

FOREIGN CURRENCY
LENDING IN ALBANIA

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BANK OF ALBANIA

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Note: The views expressed herein are of the author and do not necessarily reflect the views of the Bank of Albania.

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ABSTRACT

The growth of lending in foreign currency in many Central, Eastern and South Eastern European (CESEE) countries has driven to the expansion of analyses and researches in this regard. In Albania, similar to the other regional countries, the study of main determinants of foreign currency-lending is rather important. FCL accounts for 65% of lending to private sector. This paper examines the determinants of FCL to the private sector by means of the bound test approach to Autoregressive Distributed Lag approach, based on demand and supply indicators. The results provide evidence that foreign currency lending is mainly driven by the availability of bank foreign funding deposits and minimum variance portfolio share. Foreign currency lending is more preferred under higher interest rate differentials, inflation volatility and lower exchange rate volatility. The study identifies a long-run cointegrated and stable relationship.

Keywords: Foreign currency lending, dollarization, minimum variance portfolio, ARDL approach

JEL Classification: C32, C51, E44, E51, F31, G11, G21, O57

I. INTRODUCTION

The presence of a sizeable share of foreign currency lending (FCL) in the Central, Eastern and South Eastern European (CESEE) countries has recently attracted a keen interest of economic policy and research. As in other CESEE countries, in Albania this phenomenon started as a feature of private firms, it quickly expanded to households. Although diminishing over the years, more than 65% of all private sector loans in Albania is currently denominated in (or linked to) a FCL. Retail loans, household mortgages and large firms' loans dominate this type of lending. - Thus, FCL is largely demand driven, or factors related to it are just relatively more important than supply factors mainly due to less extent of asset substitution [Beckmann, Scheiber and Stix, (2011)].

FCL to firms could be explained by: 1) the currency hedging of exporting firms [Fidrmuc, Hake and Stix (2011)]; 2) the existence of positive spreads; and 3) the assumption that the euro is a very stable and trustworthy currency compared to the domestic one [OeNB Euro Survey, (2012)]. But, un-hedged FCL is seen as a major threat to financial stability and risk of systemic crises in SEE, in case of exchange depreciations and interest rate changes [Brown and De Haas (2010)]¹. Un-hedged FCL is as high as 60% of total FCL in the case of Albania. Currently, the FC loan portfolio appears somewhat more problematic in terms of its quality compared to the local currency portfolio, at 71% versus 29% of total non-performing loan (NPL) and at 17% versus 7% of total lending to private sector. Considering the significantly higher burden of FCL and the pace of deterioration of the NPL in foreign currency indicators which, recently has risen at high level than that in domestic currency, the situation appears particularly disturbing since the risk and consequences associated with this portfolio are a materially higher importance². Moreover, FCL potentially constrain the effectiveness of monetary policy and complicates macroeconomic policy; in particular, it can limit the central bank's ability to influence output and inflation by forcing it to prioritise exchange rate stabilization [Beckmann, et. al., (2011)].

Under such circumstances, the appropriate well-targeted regulatory and supervisory measures to these challenges crucially depend on knowledge about the sources of the driving forces behind the developments of FCL dominance and the impact the crisis had on it, even though the implications of FCL for macroeconomic and financial stability have been debated already prior to the GFC [Streiner, (2011)]. In fact, after the crisis hit the CESEE region, triggering exchange rate fluctuations and straining the financial situation of both firms and individuals, the issue of FCL has increasingly caught

¹ Beckmann, et. al. (2011) finds that the majority of respondents in a survey answered that FX lending has become riskier because of exchange rate depreciations. The number of responders is 10 percentage points higher than in countries where no depreciation took place.

² The system appears to be exposed to exchange rate credit risk indirectly, stress test scenarios that take into consideration currency devaluation by 20% results in the collapse of the banking system capital adequacy level, with only at relatively small portion. See also Bank of Albania Annual Report.

the attention of policymakers. The Supervisory Council of the Bank of Albania, by late 2008 and early 2009, decided to raise the demand for capital expenditure for the un-hedged bank's loan portfolio³ and placed a higher constraint weighted level for the foreign bank branches⁴. These macro-prudential measures aimed to de-motivate FCL. However, the widespread view that FCL in Albania is driven by interest rate spreads, exchange rate and inflation risk or funding of banks in FC has not yet been empirically analysed⁵. Although the literature on the causes and consequences of FCL is expanding, many questions in the case of Albania remain unanswered, in particular, in connection with the driving factors and their effects on FCL to private sector. Therefore, the main purpose of this material is to provide new evidence on the various dimensions effects thriving FCL to private sector in the case of Albania.

To our best knowledge, the credit channel has only recently been studied in the case of Albania, both on individual and a panel sample, and by means of empiric and non-empiric techniques⁶. Shijaku and Kalluci (2012) studied the long-run determinants of bank credit to the private sector in the case of Albania. The model is estimated by employing a Vector Error Correction Mechanism (VECM) approach, and considers both demand and supply indicators. The main findings of their study concluded that credit behaviour is positively linked to economic growth and has a countercyclical behaviour. Bank credit would be stimulated by higher banking and financial intermediation, as well as further financial liberalisation lower cost of lending, diminishing government domestic borrowing, and a more qualitative bank lending would create further lending incentives. The exchange rate is found to pick up some demand

³ These macro-prudential measures consisted of 50% higher limit for portfolio related to the calculations of capital adequacy level, a ceiling limit level of 400% of FX lending to the regulatory capital.

⁴ The limit was placed at 6.25% of total system assets and 6.25% of total system liabilities;

⁵ See: Bank of Albania Annual Reports and Supervision Reports. Also, in the Supervision Department's (Bank of Albania) report on the project over some changes in the regulation on "The management of loan risks" and the regulation on "The capital adequacy ratio" and the regulation on "The management of the activity of foreign bank branches" these were listed as some of the motives for FX lending.

⁶ See: Kalluci (2011); Dushku and Kota (2012); Note and Suljoti (2012); Suljoti and Hashorva (2012); Note and Suljoti (2013); Suljoti, Note and Manjani (2013).

valuation and consumption smoothing effects. The authors find also an adjustment mechanism that brings bank lending back to equilibrium, but the coefficient is relatively low.

Against this background, this paper, first contributes to the empirical research on this topic, by explicitly disaggregating bank lending and concentrating only on the FCL. Second, it incorporates the concept of a minimum variance portfolio (MVP) as explained by Ize and Levy-Yeyati (2003) on the determination of the optimal share of the portfolio of foreign assets considering both inflation and foreign exchange risk. Third, it also provides additional evidence of supply-side and demand-side factors related to the popularity of this type of loan in the years leading up prior and post to the financial crisis at the macroeconomic level. Finally, the model is based on the meta-analysis of Cuaresma, Fidrmuc and Hake (2011) for CESEE countries. It is estimated through the "Bound test" to the Autoregressive Distributed Lag (ARDL) approach as explained by Pesaran, Shin and Smith (2001). This provides an advantage prior to the relatively short sample time-span.

