



## REMITTANCES AS A DETERMINANT OF FINANCIAL SECTOR DEVELOPMENT

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### ABSTRACT

This paper studies the impact of remittances on financial sector development. Remittances sent across countries have increased enormously in the last three decades. For instance in 1980 remittances sent globally amounted to \$47 billion, \$102 in 1990, \$321 billion in 2010, \$529 billion in 2012 and \$550 billion in 2013. A significant portion of remittances are received in lump sum and channelled through financial institutions which increases bank deposits, revenue for banks through transaction costs and enabling households access other financial services. Data on remittances, financial sector development and the control variables for the 31 countries for the period between 1980 and 2012 was used. General Moment Method (GMM) was used to analyse the data. The results show that remittances have an adverse effect on domestic credit to private sector and foreign direct. However the study further found that impact of remittances on bank deposit was positive though statistically insignificant. The study concludes that remittances can support financial sector development if financial institutions are effective in converting deposits to credit.

## 1. INTRODUCTION

Remittances comprise of personal transfers and compensation of employees. These transfers are in the form of cash or something of value made or received by resident households to or from non-resident households. Compensation of employees denotes income of border, seasonal, and other short-term workers employed in the foreign country by migrants. (World Bank 2014). Remittances transferred across countries have overgrown in the last three decades. For instance in 1980 remittances sent globally amounted to \$47 billion, \$102 in 1990, \$321 billion in 2010, \$529 billion in 2012 and \$550 billion in 2013. Important to observe is that a large portion of this capital flows were received by developing countries. In 2011 the developing countries received \$372, \$401 in 2012 billion \$414 in 2013 and a projected \$436 billion in 2014. These figures show the increased importance of remittances as an alternative source of development finance.

This economic significance of remittances is useful to both the private sector and the public sector. For the private sector, remittances supplements households' income which stimulates consumption consequently triggering the demand for additional investments in production. Remittances are also a source of seed capital for entrepreneurs who cannot access conventional bank loans. Since a huge volume of remittances are sent through financial institutions or sent in lump sum, the study of remittances is of importance to financial institutions. Remittances are a source of revenue and deposits for commercial banks that facilitate the transmission of these capital flows. Remittances related transactions also enable the migrants and the households access other financial products like banks accounts and loans. A study by Aggarwal, *et al.* (2010) on a sample of 109 developing countries between 1975-2007 show that 1% growth in remittances stimulate a 0.36% increase in bank deposits and 0.29% increase in credit to private sector. The public sector investments involves large amounts of capital is not the case for developing countries that depends primarily of foreign aid and FDIs for infrastructural development. The public sector can harness international migrants' remittances for economic development either through private- public partnerships, diaspora bonds or through private direct investments. There are two economic approaches used to analyse the economic impact of remittances. Microeconomic analysis centre on the impact of remittances on migrants households consumption behaviours and lifestyle. Micro economists observe that remittances supplements household's income which is an incentive for more consumption, education and entrepreneurial undertakings. Macroeconomic studies show that remittances have a long run impact on the receiving country's macro-economic indicators. However, the magnitude of these transfers hinges on whether remittances are used for consumption or investment purposes (Rapoport, 2005). Durand (1996) argues that remittances influence a country's economy directly by way of investment or indirectly through the multiplier effect of consumption which elicits investments in production to meet the demand upsurge. A country's national current account approach is commonly used to explain the macroeconomic effect of remittances by regressing remittances with indicators such as; exchange rates, Gross domestic product, balance of payment and inflation.

## **2. LITERATURE REVIEW**

### **2.1 What Drives The Flow Of Remittances From The Migrants' Host Countries To Their Home Countries?**

There are various theories that attempt to explain why migrants send remittances. These theories are generally referred to as endogenous. The major focus of these theories is on family economics utility and altruism and portfolio motives portrays the migrant as a self-seeking individual who will decide whether to invest in the host country, back home or both (Rocha, *et al.*, 1992). Individuals send money to their households because they value the welfare of their families referred as altruism motive. A study by Funkhouser (1995) in El Salvador and Nicaragua proclaim that remittances are a behaviour constituent of the migrant. The findings of Funkhouser (1995) maintain that the volume of remittances will be influenced by; first, the migrant's factors like the level of income and attachment to the family. Migrants with higher income tend to remit more than migrants with lower income.

The flow of remittances is also hypothesized to increase as the income level of the migrant improves and as the social ties between the migrant and his household strengthens.

Second, the migrant's family characteristics determine the frequency and the amount of remittances to be sent. The income level and the number of dependent siblings in the household will influence the migrant's decision on the amount of money to send back home. Third, the number of migrant workers from the same household working in foreign countries; it is argued that as more members of the same household migrate, the migrant will be relieved the burden of supporting his household single-handedly since this responsibility will be shared by all the migrants. However, a study by Aggarwal and Horowitz (2002) on the effect of 'many migrants' on the level of remittances shows divergent effects from those of a 'one migrant' model as used in many studies. This study maintains that under pure insurance intentions, the number of migrants in the same household would not affect the amount of remittances. The study further argues that under pure altruism, the existence of additional remitting migrants this will reduce the size of remittances.

A study by Dalen, *et al.* (2005) in Egypt, Morocco and Turkey shows that over two-thirds of the migrant-sending family unit in the three countries get remittances, and between 75 and 90% of the remittances are used to finance the daily survival expenditures on items such as food, clothing and rent - emphasizing the altruistic nature of remittances. Fundamentally, the altruism motive of remittances is founded on the argument that individuals migrate due to poverty and unemployment back home, and that after settlement in the host country they are obliged to remit home as a sign of love and care for their households. Wahba (1991) splits remittances into two components; the first component is the permanent remittances meant for household upkeep which are dependent on demographic characteristics such as family size and income level of the household. The second component of remittances is optional which is meant for investment on items such as land, stock, real estates and other localized investments. Optional investments are dependent on macro-economic factors such as interest, and inflation rate differential between host and home country and the extent the migrant is conversant with the investment climate in the two countries. In summary, it can be inferred that altruism motive asserts that: (a) migrants with higher incomes will remit; (b) poor households will receive more remittance than those which are well-off; (c) the migrant will remit more in the context of strong family bondage; and (d) remittances will reduce as more household members migrate to foreign countries. The bequest theory suggests that remittances are the bases on which inheritance decisions are to be made. Bequest motive is a self-seeking behaviour where the migrants remit in order to win favour from the head of the household and thereon ensure a large portion of his eventual inheritance upon the death of the family head. The age of the parents and the number of siblings in the family determine the amount of remittances. If the parents are approaching their final years the migrant is likely to send more; if the siblings are many the migrant send more to compete with the other sibling for inheritance. A study by Hoddinott (1994), on 215 households in Karateng Western Kenya FOUND that an additional acre of land reduces the incentive to migrate by 11%.

