OPEN	0.0903	-0.2792	0.0258	0.1222	0.5155	-0.15692	1	
TOT	-0.1959	0.2398	0.0158	0.3211	0.51437	0.3621	0.3396	1

The baseline model for this analysis specifies a dynamic panel reduced form equation to first determine the factors that cause movements in the real exchange rate:

$$R_{it} = \beta_0 + \sum_{i=1}^{n} \beta X_{it} + E_{it} \qquad (1)$$

where R_{it} is the dependent variable REER, β0 is the intercept term, β represents the coefficient estimates for the independent variables, X_{it} is a vector of fundamental macroeconomic variables [AID, M2, GS, INVEST, TRADE OPEN and TOT] that determine the equilibrium real effective exchange rate, and ε_{it} is the error term. Since the panel data is balanced, Equation 1 was estimated as a fixed effects model using OLS as suggested by Zafar (2005). The fixed effects approach assumes that the differences in the individual countries can be captured by the intercept term – i.e., the intercept term is allowed to vary for each country, but the slope coefficients are constant across countries. (Gujurati, 2003:640).

To evaluate the validity of the fixed effects model, the likelihood test and F-test were applied, and both rejected the null hypothesis of redundant fixed effects as evident in the relatively large t-statistics and zero p-values reported on Table 3. Although the model specification tests suggest no misspecification errors, the Durbin Watson value and R- Square are quite low at 1.35 and 0.32, respectively. The Durbin Watson value of less than 1.5 exhibits the presence of autocorrelation. Heteroskedasticity is also a major concern when panel data is used (Brooks 2014). The Breusch Pagan test suitable for panel data was applied to test for this problem and it was significant at the 1% level suggesting that the error terms may be incorrectly specified. Furthermore, an evaluation of the data for cross sectional dependence was conducted using the Pesaran test. The results

which are reported on Table 3 produced a statistic of 54.79, significant at the 1% level, rejecting the null hypothesis of cross-sectional dependence in the residuals.

Table 3 Model Specification, Autocorrelation, Cross Sectional Dependence and Heteroscedasticity Tests

Test	Statistic	Probability
Fixed effects model: Likelihood test. Null: Redundant fixed effects	51.42	0.000
F – Test Null: Constants are homogenous and thus should vary	5.27	0.000
Heteroscedasticity: Breusch-Pegan LM Test	629.73	0.0000
Autocorrelation: Dubin Watson Test	1.35	n/a
Cross Sectional Dependence Pesaran's Test	54.79	0.0000

Of the five latter diagnostic tests performed to assess the data and model specifications, two failed to produce the desired results. We find evidence of heteroscedasticity and autocorrelation which suggests that the error terms could be correlated over time due to commonalities. The problems of autocorrelation and heteroskedasticity renders OLS generated coefficients inefficient and therefore not suitable for estimating equation 1. To circumvent the problem of biased and inconsistent coefficient estimates, Ouattara and Strobl (2004) suggest the use of Arellano and Bond's (1991) generalized method of moments (GMM) estimator and a lagged value of the dependent variable. And so, in this paper we used the GMM method with White cross section instrument weights and lagged dependent variable as shown in equation 2 below. This improved the Durbin Watson statistics to 1.86 and also the R-Squared from 0.32 to 0.67.

$$R_{it} = B_0 + \sum_{i=1}^{n} BX_{it} + \delta R_{it-1} + E_{it} \qquad (2)$$

Next, to derive the long run values for the macroeconomic variables, we used the Hodrick – Prescott filter to decompose the independent variables (X_{it} and R_{it-1}) into permanent and transitory components. Equation 3 presents all the independent variables including the lagged dependent variable as X_{it}:

$$X_{it} = X_{pit} + X_{tit} + R_{pit-1} + R_{tit-1} \qquad (3)$$

Inserting equation 3 into equation 1 we get

$$R_{it} = B_0 + \sum_{i=1}^{n} BX_{pit} + \sum_{i=1}^{n} BX_{tit} + E_{it} \qquad (4)$$