The findings of this study support previous research in the case of Albania. First, the paper identifies a stable and a long-run cointegrated vector. Second, in case of shocks, the speed of adjustment is relatively high comparable to earlier studies on credit behaviour and money demand utility function. The results provide evidence that FCL is mainly driven by the availability of bank FC funding deposits and a MVP approach. FCL is dictated also positively by higher interest rate spread between domestic and foreign interest rates, as well as lower volatility of the inflation rate and the exchange rate. In particular, these results provide supportive evidence that even in the case of Albania, borrowers are oriented by the "risk-aversion" approach. Therefore, they are oriented towards portfolios that carry less risk, in this case towards FCL. Finally, FCL has been affected also by the post Global Financial Crisis (GFC) effects, but the negative effect has been relatively insignificant.

This paper consists of four sections. Section 2 focus on some stylised facts on FCL patterns. Section 3 presents the mechanisms underlying the estimating equation as described in the literature and indicates the data and the estimation method used. Section 4 summarizes the results. The material concludes in section 5.

II. STYLISED FACTS

The financial intermediation in the case of Albania increased in the past decade. This is not surprising, given the initial low level of bank credit-to-GDP ratio compared to Europe Union countries and other regional countries. However, the increase in bank lending was not gradual and seems to have gathered more momentum during 2004 – 2008. The boost in lending started after the privatisation of the largest bank in the country, Savings Bank. This was facilitated by the entry and the re-dimension of some foreign and emerged banks that stepped up the lending process and increased competition in this aspect⁷. In fact, much of the increase is attributed to the prevalence of the private sector, particularly private firms and households, and lending in FC currency unit. The prevalence of FCL shows different patterns. Although diminishing over the years, it composes more than 65 per cent of all private sector loans in Albania. The share of FCL is among the highest in the region, despite that total loan to GDP ratio remains among the lowest.

From a sectorial point of view, FCL is mainly provided to private firms, particularly large entrepreneurs, but over the years it has quickly been attractive to households. Firms required more FCL for overdraft, to improve technology through capital investment and expand their activity by raising circulated capital, but less for mortgages purposes. Individuals use most of FCL for mortgages, which constitutes nearly 86% of all FCL stock.

⁷ Shijaku and Kalluci (2012).

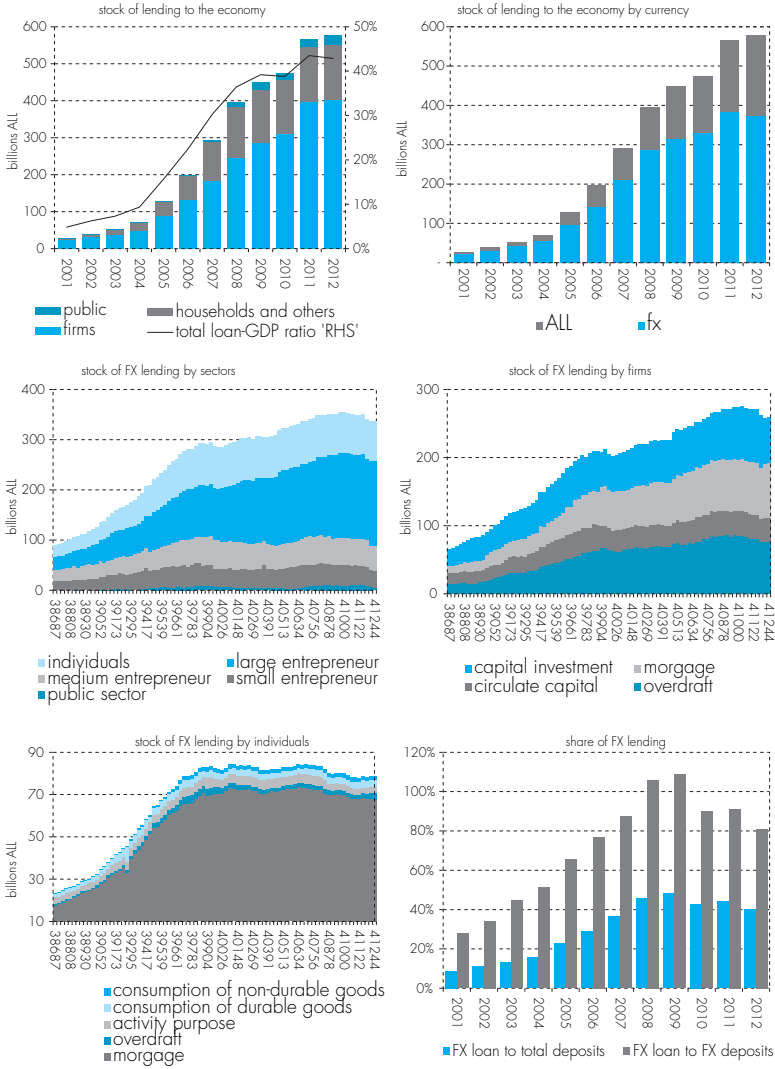
Overall, borrowing in foreign currency is more attractive due to a number of factors related to lower rates for U.S. dollar and euro loans, compared with those in domestic lending, as well as a lasting period of domestic exchange rate appreciation against the foreign currencies⁸. It is worth mentioning that the main foreign currencies, in which the FCL is provided, are euro and U.S. dollar. The euro has gained a greater foothold over the U.S. dollar, as a result of the gradual appreciation on the international markets and the strengthening of trade relations between Albania and the European Union. However, they both are considered as strong currencies, with a particularly notable stability in the medium term, while the exchange rate against them has been generally stable, following the progress of developments in international markets for longer periods of time⁹.

Over the years, the structure of FC loans reflects gradual shifts of short and medium towards long-term FCL. This trend shows a better perception of the investment environment by the banking system, as well as optimizing the use of resources towards longer term assets, which may also generate more income. However, the growth of short term FC loans signals the need of firms for working capital and that of individuals for consumption of non-durable goods, which is more evident after 2008. Deposits by firms and individuals constrain the main sustainable source of lending. Traditionally, local currency deposits make up the majority of funds invested by clients in the banking system, while already FC deposits share nearly 47% of total deposits, compared with 30% in the early 2000s'. However, the share of FCL to FC deposits remains high, at 85% in 2012 versus 120% in 2008.

⁸ See: Bank of Albania Annual reports, mainly Bank of Albania, (2004a) and Bank of Albania, (2004b).