The study further maintains that as the age of the parents advance, parent tends to be more reliant on financial support from their children, precisely, the migrants or those offspring on formal employment. Parents maximize his utility by enticing the migrant child through bequests of items such as land and livestock. Migrants' motive to inherit from their parents predict the following; migrant remit more and frequently if a large family assets has not been bequeathed; more remittances infers more inheritances and; sons tend to remit more than daughters Lucas and Stark (1985).

Remittances can be attracted by a credit agreement between the migrant and the household back home. Under this strategy the migrants remit home as a way of refunding the family for resources spent on his educations and travelling to the host country. Migrant will start to remit back as soon as he/she settles down in the host country, Whitelaw (1974) and Poirine (1997). Members of a household can also migrate to a foreign country as a risk management technique. Risk management technique is premised on rural households in a developing country which are characterized by; unstable income, overreliance on subsistence farming, unsophisticated technology, land gradually becoming unproductive and lack of credit. Households view that foreign and urban employments are stable and unaffected by perils common to rural household such as crop failure and animal diseases. Migration therefore shields the household from geographical risk. Migrants send more if the households are undergoing economic problems such as deterioration of income, (Stark & Lucas, 1989; Rosenzweig & Stark, 1989).

There are few incentives to remit when the income level of the household is stable. Income elasticity is the major determinant of the co-insurance agreement, Coax and Jimenez (1998). Studies by Fuller, Kamnuansilpa and Lightfoot (1990) in Philippines and Hoddinott (1994) in Kenya, that sought to explain the risk management motive of remittances, found the age of the migrant as the major determinant of the volume of remittance. The age of the migrant is positively correlated to remittances up to a certain age after which the relationship smoothen out. Unemployment subjects the family to credit constraint which further explains the risk management theory. Amuedo-Dorantes and Pozo (2006) observe that migrants are risk averse and remit more when their incomes are at a risk specifically if the host country is politically and economically unstable. Amuedo-Dorantes and Pozo (2006) suggest that illegal migrants remit 3% higher than legal migrants. However, for this strategy to succeed, there is the need for a high degree of self-sacrifice where failure to remit would amount to unstable family ties and the ultimate imposition of other types of sanctions, such as denial to inherit by the household (Docquier & Rapoport, 2005). Migrants are interested in owning property back home as livestock and this could be a reason for remitting. (Ahlburg & Brown, 1998). Secondo (1997) Migrants also remit to support their offspring's left at home on basic items such as food, clothing and education, is another cause for remitting.

## **2.2 Financial Sector Development**

A country's economic prosperity depends on the efficiency of its financial system in harnessing savings and channelling them into investments. Banking sector development contributes to socio-economic development specifically, job creation, economic growth, poverty eradication and education.

This assertion is echoed by Miller (1998) who says “financial markets contribute to economic growth is a proposition too obvious for serious discussion”. The financial sector transfers resources from savers to investors (Mundaca (2005); promote investors’ confidence through provision of information, risk management, transparency and governance; enhance liquidity of financial assets and facilitate the pricing of securities.

Owing to its significance many studies have been done to unearth the determinants of banking sector development. The quality of institutions for the protection of creditors and contract enforcement is central to private sector development (Levine 2004; La Porta *et al* 1997; Levine *et al* 2000; Demurgic-Kunt *et al* 2004 and Barth *et al* 2004). Pagano and Volpin (2001) found the political climate as influencing banking sector development. They argue that a static political regime inhibit external financing. Gerschenkron (1962) found public ownership as a determinant. He argues that government ownership of financial institutions means more funding for the institutions. The impact of remittances on economic growth is mixed. Ayadi *et al* (2013) and Garcia and Lin (1999) found that income and capital flow are central to banking sector development. Ayadi argues that capital flows have an income effect which stimulates savings in the form of bank deposits and eventually availability of credit. Accessibility to bank credit is critical for sustained economic growth specifically in developing countries thus the need of identifying the key determinants of bank credit is an important topic for researchers. Imran (2012) observes that a strong financial system is essential for economic growth and financial market imperfections create borrowing constraints, hence lower economic and credit growth a common phenomenon in Developing countries where potential investors cannot access credit due to stringent lending conditions. By and large, bank credit is conceived from two dimensions, the demand side which encompasses firms and individual’s access to credit and the supply side which involves financial institutions such as the money and capital markets. This study focuses on credit supply factors which affect the credit growth and as a result availability of bank loans for investment purposes. The key determinants of bank credit include; foreign liabilities, domestic deposits, economic growth, exchange rate, and the monetary policies, Imran (2012). A study by Harald and Heiko (2009) in Lebanon found that a slowdown in deposits inflow tightens financing condition for the government and this sooner or later leads to slow or no economic growth. Studies by Mundaca (2005), Giuliano *and* Zazzaro (2006) shows that remittances and banking sector development are complementary to economic growth implying that a developed financial system multiplies the economic impact of remittances and vice versa. Aggarwal *et al* (2004), Beck *et al* (2007) and Gupta *et al* (2009) argue that remittances support banking sector development in the recipient country. Contrary to the complementary view is the finding of a study down by Giuliano *and* Ruiz (2009), in countries considered to have underdeveloped financial institutions, found that remittances spur economic growth suggesting that remittances substitute’s banking sector development. Another argument put forward in literature explains the effect of remittances on stock market development. Billmeier and Massa (2009) found that the impact of remittances on stock market development is significant in countries without a sizeable natural resource endowment this finding infers that remittances are compensatory in nature.