Then we used the estimated coefficient values $\hat{B}$ of the reduced form equation (2) and multiplied them with the permanent components X_{pit} of the independent variables to estimate the equilibrium REER (R^*_{it}) for each year. [i.e., we solved equation 5 below using the estimated coefficients and the long run values of the explanatory variables)

$$R^*_{it} = \sum_{i=1}^{n} \hat{B}X_{pit} + E_{it} \qquad (5)$$

Combining equation 5 into equation 4 implies that:

$$R_{it} = R^*_{it} + \sum_{i=1}^{n} \hat{B}X_{tit} + E_{it} \qquad (6)$$

The advantage of using model (5) to estimate the equilibrium REER is that it allows the dependent variable R^*_{it} to change as the macroeconomic variables X_{it} change. We then estimated misalignment as the difference between the real effective exchange rate R_{it} and the estimated equilibrium real exchange rate R^*_{it}.

$$Mis_{it} = R^*_{it} - R_{it} \qquad (7)$$

Where a positive value = currency overvaluation and negative = currency undervaluation.

4. Results

Table 4: Regression Results of the determinants of the REER in the CFA Zone (2000-2022)

Variable	Model 1	Model 2 plus remit	
Aid	-0.0053***	0.001	
Broad Money (M2)	-.2939*	-0.292*	
Government Spending	0.3706*	0.117	
Investment	-.0738	-0.368*	
Terms of Trade	0.0785*	0.0987*	
Trade openness	-.0329	-0.082	
Covid – 19	-3.338**	-1.852	

Remittance		-0.007***	
Lagged Dependent variable	0.5281*	0.270*	
R-Squared	0.67	0.49	

Significance level: *= 1%; ** 5% and * 10%**

Table 4 model 1 reports the relationship between the actual real effective exchange rate and some fundamental macroeconomic variables. It shows that increases in aid inflow, money supply, investment, trade openness and covid-19 pandemic policies appreciate the real effective exchange rate. In contrast, government spending, terms of trade and the prior period's (lagged) real effective exchange rate depreciate the real effective exchange rate. Interestingly, the most variations on the real effective exchange rate are caused by increases in money supply and covid-19 policies (overvaluation); government spending and the lagged REER (depreciation). Interestingly, Table 4 model 2 reveals that remittances appreciate the real exchange rate of the zone, although the effect is marginal.

Next, Ratha and Moghaddam (2020) note that previous empirical studies have scantly addressed the side effect of remittances on the RER partly because of insufficient data for a rigorous econometric analysis. But over the last few years, consistent data on workers remittances have been made available. Therefore, to fill the gap in the literature, we investigate the impact of worker remittances and the RER determinants in causing misalignment by regressing them in a pair wise method (one variable at a time) against the estimated misalignment from equation 7. The results are reported on Table 5 below.

$$Mis_{it} = \beta_0 + \beta_1 \text{Remit}_{it} + \beta_2 \text{Mis}_{it-1} + E_{it} \quad (8a)$$

$$Mis_{it} = \beta_0 + \beta_1 \text{Remit}_{it} + \beta_2 \text{Aid}_{it} + \beta_3 \text{Mis}_{it-1} + E_{it} \quad (8b)$$

$$Mis_{it} = \beta_0 + \beta_1 \ldots, \beta_{2\ldots,} + \beta_3 \text{M2}_{it} + \beta_4 \text{Mis}_{it-1} + E_{it} \quad (8c)$$

$$Mis_{it} = \beta_0 + \beta_1 \ldots, \beta_{2\ldots,} \beta_3 \ldots, + \beta_4 \text{GS}_{it} + \beta_5 \text{Mis}_{it-1} + E_{it} \quad (8d)$$

$$Mis_{it} = \beta_0 + \beta_1 .., \beta_{2\ldots,} \beta_3 \ldots, \beta_4 .., + \beta_5 \text{Invest}_{it} + \beta_6 \text{Mis}_{it-1} + E_{it} \quad (8e)$$

$$Mis_{it} = \beta_0 + \beta_1 .., \beta_{2\ldots,} \beta_3 \ldots, \beta_4 .., + \beta_5 .., + \beta_6 \text{TOT}_{it} + \beta_7 \text{Mis}_{it-1} + E_{it} \quad (8f)$$

$$Mis_{it} = \beta_0 + \beta_1 .., \beta_{2\ldots,} \beta_3 \ldots, \beta_4 .., + \beta_5 .., + \beta_6 .., + \beta_7 \text{Trade open}_{it} + \beta_8 \text{Mis}_{it-1} + E_{it} \quad (8g)$$

$$Mis_{it} = \beta_0 + \beta_1 .., \beta_{2\ldots,} \beta_3 \ldots, \beta_4 .., + \beta_5 .., + \beta_6 .., + \beta_7 .., + \beta_8 \text{Covid19}_{it} + \beta_9 \text{Mis}_{it-1} + E_{it} \quad (8h)$$