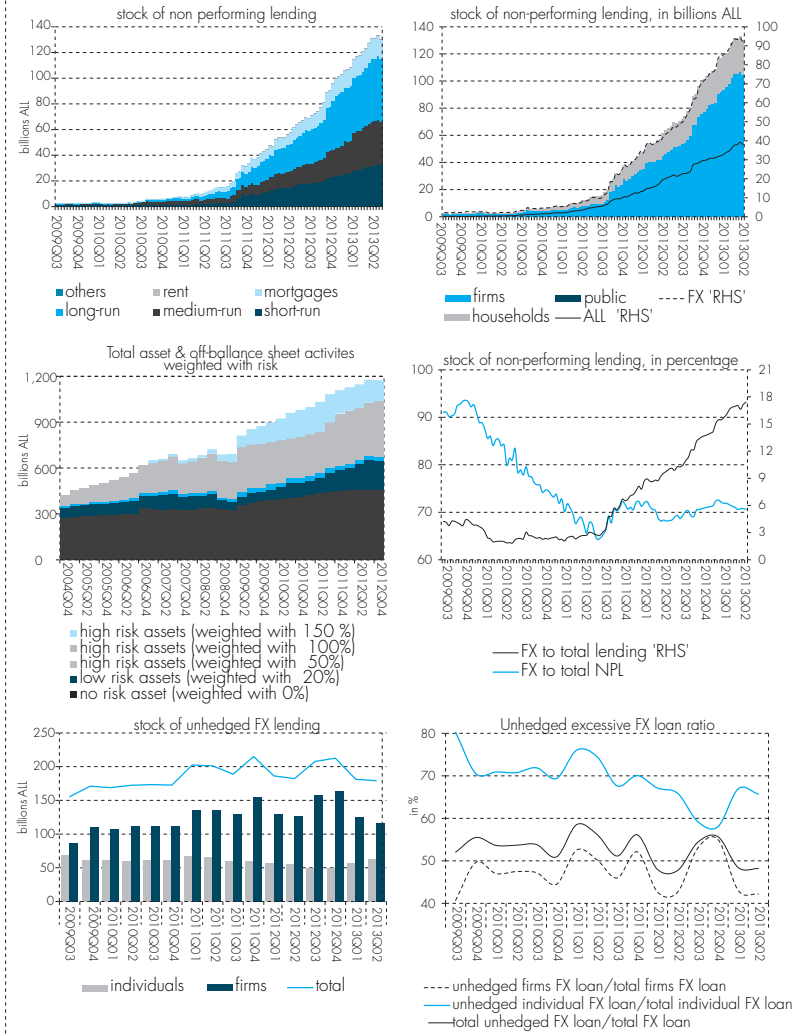
⁹ See: Bank of Albania, (2005a) and Bank of Albania, (2005b).

Chart 1 Portfolio of categorised lending to the economy



Source: Author's calculations.

Chart 2 Portfolio of categorised lending to the economy



Source: Author's calculations.

The events in international financial markets, in late 2008, were manifested in the domestic financial system through deterioration of public confidence in the system and the withdrawal of deposits from the banking system. At the same time, since then the banking activity has been characterised by a cautious approach to exposure to various risks. On the one hand, this resulted in a decrease of

the paces of the stock of bank lending, which in fact reflected the perception of the banking system and economic agents on macroeconomic developments in the country and across the region. On the other hand, diminishing rates were also due to the deteriorating quality of bank lending portfolios. In a structural aspect, FCL portfolio appears somewhat more challenging, in terms of its quality compared to the portfolio in local currency, at 71% versus 29% of total non-performing loans (NPL); and at 17% versus 7% of all lending to private sector. The indicator that measures the quality of the hedged portfolio appears more problematic than the quality of the un-hedged portfolio. Overall, the un-hedged FCL remains high, above 50%. The un-hedged FCL is higher for households than for firms, at 80% versus 40%. Although, credit risk in the system appears to be increasing, maintaining a satisfactory level of capital adequacy by banks provide a safeguard pattern for controlling the overall level of risk. This indicator has been significantly higher compared to the regulatory minimum level of 12%¹⁰.

III. METHODOLOGY AND DATA

A. EMPIRICAL APPROACH

The empirical studies on the determinants of FCL process consider both the supply and the demand factors. As explained by Cuaresma, et. al. (2011), they tend to build upon linear regression models of the following type:

$$\phi_t = \alpha + X_t\beta + \varepsilon_t \quad (1)$$

Where, depending on the study, ϕ stands as an indicator of FCL; X is a matrix of explanatory variables and $\varepsilon \sim \text{iid}(0, \sigma^2)$ is the stochastic error term. In our paper, we address this issue by employing data used by Cuaresma, et. al. (2011) focusing only on interest rate differential, inflation and exchange rate volatilities of these determinants, the

¹⁰ In response of the crisis, Bank of Albania approved a new regulation on liquidity, which lays down the standards mandatory for banks to manage liquidity, as well as a new definition and realistic composition of liquid assets. Also, a regulatory level for liquidity was determined for the first time on a monthly basis, which states that the ratio of liquid assets to short-term liabilities should not be lower than 20%.

supply side of deposit dollarization as well as on a indicator based on the Minimum Variance Portfolio (MVP) approach.

The concept of the MVP was first introduced by Ize and Levy-Yeyati (2003), and thereafter has received substantial attention in empirical analyses of both deposit and loan dollarization. Thus, they developed a simple portfolio model where the risk-averse depositors and borrowers choose the currency composition of their deposits and loans in a bi-monetary economy. The approach assumes that the menu of assets available to depositors includes home currency deposits and foreign currency deposits (at home and abroad). Borrowers, on the other hand, can borrow either in the home or in the foreign currency directly from domestic banks. The equilibrium in the market for loanable funds allows us to characterize the interaction between depositors and borrowers, its implications in terms of interest rate differentials, and the dollar portfolio share on both sides of domestic banks' balance sheets. In other words, this approach implies that the optimal share of the portfolio of foreign assets or liabilities is determined by both sides of a bank's balance sheet, by hedging against inflation and foreign exchange risk, while the choice of location depends only on country risk¹¹.

¹¹ While nominal interest rates are pre-determined over the maturity of assets and loans, the real returns are subject to different risk sources. On the one hand, the real returns to domestic assets are subject to an inflation shock, μ_p ,

$$r = \bar{r} - \mu_p \tag{a}$$

On the other hand, real returns to assets issued in the foreign currency are influenced by changes of the real exchange rate, μ_π ,

$$r = \bar{r}^f - \mu_\pi \tag{b}$$

For simplicity, the minimum variance portfolio (MVP) approach assumes that inflation and real exchange rate shocks have zero means and a variance-covariance matrix $\Sigma \Pi$ $\rho = [\sigma_{ij}]$. The risk-averse households minimize the variance of the expected real return from their portfolio structure,

$$E(R) = \lambda (r^f) + (1 - \lambda) E(r) \tag{c}$$

by choosing the optimal share of foreign currency assets or liabilities, λ . The MVP share of foreign currency assets or liabilities is determined as,

$$\lambda_{MVP} = \frac{\sigma_{pp}^2 + \sigma_{p\pi}}{\sigma_{pp}^2 + \sigma_{\pi\pi}^2 + 2\sigma_{p\pi}} \tag{d}$$

Where, σ is the variance or covariance of inflation and changes of real exchange rate.