Most of these studies link remittance and financial sector and economic growth and none of them has endeavoured to establish a direct link between remittances and banking sector development. Ayadi et al (2013) concludes that the impact of remittances has been under explored and further argue that remittances are received and saved in deposit accounts in banks and provide unbanked recipient with information about other banking products. This paper therefore seeks to establish the effect of remittances on banking sector development specifically, the growth of bank credit.

### **2.3 Theoretical Considerations**

Banks depend on household savings as a source of loanable funds. There are three key motives for holding money; transactions, precautionary and investment motives. These motives are satisfied by three types of deposits; demand savings and time deposits. Demand deposit is a synonym of current account intended for transactional motive. The second type of deposit is the savings accounts meant for households that wish to save money and earn interest on the deposit. Households keep their savings in bank accounts for precautionary reasons even though they are simultaneously induced by investment motives. Precautionary motive for holding money denotes households desire to hold cash balances for unanticipated eventualities. On the other hand the speculative motive relates to the desire to hold liquid assets from to profit from market imperfections leading to future changes in the rate of interest and return. These final class of deposits are referred to as time deposits that cater for the investment motives of households with idle funds and expecting higher returns on their money. From the depositor's viewpoint three theories describes the savings behaviour; the life cycle hypothesis developed by Modigliani and Brumberg (1954); the permanent income hypothesis by Friedman (1957); and buffer-stock theory of savings behaviour by Deaton (1991 and Carroll, (1992). From literature, household savings is the main source of deposits for banks. At macro-economic level several factors have been identified as key determinants of household savings. Qin (2003) found that the expected savings as the key contributing factor of bank deposits. Similarly to their Taiwanese counterparts, interest rate seems to be an important consideration to Mainland Chinese in making deposits. He concluded that precautionary was one of the essential factors that motivated them to save. A study by Hondroyiannis (2004) in Greece found that in the long run savings are sensitive to fertility changes, old dependency ratio, real interest rate, liquidity and public finance. Ozcan et al (2003) study in Turkey found income levels, financial depth and inflation stimulates saving while Athu-Korala and Tsai (2003) found population dynamics, disposable income, social securities contributions and financial reforms. By merging Friedman's (1957) proposition on permanent income (which determines household savings) and Wahba's assertion of permanent remittances (which are intended for household upkeep and influenced by demographic characteristics such as family size and income level of the household) its logical to argue that remittances complement households income subsequently households savings and eventually an increment in bank deposits advanced as loans to investors.

Studies show that remittances compensate the household for the credit constraints created by inefficiencies in the financial sector.

Ramirez and Sharma (2008) note that remittances play an important economic role in countries whose financial sector is considered inefficient, A sound financial sector is able to harness remittances through incentives such as financial agents who facilitate transfer of remittances, securitization of future remittances receipt as collaterals for bank credit, lowering transfer costs and financial advice. These incentives encourage migrants to use official channels of remitting, Freud & Spatafora (2008). Remittances are also linked with banking sector development. A study by Demirgüç-Kunt, *et al.* (2007) in Mexico found that 1% increase in the number of remittance receiving household translate to 0.16% increase in the number of bank branches; a 25% increase in the number of bank accounts and; a 2.5% points in the deposit/GDP ratio.

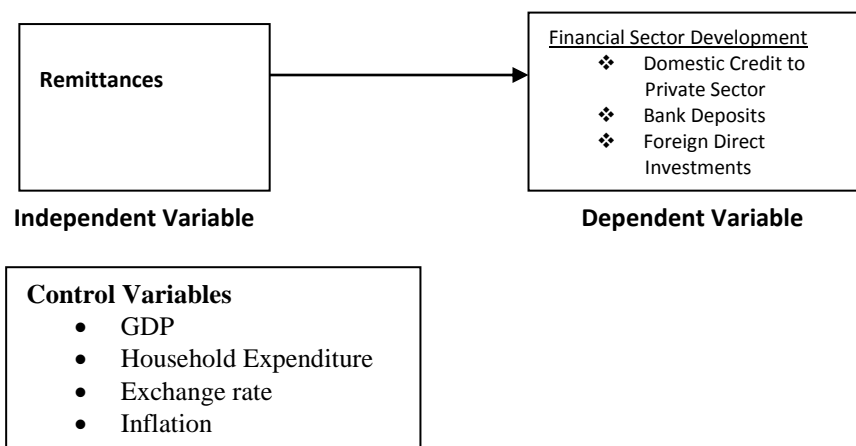
Banks transacting directly with the households hold crucial information for instance when remittances are expected and the amount of receipts. This kind of information can be used as collateral by bank, referred to as securitization of remittances, for the purpose of lending. Securitization of remittances allows regular recipients of remittances to access credit at a preferential interest rate. A study by Ketkar and Ratha (2009) shows the presence of untapped remittances based securitization of \$12 billion in the following countries: Brazil, El Salvador, Morocco, Yemen, Ukraine, India, Sri Lanka, Brazil, India, Pakistan, Serbia, Montenegro, Peru, Senegal and Tajikistan. Banks back home can also advance transnational loans to migrants on agreement they will repay the loan while still abroad. Migrants can borrow mortgage loans and investment back home as personal investments or on-behalf of their families who could be facing credit constrains. In Mexico for instance, a partnership between the government and other financial intermediary, Mexico Sociedad Hipotecara Federal (SHF) advanced loans to 3,500 of its citizens residing abroad in the period between 2004 and 2008 (Barranco, 2010). Terrazas (2010) recognized five channels used to marshal Diaspora wealth through the capital markets: deposit accounts characterized by both local and foreign currency; securitization of remittances by commercial banks; transnational mortgages; Diaspora bond for the governments; and Diaspora mutual funds.

Remittances are usually received in lump-sums owing to high transaction costs. Subsequently, households require financial services for safe keeping of money for a relatively long period of consumption. These deposits will increase the assets of the receiving bank which will then allow them to increase their lending and investment capacity. Dustmann and Joseph (2010) argue that up to 48% of migrants in Germany hold savings in their country of origin. In regard to these, many developing countries such as Ethiopia, Kenya, India, Nigeria and Turkey have liberalized their financial systems allowing foreigners to open Foreign Current Deposits (FCD) accounts in an attempt to attract Diaspora savings. Remitting charges are a source of income for commercial banks. The financial sectors boost the developmental impact of remittance through financial intermediation and eventually economic growth. Remittances channelled through banks are likely to be saved which enables the household access other financial products offered by the banks for instance education policies and health insurance schemes. Developed countries like the USA, UK and countries in East Asia have developed financial markets which facilitate the participation of the diaspora in mainstream investment segments.