Table 5: Regression Results of Remittance on the Stability (Misalignment) in the CFA Zone (2000-2022)

Variable	Model 8a	Model 8b	Model 8c	Model 8d	Model 8e	Model 8f	Model 8g	Model 8h
Remittance	0.004***	0.006***	0.003	0.003	0.005	0.005	0.005	0.007***
Aid		-3.07E-05	-0.001	-0.001	-0.002	-0.002	-0.003	-0.001
Broad Money (M2)			0.136***	0.108	-0.006	-0.001	0.046	0.933
Government Spending				0.251	0.252	0.232	0.177	0.437
Investment					0.380*	0.378*	0.388*	0.391
Terms of Trade						-0.008	-0.021	-0.029
Trade openness							0.087	0.018
Covid – 19								4.927*

Lagged Dependent variable	0.737*	0.726*	0.617*	0.620*	0.595*	0.596*	0.591*	0.572*
R-Squared	0.79	0.79	0.78	0.78	0.78	0.77	0.78	0.80

Significance level: *= 1%; ** 5% and * 10%**

Our findings reported on table 5 suggest evidence of remittances causing the Dutch Disease problem in CFA Franc Zone countries, but the resulting misalignments of the equilibrium real exchange rate found are marginal. We also find that aid does not have Dutch Disease effects in CFA Franc economies, consistent with numerous prior studies but we found that policies implemented following covid-19 contributed significantly to the misalignment of the real exchange rate. Finally, our findings also reveal strong persistent effects of misalignments (i.e. prior-year misalignments having lasting impacts), in CFA Franc Zone economies, which could be partly attributed to the notably slow speed of adjustment of the equilibrium real exchange rate to its long-run equilibrium in these economies, especially following shocks like the 2008-2009 financial crisis and the recent covid-19 pandemic.

4. Conclusion

The implications of these findings are firstly that, policymakers in CFA Franc Zone economies need not worry about the impact of remittances, expected to continue to grow, on the goal of achieving sustainable external trade balance and maintaining a stable fixed exchange regime. Secondly, further research needs to try to uncover the mechanics driving the persistent effects of misalignments of the equilibrium real exchange rate in CFA Franc economies, as an understanding of those drivers could contribute to stability of the fixed regime, in a world of increasing domestic and external shocks.

References

Acosta, P.A., K.K. Lartey and F.S. Mandelman, 2009. "Remittances and Dutch Disease," Journal of International Economics, Vol. 79: 102-16.

Adams, Richard H., Jr., 1998. "Remittances, Investment and Rural Asset Accumulation in Pakistan," Economic Development and Cultural Change, Vol. 47 (October): 155-73.

Agbor, Julius, 2012. "The Future of the CEMAC CFA Franc." Brookings Policy Paper No. 2012-06, Washington DC

Alderman, Harold, 1996. "Saving and Economic Shocks in Rural Pakistan," Journal of Development Economics, Vol. 51 (December): 343-65.

Amjad, Rashid, 1986. "Impact of Workers' Remittances from the Middle East on Pakistan's Economy: Some Selected Issues," *Pakistan Development Review*, Vol. 25: 757-82.

Amuedo-Dorantes, C., and S. Pozo, 2004. "Workers Remittances and the Real Exchange Rate: A Paradox of Gifts," World Development, Vol. 32: 1407-1417.

Arellano, M., and Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58(2), pages 277-297.

Beja, E.L., 2011. "Do International Remittances Cause Dutch Disease?" Migration Letters, Vol. 8 (2): 132-40.

Berg, Andrew, et al., 2007. "The Macroeconomics of Scaling Up Aid: Lessons from Recent Experience," IMF Occasional Paper No. 253 (Washington: International Monetary Fund).