The empirical model is estimated by the ARDL approach proposed by Pesaran, et. al. (2001). The advantages is threefolds. First, the pursuit of this approach provides more degrees of freedom compared to the Vector Autoregressive (VAR) and VECM approach developed by Johansen and Juselius (1990) due to single equation estimation mechanism. Therefore, it is more efficient over sample with relatively limited number of observations. Second, this approach provides a long-run cointegration relationship through the specification of the model, among co-operating the short-run effects. Third, the method hypothesis the existence in the long-run of a cointegration relationship among the variables of interest regardless their different order of integration I(0) or I(1). The estimated regression can be specified by:

$$\Delta\phi_t = \beta_0 + \beta_1 \phi_{t-1} + \beta_2 \rho_{t-1} + \beta_3 \pi_{t-1} + \beta_4 \lambda_{MVP_{t-1}} + \beta_5 \iota_{t-1} + \beta_6 \omega_{t-1} + \sum_{i=1}^p \delta_{1i} \Delta\phi_{t-i} + \sum_{i=0}^q \delta_{2i} \Delta\rho_{t-i} + \sum_{i=0}^q \delta_{3i} \Delta\pi_{t-i} + \sum_{i=0}^q \delta_{4i} \Delta\lambda_{MVP_{t-i}} + \sum_{i=0}^q \delta_{5i} \Delta\iota_{t-i} + \sum_{i=0}^q \delta_{6i} \Delta\omega_{t-i} + \beta_7 \tau_{t-1} + \varepsilon_t \quad (2)$$

Where, ϕ is the FCL; ρ and π are the volatility of inflation and exchange rate; λ_{MVP} is the minimum variance portfolio; ι is the interest rate differential; ω is the FC deposits; τ is a dummy variable; β_0 is a vector of constant term; β_i and δ_i are the long and short-run coefficients to be estimated; Δ is the difference operator; $\varepsilon \sim \text{iid}(0, \sigma^2)$ is the stochastic error term.

Then, this model is evaluated through a three-step protocol mechanism. First, equation 2 is estimated by means of Ordinary Least Square (OLS) techniques. Second, an F-test (Wald test) over the hypothesis¹² on the joint significance of the coefficients of the lagged levels of the variables¹³ is conducted according to the bounds test to co-integration and Granger causality approach to investigate the long-run equilibrium relationship between variables

¹² The null hypothesis of no co-integration is $H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$ and the alternative hypothesis of co-integration is $H_a: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$.

¹³ Pesaran et al (2001) suggest that for models with quarterly data there is an up to 8 optimal lags, even though the results of the F-test depend on the number of lags imposed [Bahmani-Oskooee and Rehman (2005)].

of interest¹⁴. Third, based on the Schwarz lag length criterion for our ARDL model, the long-run magnitude between variables of interest is evaluated as follows:

$$\Delta\phi_t = \beta_0 + \beta_1\Delta\phi_{t-1} + \beta_2\Delta\rho_{t-1} + \beta_3\pi_{t-1} + \beta_4\Delta\lambda_{MVP_{t-1}} + \beta_5\Delta t_{t-1} + \beta_6\Delta\omega_{t-1} + \beta_7\tau_t \quad (3)$$

Where, variables are as previously defined. Third, the short-run coefficients were obtained by estimating an error correction mechanism (ECM) model convergence to long-run equilibrium, specified as follows:

$$\begin{aligned} \Delta\phi_t = & \beta_0 + \sum_{i=1}^P \delta_{1i} \Delta\phi_{t-i} + \sum_{i=0}^q \delta_{2i} \Delta\rho_{t-i} + \sum_{i=0}^q \delta_{3i} \Delta\pi_{t-i} \\ & + \sum_{i=0}^q \delta_{4i} \Delta\lambda_{MVP_{t-i}} + \sum_{i=0}^q \delta_{5i} \Delta t_{t-i} + \sum_{i=0}^q \delta_{6i} \Delta\omega_{t-i} + \alpha_1 ECM_{t-1} + \varepsilon_t \end{aligned} \quad (4)$$

Where, α_1 is the speed of adjustment towards equilibrium; δ is the short-run dynamic coefficient; ECM_{t-1} is the lagged error correction term mechanism estimated through equation 4, specified as follows:

$$ECM_t = \phi_{t-1} - \beta_0 + \beta_1 \Delta\phi_{t-1} + \beta_2 \Delta\rho_{t-1} + \beta_3 \Delta\pi_{t-1} + \beta_4 \Delta\lambda_{MVP_{t-1}} + \beta_5 \Delta t_{t-1} + \beta_6 \Delta\omega_{t-1} + \beta_7 \tau_t \quad (5)$$

The majority of the studies¹⁵ consider the inflation volatility as a proxy for the lack of monetary credibility. Hence, as asserted by the model of Jeanne (2005) and Brown, Kirschenmann and Ongena, (2010), a higher volatility is expected to induce more borrowing in foreign currency, because foreign currency borrowing can be associated with more stable real interest rates than borrowing in local currency. However, Cuaresma, et. al., (2011) believes that from the perspective of the borrower, the impact of this factor on FCL depends on the trade-off between currency risk and real interest rate risk. FCL portfolio is quite sensitive to fluctuations in exchange rate [Shijaku and Kalluci, (2012)] and including π allows capturing the extra cost effects of the volatility in the exchange rate regardless of changes in monetary policy [Vika (2007)]. The incentive to take FCL is weaker when the volatility of the exchange rate is higher,

¹⁴ To fulfill the endogeneity condition, each variable is estimated as a dependent variable on the left-hand side (LHS) of equation 2 and existence of possible other long-run relationships is tested again by means of the F-test.

¹⁵ See also Jeanne (2005), Luca and Petrova (2008), Cuaresma, et. al., (2011).

as this boosts the default risk on un-hedged loans [Brown, Ongena and Yesin, (2009) and Brown, et. al., (2010)].

Therefore, individuals and firms with local currency revenue are expected to be less likely to take FCL when exchange rate volatility is high. Empirical evidence by Cuaresma, et. al., (2011) suggests that a negative impact of rising exchange rate volatility reflects the credit default risk of un-hedged loans and a positive influence could emerge from the expected stability of repayment rates. However, theoretical impact of exchange rate depreciation may also be ambiguous, as it can have a different impact on lenders' and borrowers' behaviour, depending on whether it represents consumption smoothing or cost effect¹⁶.