However, the types of securities purchased by the migrants depends on two factors; whether the migrants are first generation which is highly inclination to direct investments or second generation that favour portfolio investments that are less demanding. Capital markets support private sector development through marshalling and distributing financial resources (Applegarth, 2004). Owing to the importance attached to cross country capital flows, countries are now redefining their priorities towards a fast and sustained economic growth through progressive foreign investment strategies. Some of the strategies adopted focus on; fiscal and monetary policies, trade liberalization and partnering with other international development agencies such as United States Agency for International Development (USAID) and Overseas Private sector Development Corporation (OPIC), International Monetary Fund (IMF) and World Bank. Rwanda has established the- Rwanda Diaspora Fund for Rwandese working abroad in finance industries.

Diaspora bonds have been issued by countries such as Israel to its Jewish migrants, India 1991, 1998 and 2000; Ethiopia to its migrants in Middle East (Birks & Sinclair 1978) and Ghana's \$ 50 million Diaspora bond of 2007. The Diaspora bonds are issued regularly to the Diaspora to finance capital expenditure of major infrastructures such as electricity and roads where the domestic credit is constrained or in an attempt to finance current account deficits. Diaspora participates in main stream capital investment in their home countries. Leblang (2009) argues that 1% growth in migrants stock from country A to home country B explain a 0.2% portfolio investment of country B in A. Another significance of remittance is the fact that the banking sector earns a lot of revenue from agency, processing and other transactions involving remittances transfers from the host country and home country. Little effort has been made to establish remittances-banking sector development causality notwithstanding numerous financial dealings involving the two variables ranging from money transfers to bank deposits. This paper therefore endeavours to establish the empirical relationship between remittances and financial sector development. The relationship between the research variables is shown below.

**Figure 1: The Conceptual Framework of the Research Study**





**3. DATA AND MODEL SPECIFICATION**

This study investigates remittances as a determinant of financial sector development. The study uses annual data for econometric analysis for a period of thirty years from 1982 to 2012 collected by World Bank. Financial sector development is the dependent variable while remittances are the explanatory variable as shown in figure 1. The study controlled for; the state of the economy measured by GDP per capital; effectiveness of the monetary regime proxies, Exchange Rate and Inflation rate; household incomes and savings measured by gross household. The data obtained from the World Development Index (WDI). T

he model used in study is as follows;

$$FSD_t = \beta_0 + \beta_1 REM_t + \beta_2 INF_t + \beta_3 GDP_t + \beta_4 EXCH_t + \beta_5 HCEXP_t + \mu_t \dots\dots\dots$$

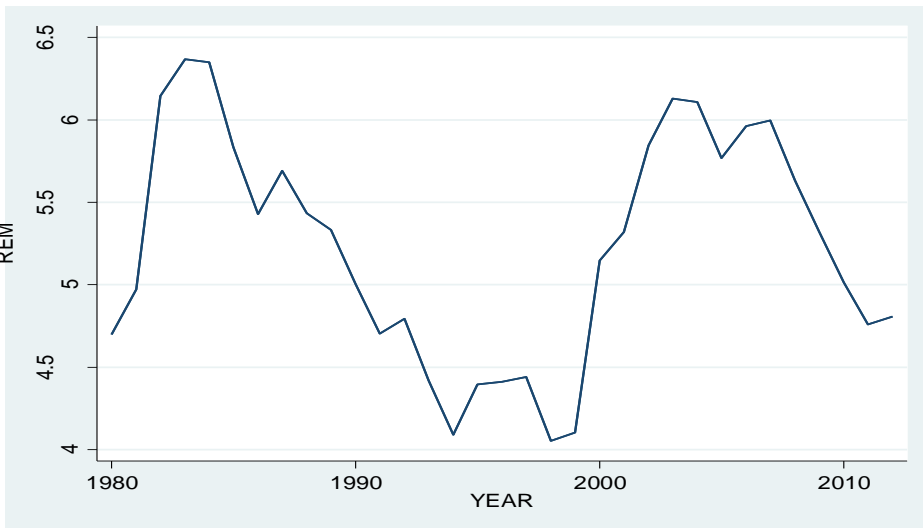
Where; FSD is the Financial Sector Development measured by bank deposits (DEPOSITS), domestic credit (DOMESTIC CREDIT) and foreign direct investment (FDI). The reason for the inclusion of FDI as an additional measure of financial sector development is the fact that remittances as transnational capital flows that boost the transfer of technology new management concepts and culture that leads to productivity and economic growth. REM is Remittances, INF inflation, GDP is Real Gross Domestic Product Growth, and EXCH is Exchange Rate, HCEXP household expenditure and  $\mu_t$  is the error term. All variables are taken in aggregate form since the study is macroeconomic.

The equations are estimated using GMM dynamic panel estimator. GMM helps minimize biases arising from endogeneity the causality between remittances and financial sector development can run in both directions. The data was analyzed by use of STATA software. The study hypothesize that remittances from abroad, deposits by the domestic businesses and individuals, inflation rate, economic growth, exchange rate and the monetary policies have a positive effect on domestic credit to private sector whereas the money market rate decreases the private credit.

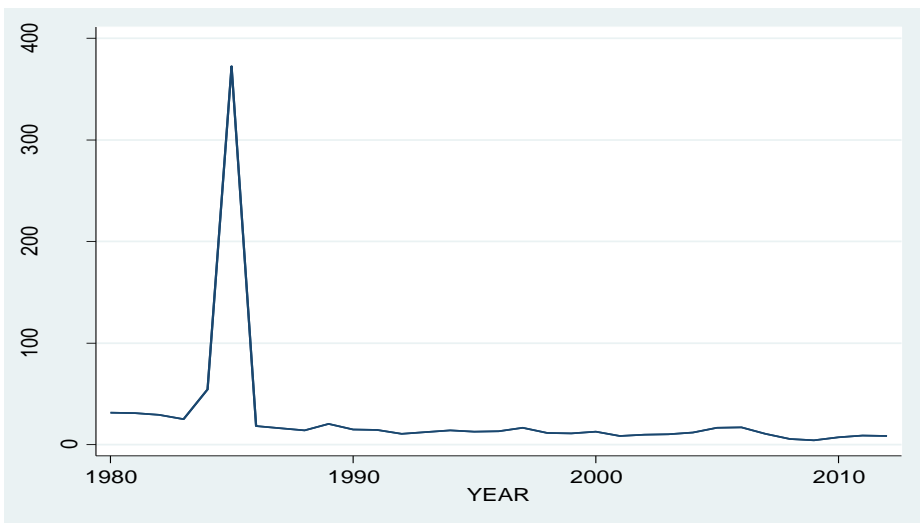
**4. EMPIRICAL RESULTS**

This section presents the data used for the analysis shown by graphs 1,2,3,4,5,6,7 and 8 below. The graphs further show the trend of the research variables for the entire period under study. This section further discusses the summary statics, correlation analysis and concludes by analyzing the output of the regression model.