Bourdet, Y., and H. Falck, 2006. "Emigrant's Remittances and Dutch Disease in Cape Verde," International Economic Journal, Vol. 20: 267-284.

Brooks, C., (2014). Introductory econometrics for finance. 2nd ed., Cambridge University Press.

Burney, Nadeem, 1989. "A Macroeconomic Analysis of the Impact of Worker's Remittances on Pakistan's Economy," into the Gulf and Back: Studies on the Impact of Asian Labor Immigration, ed. By Rashid Amjad, New Delhi: International Labor Organization.

Chami Ralph, Adolfo Barajas; Thomas Cosimano; Connel Fullenkamp; Michael Gapen; & Peter Montiel, 2008. "Macroeconomic Consequences of Remittances." IMF, Occasional Paper # 259, Washington DC.

Chami, Ralph., Connel Fullenkamp, and Samir Jahjah, 2003. "Are Immigrant Remittance Flows a Source of Capital for Development?" IMF Working Paper 03/189, Washington DC

Combes, J.L., T. Kinda and P. Plane, 2011. "Capital Flows, Exchange Rate Flexibility and the Real Exchange Rate," IMF Working Paper.

Conrad, Daren, Benjamin Ramkissoon and Sara Mohammed, 2018. "Back to Basics: Remittances in the Keynesian Macroeconomic Framework," Int Adv Econ Res, Vol. 24: 233-238. https://doi.org/10.1007/s11294-018-9703-y

Durand, Jorge, Emilio A. Parrado and Douglas S. Massey, 1996. "Migradollars and Development: A Reconsideration of the Mexican Case," International Migration Review, Vol. 30 (summer): 423-44.

Giuliano, Paola & Marta Ruiz-Arranz, 2005. "Remittances, Financial Development and Growth." IMF Working Paper 05/234, Washington DC.

Greene, W. (2003) Econometric Analysis, 5th ed., Prentice Hall, New York.

Gujarati, D., Basic Econometrics. 4th ed., McGraw-Hill, New York.

Federal Reserve Economic Data. https://fred.stlouisfed.org/

Hair, J.F., Black, W. C., Babin, B. J., Anderson, R.E., and Tatham, R. L. Multivariate data analysis. *Journal of Abnormal Psychology*, 87, pages 49-74.

IMF, 1993. Balance of Payments Manual (Washington, 5th edition).

IMF, 2018a. West African Economic and Monetary Union (WAEMU), IMF Country Report No. 18/106

IMF, 2018b. Central African Economic and Monetary Union. A New Medium-Term Approach for International Reserves Management. No. 18/15

IMF, 2017. Central African Economic and Monetary Union (CEMAC), IMF Country Report No. 17/393

Kannan, K.P. and K.S. Hari, 2002. "Kerala's Gulf Connection: Remittances and Their Macroeconomic Impacts" in Kerala's Gulf Connections: CDS Studies on International Labour Migration from Kerala State in

India, ed. By K.C. Zachariah, K.P. Kannan, and S. Irudaya Rajan (Thiruvananthapuram, India: St. Joseph's Press)

Karpestam, Roy Peter David, 2012. "Dynamic multiplier effects of remittances in developing countries," Journal of Economic Studies, Vol. 39(5): 512-536.

Keynes, John Maynard. 1929. "The German Transfer Problem," "The Reparation Problem: A Discussion. II. A Rejoinder," "Views on the Transfer Problem. III. A Reply," Economic Journal 39 (March 1929, 1–7, (June 1929), 172–178, (September 1929), 404–408.

Lane, Philip, and Gian Maria Milesi-Ferretti. 2004. "The Transfer Problem Revisited: Net Foreign Assets and Real Exchange Rates," The Review of Economics and Statistics, Vol. 86, No. 4 (November 2004).

Lartey, E. K. K., F. Mandelman and P. A. Acosta (2008). 'Remittances, Exchange Rate Regimes, and the Dutch Disease: A Panel Data Analysis," Federal Reserve Bank of Atlanta Working Paper 2008/12.

Lee, Kyung-woo, Markus Haacker, and Raju Singh. 2008. "Determinants and Macroeconomic Impact of Remittances in Sub-Saharan Africa," IMF Working Paper, forthcoming.