In early transition, banks basically financed lending with deposits [Weller (2000)]. In Albania, deposits are the main source of available liquid funds of banks, and deposits in the domestic currency have the highest share. Therefore, as in the majority of the studies¹⁷, we analyse the indicators related to the supply side, in particular, how banks finance their FCL through the deposits' stock. Accordingly, an expansion in deposits provides banks with more funds available for lending, thereby, encouraging credit extension. Thus, a positive dynamic in banking deposits involves a credits evolution in the same direction. The paper tests the role of bank disposable funding as a significant driver of FCL and whether there is a positive relationship between foreign liabilities of the bank and FCL. Luca and Petrova (2008) find no robust relation between aggregate lending in FC across transition countries and aggregate foreign liabilities of banks. They do, however, find a strong relation between aggregate levels of deposit "dollarization" and FCL.

The choice of the cost related indicators is quite straightforward. Calza, et. al., (2003) and Kakes (2000) believe that the interest rate is a potential determinant of credit demand and as an opportunity cost indicator it simultaneously determines both the demand and supply of bank credit. Égert, et. al., (2006) imply that

¹⁶ See also Barajas and Morales (2003), Jeanne, (2005) and Luca and Petrova (2008).

¹⁷ Luca and Petrova, (2008), Albulescu, (2009), Brown, et. al. (2009), Cuaresma, et. al. (2011) and Streiner (2011).

the usage of spread rather than the interest rate is more important since it reflects the relative price and the risk of FCL. Based on Brown, et. al., (2009) and Brown, et. al., (2010) we expect that a higher interest rate differential is required to motivate firms with higher distress costs to take FCL. Hence, it is expected that a higher interest rate differential would induce more FCL. But, the real interest rate differential is influenced by macroeconomic stability, and its significance could result from the trade-off between currency risk (in the case of a large devaluation of the domestic currency) and real interest rate risk (in the case of a lower-than expected inflation rate).

Finally, our model suggests that FCL is also determined by the MVP indicator, λ_{MVP} . In a similar vein, Ize and Levy-Yeyati (2003) explain that borrowers consider the relative volatility of real returns issued in domestic and foreign currency and hence trade off inflation volatility and real exchange rate volatility. In their sample of transition countries, Basso, Calvo-Gonzales and Jurgilas (2007) finds that higher MVP dollarization induces a higher degree of both deposit and lending dollarization. On the contrary, Neanidis and Savva (2009) suggests that MVP's effect on FC deposits is materializing only in the long-run as agents have the capacity to better assess the differences associated with the volatility of inflation versus that of depreciation. They find no relationship or even a slight negative impact of the MVP indicator on lending dollarization in the short run.

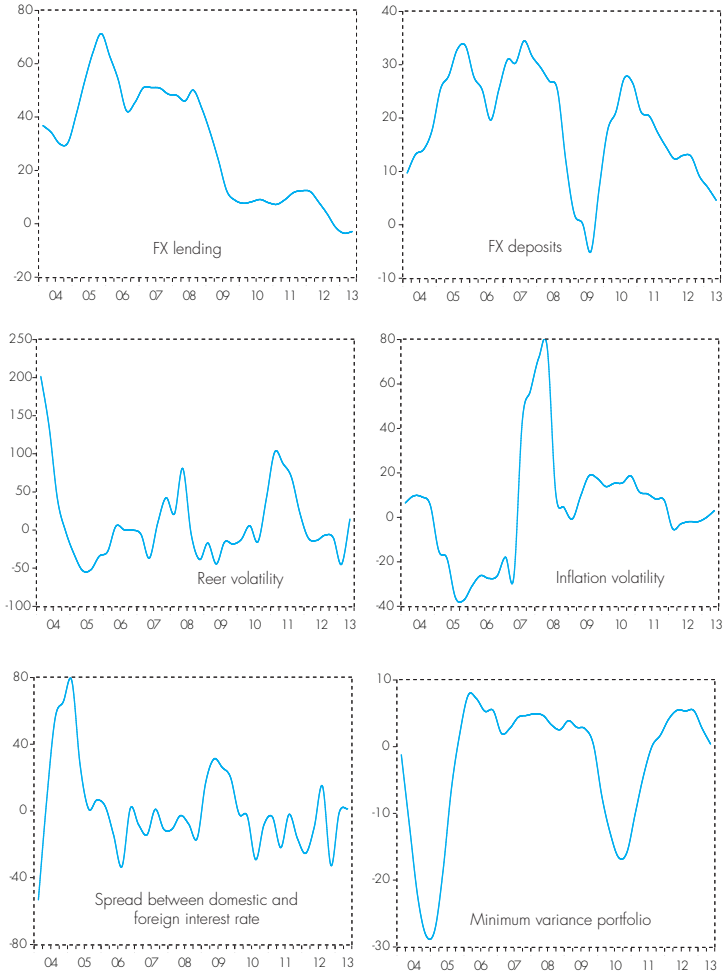
B. DATA

The specified model on the determinants of FCL is based on a framework that distinguishes among macroeconomic determinants, such as volatility of inflation and exchange rate, minimum variance portfolio and two other major aggregate determinants, namely: interest rate spreads and FC deposits. The dependant variable, ϕ , represents the FCL to the private sector. With regards to other indicators, both ρ and π are indicators of volatility, namely the inflation and exchange rate estimated through EGARCH technique (Table 1 and 2 in Appendix) as suggested by Rummel, (2010). Data on inflation rate are based on Consumer Price Index (CPI).

First, CPI is log-linearized. Then, it is transformed as a first difference according to the function $[\text{dlog}(\text{CPI}) \times 400]$. As Basso, et. al., (2007) explain, one could estimate variances over the whole sample period, but this is biased, as it makes it impossible to account for unobserved heterogeneity in our empirical analysis.

In addition, in the absence of forward-looking data on inflation and exchange rate expectations, variance and covariance were obtained from the percentage change in inflation and the real effective exchange rate (REER) over the period of one year starting from January 1998 to June 2013. Therefore, λ_{MVP} is based on all historical information up to the last observation point according to equation (d) at the footnote. The data on ω consider the FC deposits in the banking sector. ι represents the spread between 12 month interest rate on domestic and foreign currency lending. Finally, τ represents a dummy variable to account for the effect of financial and economic crisis, taking the value 1 for the period 2008Q03 – 2010Q01, 0 otherwise. Data on FCL and FC deposits are deflated by CPI. All indicators enter the model as annual percentage change. The data on CPI are taken from the Albanian Institute of Statistics (INSTAT). The rest are taken from the Bank of Albania.

Chart 3 FCL and explanatory variables



Source: Bank of Albania and Author's Calculations.