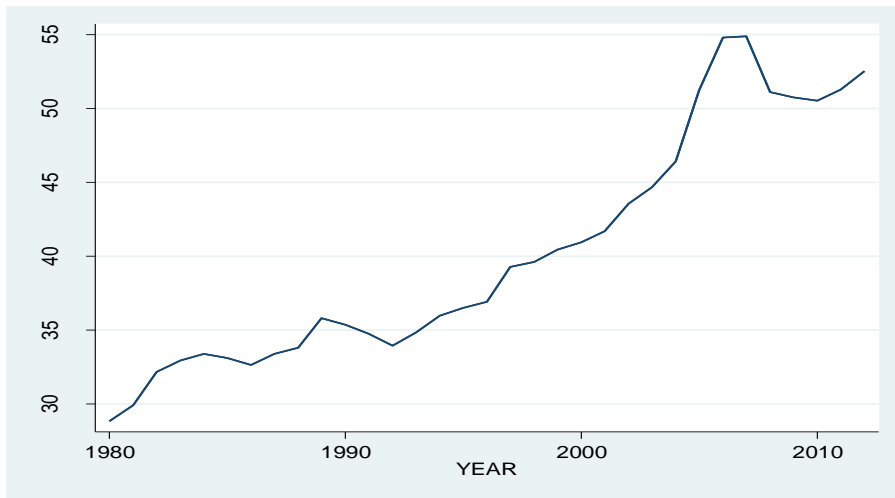
**Graph 1: Growth in Remittance (1980-2012)**



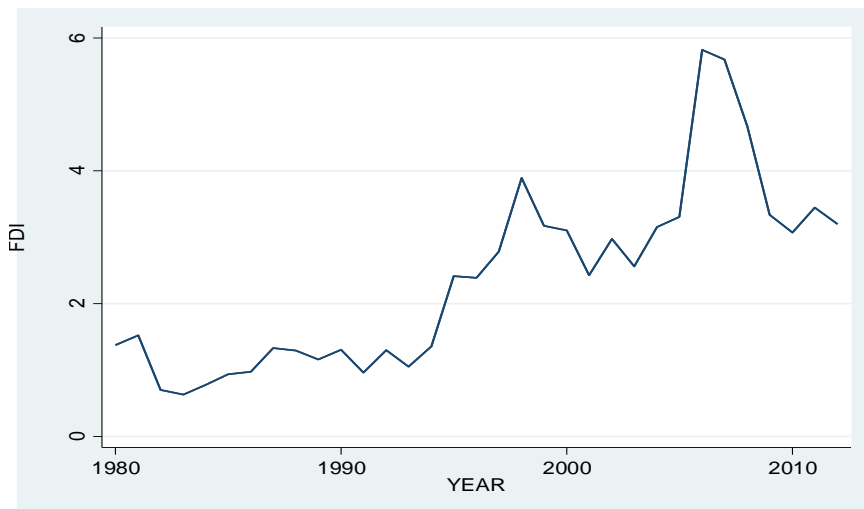
**Graph 2: Growth in Bank Deposits (1980-2012)**



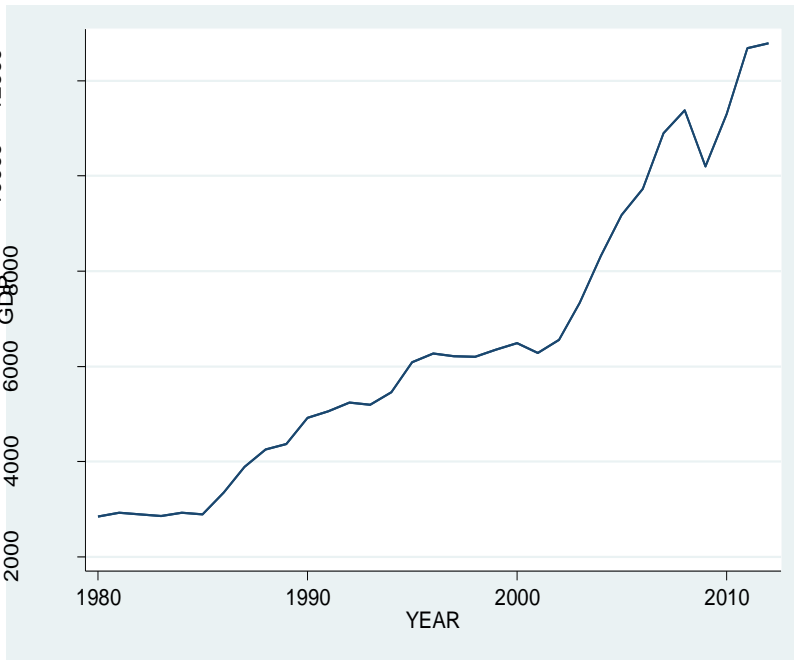
**Graph 3: Growth of Credit to Private Sector (1980-2012)**