Li, Y., and F. Rowe. 2007. "Aid Inflows and the Real Effective Exchange Rate in Tanzania," World Bank Policy Research Working Paper, No. 4456.

Mongardini, Joannes and Brett Rayner, 2009. "Grants, Remittances, and the Equilibrium Real Exchange Rate in Sub-Saharan African Countries," IMF Working Paper No. 2009/075.

Montiel, Peter J., 2006. "Workers' Remittances and the Long-run Equilibrium Real Exchange Rate: Analytical Issues" (unpublished; Williamstown, Massachusetts: Williams College).

Nikas, C. and S. A. Blouchoutzi (2014). "Emigrants' Remittances and the 'Dutch Disease' in Small Transition Economies: The Case of Albania and Moldova," Romanian Statistical Review, Vol. 62(1): 45–65.

Oberai, A.S., and H.K. Manmohan Singh, 1980. "Migration, Remittances and Rural Development: Findings of a Case Study in the Indian Punjab," International Labor Review, Vol. 119: 229-41.

Ogun, O., 1995. "Real Exchange Rate Movements and Export Growth: Nigeria, 1960 – 1999", African Economic Research Consortium Research Paper.

Ohlin, Bertil. 1929. "The Reparation Problem: A Discussion. I. Transfer Difficulties, Real and imagined," "Mr. Keynes's views on the Transfer Problem. II. A Rejoinder," Economic Journal 39 (June 1929), 172–182 (September 1929), 400–404.

Ojapinwa, T.V., and N.I. Nwokoma, 2018. "Workers' Remittances and the Dutch-Disease Argument: Investigating the Relationship in Sub-Saharan Africa," African Development Review, Vol. 30(3): 316-324.

Okodua, H. and W. K. Olayiwola (2013). "Migrant Workers' Remittances and External Trade Balance in Sub-Sahara African Countries," International Journal of Economics and Finance; Vol. 5(3).

Olubiyi, E. A. (2014). "Trade, Remittances and Economic Growth in Nigeria: Any Causal Relationship?" African Development Review, Vol. 26, No. 2, pp. 274–85.

Opoku-Afari, M., O. Morrissey, and T. Lloyd (2004). "Real Exchange Rate Response to Capital Inflows: A Dynamic Analysis for Ghana," Research Paper No. 04/12, Centre for Research in Economic Development and International Trade, University of Nottingham.

Ouatta, B. and Strobl, E. (2004). Foreign Aid Flows and the Real Exchange Rate in the CFA Franc Zone," Center for Research in Economic Development and International Trade.

Rajan, Raghuram, and Arvind Subramanian. 2005. "What Undermines Aid's Impact on Growth?" NBER Working Paper 11657. October.

Ratha, Artatrana and Moghaddam, Masoud, 2020. "Remittances and the Dutch Disease phenomenon: evidence from the bounds error correction modelling and a panel space," Applied Economics, Vol. 52(30): 3327-3336.

Roy, R., and M. M. Rahman (2014). "An Empirical Analysis of Remittance–Inflation Relationship in Bangladesh: Post-Floating Exchange Rate Scenario," MPRA Paper from University Library of Munich, Germany.

Sackey, H. A. (2001). "External Aid Inflows and the Real Exchange Rate in Ghana," African Economic Research Consortium Research Paper No. 110.

Singer, David Andrew, 2010. "Migrant Remittances and Exchange Rate Regimes in the Developing World." American Political Science Review, Vol. 104(02): 307–323.

Sy, M. and H. Tabarraei (2010). "Capital Inflows and Exchange Rate in LDCs: The Dutch Disease Problem Revisited," PSE Working Papers, halshs-00574955, HAL.

Tingsabadh, Charit, 1989. "Maximizing Development Benefits from Labor Migration: Thailand" into the Gulf and Back: Studies on the Impact of Asian Labour Migration, ed. by Rashid Amjad. New Delhi: International Labor Organization.

World Bank's World Development Indicator Database 2023: https://databank.worldbank.org/source/world-development-indicators

Zafar, A. (2005) The impact of the strong euro on the real effective exchange rate of the two francophone African CFA zones, World Bank Policy Research Paper No. 3751, World Bank, Washington, D.C.