IV. EMPIRICAL RESULTS

The assessment of the specified model is conducted according to Eq. (2). It is based on quarterly data from 2004 Q1 to 2013 Q2. This period is considered more stable in the view of banking system development and the reporting way of data. It corresponds with major innovative changes in the domestic banking system and the overall abrupt growth of credit stock. In addition, based on the Augmented Dickey Fuller and Philips Peron unit root test approach (Table 5 in the Appendix) traced by Shijaku (2012), some of the indicators involved in the specified model are integrated of order $I(1)$, the rest is integrated of order $I(0)$. Therefore, beyond the analyse of the used indicators' characteristics, the unit root test affirms that applying the ARDL approach is suitable, while in the estimated equation a constant has been included. The computed critical values of F-statistics test¹⁸ (Table 6 in the Appendix) confirm that in the case of Albania, there is a unique cointegration relationship between FCL and other explanatory variables, but only the optimal 2 lagged model meets the endogeneity condition and the maximization informing Schwarz condition (Table 6 in the Appendix). Next, the results (Table 1 and 2) on a set of diagnostic conducted tests show that the specified model has a high explanatory level. It has no problem with respect to model functional formulation, normality, serial correlation and heteroscedasticity in the error term and stability of the coefficient estimated using the cumulative sum (CUSSUM) and cumulative sum of squares (CUSSUMSQ) test (Diagram 1)¹⁹.

Analysis of empirical model confirms that the results obtained are very informative (Table 1 and 2). Results show that the coefficient associated with ι has, as expected, a positive and statistically significant sign. This implies that comparably high domestic interest rates would be associated with higher FCL. Rising of ι by one percentage point increases the demand for FCL by nearly less than 0.065 percentage point. Nevertheless, comparably to Fidrmuc,

¹⁸ Critical values of F-test related are taken by Narayan (2004), who has reassessed the critical values of the lower bound $I(0)$ and the upper bound $I(1)$ to allow the evaluation of the coefficients on a sample with relatively small number of observations.

¹⁹ We also found a stable relationship even after we omitted the dummy on financial and economic crisis.

et al., (2011), the estimated impact is found relatively small, but similar to findings reported by Brown, et al., (2009) and those in the case of Shijaku and Kalluci (2012). This could be linked with two particular reasons. On the one hand, FCL is considered to be sustainable, especially in the medium and long, at a time when the exchange rate in the case of Albania has been generally stable, following the progress of developments in international markets for a period long time. Therefore, there is no substitution effect given that FCL is considered more risk free in terms of domestic inflation and exchange rate. On the other hand, borrowers might be orientated toward cost reduction, but the needs for fund financing make the demand for loans inelastic. This is also in line with suggestions by Beckmann, (2011) that the stability of interest rates tends to be more important than the mere perceived cost advantage in SEE and have some doubts about the stability of their domestic currencies in terms of prices.

The coefficients related to ρ and π exhibit the theoretically expected sign and are statistically significant at conventional level. According to them, FCL is positively related to domestic monetary volatility comparable to the negative impact of the volatility of the exchange rate. These results are similar to conclusions by Barajas and Morales (2003) that higher exchange rate volatility reduces FCL and to those by Luca and Petrova (2008) that rising inflation volatility will shore up attitude towards FCL. However, in our case, although statistically significant at conventional level, their effect is found to be relatively small in terms of the magnitude. On the one hand, Rosenberg and Tirpák (2009) in a study on CESEE countries also find a negative, but small effect of exchange rate volatility on the FCL. On the other hand, as in Cuaresma, et al. (2011), the empirical findings shows that the problem of inflation and exchange rate volatility is less dominant in the case of Albania due to the lower inflationary pressure and stable exchange rate regime through the sample time.

Similar to other empirical studies²⁰, a crucial outcome remains the confirmation of the theoretical argumentation of Ize and Levy-Yeyati (2003) that in the case of Albania λ_{MVP} is a relatively key factor to explain trend towards FCL. The positive sign of the coefficient indicate that λ_{MVP} is positively related to FCL. With regards to the magnitude, the level of FCL will rise by nearly 0.788 percentage point in respond of 1 percentage point in MVP-implied share. At the same time, considering other empirical studies²¹ in the case of Albania, but different to those related to the CESEE countries, and similar to Luca and Petrova (2008) and Cuaresma, et al., (2011), the degree of deposit dollarization constitutes a statistically key driver of FCL in the Albanian banking system. An increase of it by 1 percentage point is found to be associated with a 0.803 percentage point boost of the FCL. This impact is found to be the highest among other explanatory variables. Its size is relatively similar to the relationship between the stock of bank lending and that of deposits reported from Shijaku and Kalluci (2012). In addition, we found that FCL has been dictated by the negative effects of the GFC. However, although statistically significant, its effect is estimated to be relatively small.

FCL is found to be cointegrated with other explanatory variables in the long-run. The coefficient on error term, ECM, has a negative sign and is statistically significant at 1% level. There is an error correction mechanism, which brings FCL back to equilibrium. Thus, the long-run equilibrium of Granger (1986) is achievable. Results, support also findings by Shijaku and Kalluci (2012) that FCL is determined by both the demand and supply factors, while the speed of adjustment coefficient is relatively high. Therefore, in case of shocks, any deviation from the equilibrium level would be corrected on a relatively short extend time span. On the other hand, this process is found to be faster than the magnitude observed by previous studies on credit behaviour and money demand utility function²².

²⁰ Basso, et. al. (2007), Neanidis and Sawa (2009), Cuaresma, et. al. (2011) and Fidrmuc, et. al. (2011).

²¹ Note and Suljoti (2012) and Shijaku and Kalluci (2012).

²² See: Shijaku and Kalluci (2012) on credit behaviour and Tanku (2006), Shijaku, (2007) and Shijaku (2012) on money demand adjustment coefficient.

Table 1 Estimating long-run coefficients using ARDL approach

ARDL(2, 1, 0, 0, 2) selected based on Schwarz Bayesian Criterion DV is ϕ , 38 observations used for estimation from 2004Q1 to 2013Q2				
Regresses	Coefficient	Standard Error	T-Ratio	[Prob]
ρ	.04451	.025558	1.7415	[.094]
π	-.05012	.013815	-3.6280	[.001]
λ_{MVP}	.78801	.076937	10.2423	[.000]
ι	.06479	.030732	2.1083	[.045]
ω	.80327	.091627	8.7668	[.000]
c	.65058	.039297	16.5554	[.000]
τ	-.04065	.018333	-2.2173	[.036]

Source: Author's Calculations.

Following these findings, the empirical analysis is extended also to the short-run effects. Results are reported in Table 2. They show that, besides the impact from inflation volatility, other coefficients have the expected sign. At the same time they are statistically significant. Accordingly, there is a high inertia in FCL in the short-run, which is found to be the highest among other indicators. Meanwhile, even in the short run, the effect of the cost is found to play an insignificant role in the dollarization of the stock of bank lending, which is even smaller than the value of the coefficient in the long run.