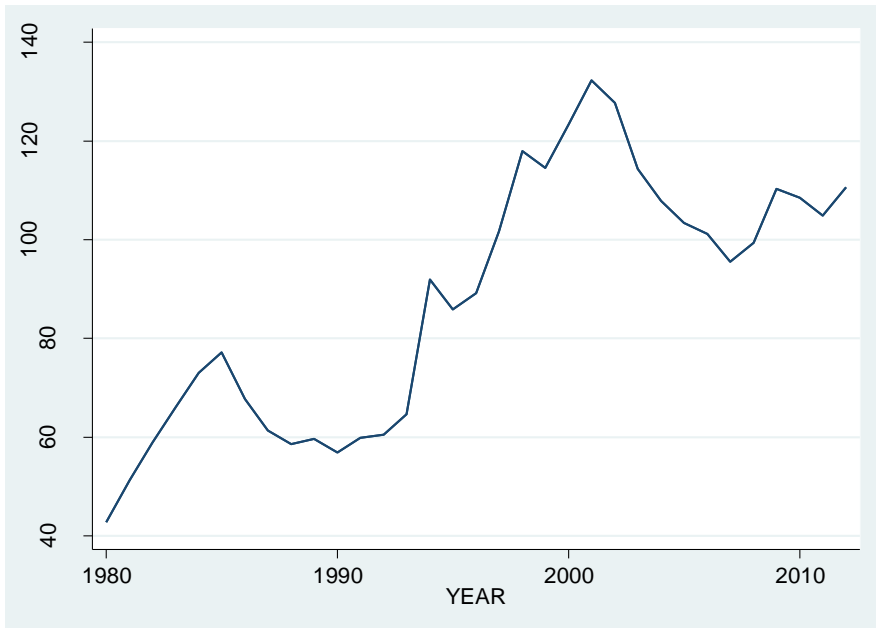
**Graph 4: Growth of Foreign Direct Investments (1980-2012)**



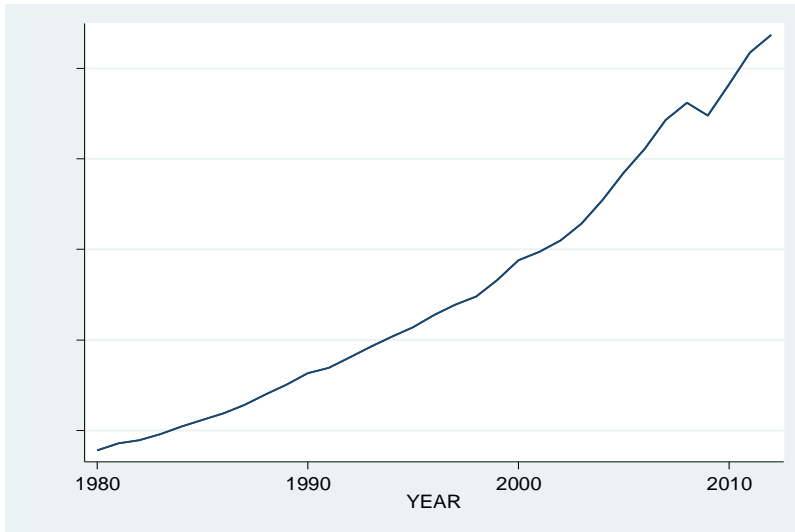
**Graph 5: GDP growth rate (1980-2012)**



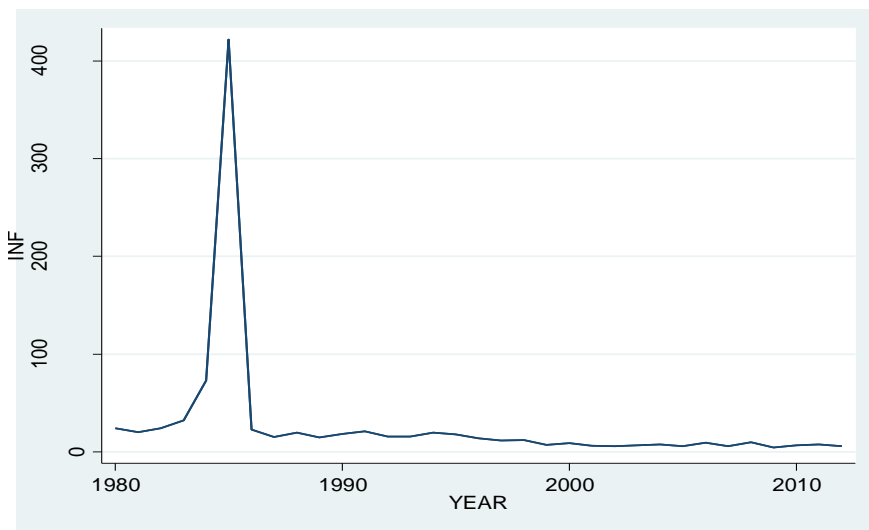
**Graph 6: The trend in exchange rates (1980-2012)**



**Graph 7: Growth in Household consumption (1980-2012)**



**Graph 8: Trends in Inflation (1980-2012)**



From graph 1 it can be deduced that there was a gradual increment in remittances received between 1982-1986 followed by a sharp decline between 1986-1994. It can also be observed that remittances grew between 1998 to 2012. Bank deposits and inflation showed no growth throughout the period as illustrated by graphs 2 and 8 respectively.

Graphs 3, 4, 5, 6, and 7 show that domestic credit to private sector, GDP and exchange rate, FDI and Household consumption grew constantly throughout the period. The summary statistics for variables is shown in appendices 1 and 3. The average remittances received are estimated at 5.22% of the GDP of the 31 countries under study. Domestic credit to the private sector was averaged at 40% of GDP while claims to the private sector were 26.52% of GDP. The results indicate ineffective monetary policies as shown by the high exchange rate (87 units per USD) and inflation rate of 27%. The study found significant improvements in GDP per capita (current USD) as reported by 2,845.14 in 1980; 4,916 in 1990; 6494 in 2000 and 11,305 in 2010. The average FDI net inflow is estimated at 2.3% of GDP for the selected countries with Lesotho receiving the highest FDI of 35.23% and Botswana the lowest -6.89609% in the period 1980-2012. The correlation matrix in Appendix 2 show that remittances are negatively correlate with bank deposits (-0.217) and a significant negative correlation of remittances with domestic credit to private sector (-0.1331\*) implying that remittances substitute bank credit. Remittances and foreign direct investment have a positive and significant relationship (0.225\*) that suggest common determinants of the direction and magnitude of the two external capital flows. The Remittances-FDI association further reinforce the fact that migrants send remittances with an intention to invest back home. GDP per capita, household consumption expenditure, exchange rates and inflation are negatively correlated to remittances which support the assertion remittances are compensatory in nature. Some of the macroeconomic identified as having a positive association with domestic credit to private sector development include; GDP per capita (0.712\*), household consumption expenditure (0.087), FDI's (0.212\*\*) and exchange rates (0.064). The rate of inflation is negatively correlated to domestic credit (-0.033) which is consistent with the conventional monetary policies theories on inflation and lending. GDP per capita, household consumption expenditure, FDI and exchange rate were all found as negatively related to bank deposits. For instance high household expenditure discourages savings and eventually banks claims to private sector. Contrary the rate of inflation encourages high bank deposits reported by the statistically significant correlation coefficient of 0.997\*\*. The results of the panel analysis are tabulated in appendices 4, 5 and 6. The effect of remittances on the three measures of financial sector development is statistically insignificant. Remittances will adversely impact on domestic credit to private sector and foreign direct investment as reported by beta coefficients of (-0.013925) and (-0.013925) respectively. This observation supports Giuliano and Ruiz-Arranz (200) argument that remittances substitute bank loans. Remittances were found as exerting a positive effect on bank deposits. These findings can be interpreted in two ways. One, remittances channeled through official means such as banks have the net effect of increasing bank claims to the private sector. Two, since remittances are received as lump sum amounts due to high transaction costs, households deposits such cash inflows with banks and withdraw them over the consumption period.

## 5. CONCLUSION

Many studies have been done in an effort to explain the combined effect of remittances and financial sector development on economic growth. This study sought to establish whether remittances are a determinant of financial sector development since a sound financial sector is linked to increased investments and ultimately economic growth. The study concludes that remittances adversely affect financial sector development since this capital flows are informal, altruistic and purposely intended for household consumption. The study found the relationship between remittances and bank deposits as being positive though statistically insignificant. These findings suggest a missing link between bank deposits and domestic credit to private sector. Financial institutions are advised to be more prudent and creative in attracting remittances, transforming them into bank deposits and advancing them as credit through lending.

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**Appendix 1: Descriptive Statistic Period Average 1980-2012**

Variable	Obs	Mean	Std. Dev.	Min	Max
REM	1023	5.226302	11.72758	.0014116	106.4789
DEPOSIT	1023	26.52316	347.311	-128.9158	11046.93
CREDIT	1023	40.25466	36.37847	1.542268	319.4609
GDP	1023	6465.54	11945.53	168.7364	83270.24
HCEXP	1023	2.57e+11	1.15e+12	3.19e+08	1.11e+13
EXCH	1023	87.84052	212.4691	.0000245	1401.437
INF	1023	27.63552	388.7528	-11.16159	12338.66
FDI	1023	2.366346	3.510459	-6.897609	35.23495

**Appendix 2: Pairwise Correlation Matrix of the Research Variables**

		REM	DEPOSIT	CREDIT	GDP	HCEXP	EXCH	INF	FDI
REM	Pearson Correlation	1	-.022	-.133**	-.178**	-.089**	-.108**	-.019	.225**
	Sig. (2-tailed)		.488	.000	.000	.004	.001	.540	.000
DEPOSIT	Pearson Correlation	-.022	1	-.013	-.016	-.013	-.015	.997**	-.023
	Sig. (2-tailed)	.488		.673	.619	.683	.630	.000	.464
CREDIT	Pearson Correlation	-.133**	-.013	1	.712**	.087**	.064*	-.033	.212**
	Sig. (2-tailed)	.000	.673		.000	.005	.040	.297	.000
GDP	Pearson Correlation	-.178**	-.016	.712**	1	.460**	-.009	-.025	.122**
	Sig. (2-tailed)	.000	.619	.000		.000	.786	.417	.000
HCEXP	Pearson Correlation	-.089**	-.013	.087**	.460**	1	-.049	-.013	-.051
	Sig. (2-tailed)	.004	.683	.005	.000		.115	.673	.101
EXCH	Pearson Correlation	-.108**	-.015	.064*	-.009	-.049	1	-.022	-.087**
	Sig. (2-tailed)	.001	.630	.040	.786	.115		.488	.006
INF	Pearson Correlation	-.019	.997**	-.033	-.025	-.013	-.022	1	-.028
	Sig. (2-tailed)	.540	.000	.297	.417	.673	.488		.371
FDI	Pearson Correlation	.225**	-.023	.212**	.122**	-.051	-.087**	-.028	1
	Sig. (2-tailed)	.000	.464	.000	.000	.101	.006	.371	
									1023