Similarly, FCL behaviour is found also to be slightly affected by domestic monetary and exchange rate volatility in the short-run, supporting the long run observed relationship. But, different to exchange patterns, inflation volatility does not exhibit the expected sign and is not statistically significant. The former, based on a preliminary assumption, might be due to the rising risk perception. The other arguments, based on Brown and Haas (2010), might be due to the dominance of longer term FCL structural patterns in the case of Albania and the unpredictability of monetary policy over the long term horizon. Further, the coefficient of MVP continues to reveal a positive relationship, which is statistically significant and relatively strong even in the short run. The FCL will rise by nearly 0.685 percentage point in response of 1 percentage point in MVP-implied share. Finally, the accumulated lag impact of FC deposits remains a key driver of FCL even in the short run. The impact is estimated to be the highest among the other explanatory variables.

Table 2 Error correction for the selected ARDL model

ARDL(2, 1, 0, 0, 2) selected based on Schwarz Bayesian Criterion DV is ϕ 38 observations used for estimation from 2004Q1 to 2013Q2				
Regresses	Coefficient	Standard Error	T-Ratio	[Prob]
$\Delta\phi(-1)$	.72235	.09953	7.2573	[.000]
$\Delta\rho$	-.02728	.02920	-.93417	[.358]
$\Delta\pi$	-.04357	.01693	-2.5735	[.016]
$\Delta\lambda_{MVP}$	.68507	.17851	3.8378	[.001]
$\Delta\iota$	.05633	.02495	2.2579	[.032]
$\Delta\omega$	.41751	.12683	3.2918	[.003]
$\Delta\omega(-1)$	.48874	.12133	4.0281	[.000]
$ECM(-1)$	-.86936	.19809	-4.3886	[.000]
Diagnostic Tests				
R ²	.89115	-	1.3326	[.514]
Adj. R ²	.83890	X ² Re set	.043671	[.834]
F-stat. F(10, 27)	20.467[.000]	X ² Auto	6.2369	[.182]
S.E.R.	.23152	X ² white	1.8250	[.177]
AIC	-9.08651	Cusum	S	
SIC	-10.15095	Cusumsq	S	
$ECM_t = \phi_{(t-1)} - .044508 * \rho_{(t-1)} + .050120 * \pi_{(t-1)} - .78801 * \lambda_{MVP(t-1)}$ $- .064792 * \iota_{(t-1)} - .80327 * \omega_{(t-1)} - .65058 - .040649 * \tau_{(t-1)}$				

Source: Author's Calculations

V. CONCLUSIONS

The Albanian economy experienced a rapid credit growth, particularly after 2004. The privatisation of the largest bank and entry of foreign banks stepped up the lending process and promoted competition. On the one hand, bank lending, particularly FCL, has played an important role in the catching-up process and financial integration in Albania, mainly over the last decade. On the other hand, rapid FCL was a common feature of regional countries, which however reversed completely after the outburst of financial crisis. The latter intensified the attention to the factors that dictate this form of lending, in particular as a result of the negative impact assumed it has the financial sector. Likewise, a very important issue that arises recently is associated with constraints that this form of lending plays in contempt of the effectiveness of monetary policy.

This paper builds upon previous empirical analyses in the case of Albania, but different to those, it disaggregates lending according to currency counterpart, in particular according to the part given in foreign currency and the one given in domestic currency. The aim is to appraise explicitly the determinants of FCL (based on demand and/or supply side) based on the meta-analysis for CESEE countries. The model specification is estimated through means of bound test to ARDL approach. Therefore, the coefficients on short-run elasticity were obtained by estimating an ECM model convergence to the long-run equilibrium. The study identifies an error correction mechanism, which brings FCL back to equilibrium. Interestingly, the speed of adjustment is relative high and greater than the magnitude observed previously on credit behaviour and money demand utility function studies.

Results support findings by previous empirical work in the case of Albania. The findings confirm the theoretical assumption that FCL will be influenced by risks perception conditions. Economic agents are more prone to FCL conditions to further higher of positive spreads in interest rates. Stability over exchange rate is another factor that has been found to affect this trend. Other results support the theoretical argument of MVP's concept, which together with the indicator related to FC deposits constitute the main explanatory

factors in foreign currency lending. This is another argument supporting the developments related to FCL over the sample period reflects the tendency of the private sector towards instruments that carry less risk, especially those related to inflationary pressures and higher volatility in the exchange rate. At the same time, the results indicate that the need for liquidity exceeds the substitution effect and / or the effect of cost reduction to lending service, making demand inelastic. Finally, FCL has been affected by the GFC, but the negative effect has been relatively insignificant.

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APPENDIX

Table 3 EGARCH (11) – AR(12, 1, 12)-in-variance model for $\Delta \log(\pi)$
(errors follows normal distribution)

Dependent Variable: $\Delta \log(\pi)$				
Method: ML - ARCH (Marquardt) - Normal distribution				
Sample (adjusted): 2001M01 2013M05				
Included observations: 149 after adjustments				
Convergence achieved after 25 iterations				
MA Backcast: 2000M01 2000M12				
Presample variance: backcast (parameter = 0.7)				
LOG(GARCH) = C(6) + C(7)*ABS(RESID(-1))/@SQRT(GARCH(-1)) + C(8)*RESID(-1)/@SQRT(GARCH(-1)) + C(9)*LOG(GARCH(-1))				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
log(GARCH)	1.32E-05	.000412	0.032070	[.9744]
C	-0.000921	.008027	-0.114779	[.9086]
AR(12)	0.895660	.021841	41.00752	[.0000]
MA(1)	0.264216	.042313	6.244339	[.0000]
MA(12)	-0.735745	.046673	-15.76380	[.0000]
Variance Equation				
C(6)	-1.244213	0.586790	-2.120371	0.0340
C(7)	0.407989	0.186959	2.182240	0.0291
C(8)	-0.252977	0.110543	-2.288508	0.0221
C(9)	0.892623	0.057278	15.58403	0.0000
Diagnostic Tests				
R ²	0.522698		Mean dependent var	0.000485
Adjusted R ²	0.509440		S.D. dependent var	0.015295
S.E.R.	0.010713		A.I.C.	-6.227170
SSR	0.016525		S.I.C.	-6.045723
Log likelihood	472.9241		H.Q.C.	-6.153451
DW statistic	1.494875			
Inverted AR Roots				
	.99	.86+.50i	.86-.50i	.50+.86i
	.50-.86i	-.00-.99i	-.00+.99i	-.50-.86i
	-.50+.86i	-86+.50i	-.86-.50i	-.99
Inverted MA Roots				
	.96	.82-.49i	.82+.49i	.47+.84i
	.47-.84i	-.02-.97i	-.02+.97i	-.51+.84i
	-.51-.84i	-.87-.49i	-.87+.49i	-1.00

Source: Author's calculations.