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

### Appendix 3: Per Country Average Values of the Research Variables for the period 1980-2012

COUNTRY	REM	DEPOSIT	CREDIT	GDP	H.INCOME	EXCH	INF	FDI
ALGERIA	1.2404788	4.87624229	28.3464745	2548.76826	32503255721	42.5042645	13.2236327	0.67567087
BOTSWANA	1.88937133	8.95386878	15.6967632	3319.39714	2349928072	3.73552386	9.69953888	3.24315288
CAMEROON	0.36975613	5.10583559	16.1208005	876.468993	9166980690	453.903902	4.83122156	1.19581389
COSTARICA	0.86894976	16.0244361	24.7612904	3771.35904	10116183995	453.903902	17.9652846	3.25162671
DOMICIAN	5.94425825	18.3460301	25.3356193	2445.91016	17645525904	17.2095536	16.2864072	2.65384838
EGYPT	7.25045515	6.70531897	35.9553974	1236.00779	62126583858	3.29081579	10.5405737	2.44754175
GUATEMELA	4.45561285	10.8710123	20.0745376	1681.15129	16428708071	5.30990654	10.2987482	1.41882334
INDIA	2.07820659	10.1025021	30.2566544	569.025558	3.70893E+11	31.3084453	7.58538578	0.7469452
ISRAEL	0.91524766	55.3593263	73.655736	16203.105	58216347955	2.79261868	43.6860804	2.04521593
JAMAICA	9.37952456	9.13752486	25.2315939	2866.6025	5552684636	36.3203783	17.8232271	3.11285387
KENYA	2.13000177	10.3855852	24.0166385	465.446616	10625306834	49.6933004	10.272596	0.5490015
JORDAN	18.6793739	6.92160255	67.5335713	2255.9957	8036450495	0.6040712	5.02147674	4.40104513
KOREA	0.84871542	21.6478158	76.5745715	11112.821	2.66617E+11	945.797817	5.31268084	0.61604414
LESOTHO	59.6363399	6.17671965	15.0332498	501.235088	1026803623	4.72080166	10.3271308	7.88575278
MEXICO	1.46688878	20.9612795	17.4031969	5272.16727	3.68504E+11	6.34999329	29.511649	1.96812609
PAKISTAN	4.8365547	8.0333081	24.3144951	556.881592	61487356921	41.4806622	9.8423267	0.9542114
SENEGAL	5.1746497	6.06258854	24.4538902	681.582038	5094983443	453.903902	4.39886751	1.21953797
SUDAN	2.86054906	12.973795	7.77619298	643.324959	15675765689	1.24428218	38.3943963	2.02925346
SWAZILAND	6.36175444	10.7033841	18.5248464	1623.23344	1331479158	4.72059293	9.78528059	3.75147328
SWITZERLAND	0.46348271	6.55894452	150.730729	40574.789	1.74582E+11	1.488679	1.98591234	2.80958791
THAILAND	1.2161221	14.1466445	94.1688022	2251.94318	77950661491	30.6839633	3.97160688	2.37002588
TUNISIA	4.12246786	12.9619032	53.3866076	2315.02203	13401982363	1.05819457	5.75513449	2.53792827
TURKEY	1.58741121	36.2838517	22.4551582	4323.90829	1.9576E+11	0.58194292	46.5362707	0.86423136
USA	0.02647019	4.19844306	51.6503039	31498.8224	5.83362E+12	1	2.92682011	1.18008328
HONDURAS	7.10792943	14.543139	35.9183122	1103.17298	5077344221	10.4732915	10.916524	2.95053262
AUSTRALIA	0.43847297	13.7824495	75.4117927	24992.9629	2.76048E+11	1.31812256	4.62464251	2.35188967
BOLIVIA	1.73101095	395.975596	36.0266883	1083.97528	6208597323	4.54727691	446.202912	3.27974101
BANGLADESHIA	5.10627687	12.0014536	23.5663033	357.225662	35805552192	46.050584	6.70512719	0.36746651
ICELAND	0.5323423	41.2738674	86.5223969	30176.8085	4878937551	65.0515852	15.20538	3.76733923
FIJI	2.96068133	7.5732507	38.7499298	2552.38649	1378670384	1.54931455	5.08705899	4.25509716
GHANA	<u>0.33600878</u>	<u>13.5703755</u>	<u>8.24195149</u>	<u>570.248383</u>	<u>8473116537</u>	<u>0.45833412</u>	<u>31.9771252</u>	<u>2.45686056</u>
<b>AVERAGE</b>	<b><u>5.226302</u></b>	<b><u>26.52316</u></b>	<b><u>40.25466</u></b>	<b><u>6465.54</u></b>	<b><u>2.56664E+11</u></b>	<b><u>87.84052</u></b>	<b><u>27.63552</u></b>	<b><u>2.366346</u></b>



**Appendix 4: Regression Of Domestic Credit On Remittances**

```

Arellano-Bond dynamic panel-data estimation   Number of obs       =       961
Group variable: ID                           Number of groups    =        31
Time variable: YEAR

Obs per group:   min =       31
                  avg =       31
                  max =       31

Number of instruments =    502                Wald chi2(5)        =    5719.02
                                                Prob > chi2         =     0.0000
    
```

One-step results

CREDIT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
CREDIT						
L1.	.8225182	.0147025	55.94	0.000	.7937017	.8513346
REM	-.013925	.0581362	-0.24	0.811	-.1278697	.1000198
GDP	.000264	.0000516	5.11	0.000	.0001628	.0003652
HCEXP	-1.42e-13	6.27e-13	-0.23	0.821	-1.37e-12	1.09e-12
EXCH	.0047183	.003846	1.23	0.220	-.0028198	.0122563
INF	.0004377	.0004715	0.93	0.353	-.0004864	.0013618
_cons	5.756757	.6182712	9.31	0.000	4.544968	6.968547

**Appendix 5: Regression of Bank Deposits on Remittance**

```

Arellano-Bond dynamic panel-data estimation  Number of obs      =      961
Group variable: ID                          Number of groups     =      31
Time variable: YEAR

Obs per group:   min =      31
                  avg =      31
                  max =      31
    
```

```

Number of instruments =    502                Wald chi2(5)         = 346932.54
                                                    Prob > chi2          =    0.0000
    
```

One-step results

DEPOSIT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
DEPOSIT						
L1.	-.0007545	.0016973	-0.44	0.657	-.0040812	.0025721
REM	.2765121	.2192016	1.26	0.207	-.1531151	.7061393
GDP	-.0000325	.0001487	-0.22	0.827	-.0003241	.000259
HCEXP	1.74e-12	2.94e-12	0.59	0.553	-4.02e-12	7.51e-12
EXCH	-.0038141	.0143715	-0.27	0.791	-.0319818	.0243536
INF	.8920907	.0015182	587.60	0.000	.8891151	.8950663
_cons	.2878306	2.039632	0.14	0.888	-3.709774	4.285435

**Appendix 6: Regression of Foreign Direct Investments on Remittances**

```

Arellano-Bond dynamic panel-data estimation  Number of obs      =      961
Group variable: ID                          Number of groups     =      31
Time variable: YEAR

                                           Obs per group:    min =      31
                                                                               avg =      31
                                                                               max =      31

Number of instruments =      502           Wald chi2(5)        =      645.59
                                           Prob > chi2         =      0.0000
    
```

One-step results

FDI	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
FDI						
L1.	.5990597	.0259791	23.06	0.000	.5481415	.6499778
REM	-.0283299	.0232629	-1.22	0.223	-.0739245	.0172646
GDP	.000081	.0000199	4.07	0.000	.000042	.00012
HCEXP	-3.76e-13	3.24e-13	-1.16	0.246	-1.01e-12	2.59e-13
EXCH	.0035441	.0020414	1.74	0.083	-.000457	.0075453
INF	.0000153	.0002211	0.07	0.945	-.000418	.0004486
_cons	.392447	.2433312	1.61	0.107	-.0844735	.8693674

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