Table 4 EGARCH (13) – AR(1, 1, 1)-in-variance model for $\Delta\log(\text{CPI})$
(errors follows normal distribution)

Dependent Variable: $\Delta\log(\text{CPI})$				
Method: ML - ARCH (Marquardt) - Normal distribution				
Sample: 2001M01 2012M12				
Included observations: 144				
Convergence achieved after 27 iterations				
MA Backcast: 2000M12				
Presample variance: backcast (parameter = 0.7)				
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*GARCH(-2) + C(9)*GARCH(-3)				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	0.034357	0.071683	0.479287	0.6317
C	3.109167	0.333329	9.327620	0.0000
AR(1)	0.754454	0.060989	12.37042	0.0000
MA(1)	0.280435	0.091246	3.073408	0.0021
Variance Equation				
C	0.008099	0.005631	1.438303	0.1503
RESID(-1)^2	-0.089696	0.017781	-5.044376	0.0000
GARCH(-1)	0.182186	0.268219	0.679242	0.4970
GARCH(-2)	0.356906	0.387534	0.920968	0.3571
GARCH(-3)	0.499013	0.311087	1.604093	0.1087
R ²	0.673742	Mean dependent var		2.997265
Adjusted R ²	0.666750	S.D. dependent var		1.221163
S.E.R.	0.704950	A.I.C.		1.887166
SSR	69.57363	S.I.C.		2.072780
Log likelihood	-126.8760	H.Q.C.		1.962589
DW statistic	1.902029			
Inverted AR Roots	.75			
Inverted MA Roots	-.28			

Source: Author's calculations.

Table 5 Unit Root Testa, period 2004:1 – 2013:02

Variable	Level			First difference		
	Intercept	Intercept and trend	None	Intercept	Intercept and trend	None
Augmented Dickey Fuller (ADF) test						
ϕ	[0.9144]	[0.2013]	[0.2315]	[0.0004]	[0.0021]	[0.0000]
λ_{MVP}	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
π	[0.0004]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
$\boldsymbol{\iota}$	[0.0153]	[0.0647]	[0.0009]	[0.0000]	[0.0000]	[0.0000]
ω	[0.1376]	[0.3688]	[0.1809]	[0.0004]	[0.0005]	[0.0000]
ρ	[0.2335]	[0.4731]	[0.0290]	[0.0001]	[0.0003]	[0.0000]
Phillips-Peron (PP) test						
ϕ	[0.9347]	[0.6442]	[0.3265]	[0.0577]	[0.1858]	[0.0038]
λ_{MVP}	[0.0017]	[0.0195]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
π	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
$\boldsymbol{\iota}$	[0.0153]	[0.0647]	[0.0009]	[0.0000]	[0.0000]	[0.0000]
ω	[0.1731]	[0.4282]	[0.1142]	[0.0004]	[0.0024]	[0.0000]
ρ	[0.1884]	[0.3726]	[0.0216]	[0.0000]	[0.0000]	[0.0000]
a automatic lag selection based on Schwarz Info Criterion (SIC)						

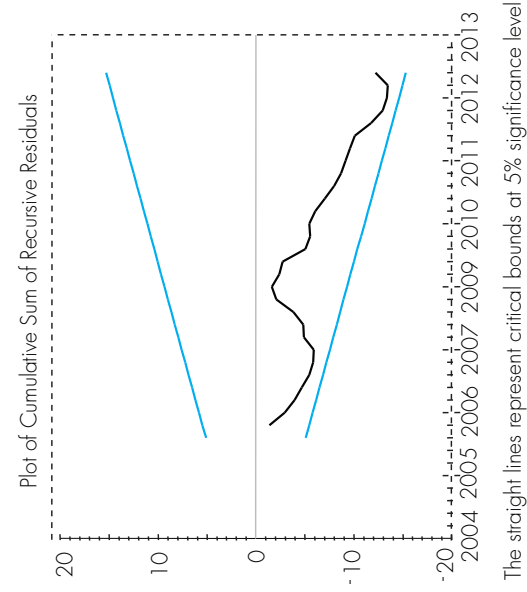
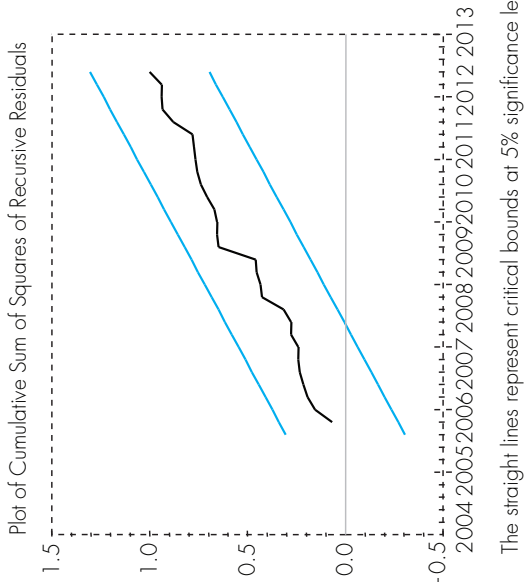
Source: Author's calculations.

Table 6 ARDL bound test for cointegration analysis based on equation 2

Dependant Variable(1)	AIC-SC lags	F-stat	df	[Prob.]	Results***
$F_{\phi}(\phi | \rho, \pi, \lambda_{MVP}, \boldsymbol{\iota}, \omega)$	2	5.54035	(6, 13)	[.0058]	Cointegration
$F_{\rho}(\rho | \pi, \lambda_{MVP}, \boldsymbol{\iota}, \omega, \pi)$	2	0.59754	(6, 13)	[.7277]	No cointegration
$F_{\pi}(\pi | \lambda_{MVP}, \boldsymbol{\iota}, \omega, \pi, \rho)$	2	3.56348	(6, 13)	[.0260]	No conclusive
$F_{\lambda_{MVP}}(\lambda_{MVP} | \boldsymbol{\iota}, \omega, \phi, \pi)$	2	1.85167	(6, 13)	[.1655]	No cointegration
$F_{\boldsymbol{\iota}}(\boldsymbol{\iota} | \omega, \phi, \pi, \lambda_{MVP})$	2	3.30631	(6, 13)	[.0335]	No conclusive
$F_{\omega}(\omega | \phi, \pi, \lambda_{MVP}, \boldsymbol{\iota}_t)$	2	1.14595	(6, 13)	[.3904]	No cointegration
*** Based on the critical value suggested by Narayan (2004), for an equation with intercept, where: k= 6 and n = 40					
- (1 %) : lower bound I(0) = 3.796 and upper bound I(1) = 5.299					
- (5 %) : lower bound I(0) = 2.757 and upper bound I(1) = 3.927					
- (10 %) : lower bound I(0) = 2.316 and upper bound I(1) = 3.371					

Source: Author's calculations.

Diagram 1 Stability test analysis based on CUSUM and CUSUMSQ



Source: Author's calculations

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