Remittances for Growth: A Two Fold Analysis of Feedback between Remittances, Financial Flows and the Real Economy in Nigeria

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Abstract

This study sets out to evaluate the relationship between remittance flows and the rest of the economy. To do so, it specifies and estimates a four-sector medium scale macro model with 49 variables comprising of 18 endogenous variables, 31 exogenous variables and 14 identities. It found very weak link between remittances and the real sector as well as components of aggregate demand with the exception of private consumption for which impact is marginally significant. Estimates indicate significant leakages for remittance proceeds through imports, possibly accounting for the weak relationship between remittances and the rest of the domestic economy. This also implies that relative spill-over effects of remittances on domestic output and employment might remain weak if not redirected using specific policies. There are indications that non-subsistent remittances are channelled into the stock market, further entrenching the financial supermarket tendencies in the Nigerian economy. Interestingly, such relationships do not seem to impact prices. In turn, however, it could not be confirmed that any of these macroeconomic variables drive remittances. The study recommends use of specific and directed incentives to both reduce the leakages and encourage investments of remittance proceeds in other (preferably real sector) alternatives as a specific developmental programme.

I. Introduction

Remittances are now an important segment of financial flows and in Nigeria are only second to oil as a source of foreign exchange earnings; outpacing other flows. But policy to channel its use is still rudimentary and uncoordinated. With so many remittance instruments, senders, channels, service providers, operators, recipients, agents and corridors, the Nigerian remittance industry could hardly be said to be positioned to help economic growth in any meaningful way. The failure of traditional sources of development finance in jumpstarting quantum growth necessitates critical thinking into the potential of other forms of flows – and remittances is just one such option needing further examination.

But there are other reasons to be interested in remittance flows in Nigeria. The Nigerian financial sector is maturing quickly in both depth and scope. Even though the link between such growth and real sector performance is still weak, policymakers are working hard to improve incentives to grow the sector and increase its impact on the real sector in the near future. Such efforts are based on the understanding of the huge resource needs for economic growth in the country. In the same vein, a thousand and one policies are put in place to attract foreign direct investment into the country. UN notes that in 2005 alone, there were over three thousand changes made to national policies in order to improve the environment for foreign direct investment, particularly in developing countries. Nigeria is definitely one of the many developing countries stretching its policy space thin to and making a number of such changes to attract FDI and official development assistance. The market has become extra-liberalized even for portfolio flows paving way for not-too-healthy flows of disruptive short term capital. These are accommodated with all the potential damages because they are deemed to provide relief, albeit temporary, to funding constraints faced by agents within the economy.

While migrant remittances have been acknowledged to be increasingly important to developing countries, little incentives seem to have been put in place to strengthen them. Indeed, for a country like Nigeria, there is not even enough data on the size and implications of alternative remittance sources and channels to be able to do so. Recently, the Central bank of Nigeria in collaboration with some development partners, initiated a survey of the remittance industry. Among other mandates, the work was to evaluate trends in the industry and propose policy options to improve the sector. The work acknowledged, like many others before it, that the size of remittance transfers may be bigger than variously estimated[1]. Measured by the policy measures and incentives, it is safe to assert that policy interest in migrant remittances is still weak in Nigeria despite intensive human capital export from the country since the adoption of structural adjustment programme. This is strange given that such huge emigration as witnessed since the 1980s should make the surge in remittances predictable given the structure of social ties among African families. Without doubt, the lack of policies to channel remittances to 'appropriate' (preferably investment sectors) over time has impacted on the overall contribution of remittances to economic development in Nigeria.

[1] Several works have put the size of informal sector remittance transfers to developing countries at anything between 40 and 75 percent of total remittances. The big task has been designing methods of capturing these informal flows and putting in place policies to formalize them or at least boost them.

Potentials for remittances as a growth catalyst seem presently unlimited in the country. And hopefully, indications are that some policy institutions in Nigeria might soon take interest in appropriately channeling the significant resources in this area. But empirical evidence to anchor such policies is still weak and far between. A few attempts have recently been made though. For example, Tomori and Adebiyi (2007) evaluated potentials for remittances in poverty reduction using partial equilibrium analysis. Chukwuone et al (2007) equally proposed an assessment of improvement in social indicators for poverty receiving households using the living standards survey. The Central Bank of Nigeria and the World Bank group have both independently conducted surveys to examine trends in the remittance industry. Most of these studies are either micro analytical or based on a survey in time. There is as yet no study though employing a systems model and evaluating time series data on remittances within the ambit of potential influences of other macroeconomic factors to examine multi-directional impacts and feedback.

This paper sets out to evaluate linkages between remittances and the rest of the economy. The analytical approach is two-fold. First, using quarterly data on a four-sector macro model that emphasizes financial flows in an error correction framework, it examines the key determinants of remittances as well as the feedback from remittances to other financial flows and the real sector. It also evaluates issues raised in surveys of remittances and the remittance industry and assesses the implications of these for improvement of the impact of the sector and its linkages with other sectors to provide the needed boost for economic growth. Among other things, it examines exclusivity clauses, instrument diversification and opportunity for accessing other financial services by remittance recipients.

II. The Case for Remittances in Nigeria's Economic Growth

Studies and data on migration and remittances in Nigeria are very limited and regularly underestimate their sizes. But at least they give some guide. The Development Prospects Group (DPG) of the World Bank estimates the stock of emigrants from Nigeria to be about 836, 832 persons spread mainly across other parts of Africa, Asia, Europe and North America and receives 971, 450 immigrants, one percent of which consists of refugees, from its African neighbours. Docquier and Bhargava 2006, Clemens and Petterson 2006 among others estimate that the country loses about 36.1 percent of all its skilled manpower with tertiary education to migration. Estimates on the proportion of physicians loaned to the rest of the world after training range from 1,548 to 4,856 (between 4.3 percent and 13.6 percent) and nearly 12, 600 (11.7 percent) of trained nurses find jobs outside the country after training. Inward remittances by these Nigerians abroad are estimated to run into several billions of dollars.

The case for improving policies for remittance is made critical by the fact that remittance inflows into Nigeria relative to other inflows are by no means small. Orozco (2003) estimates that approximately 65 percent of total official remittance inflows to SSA SSA and 2 percent of formal global remittance flows come to Nigeria. From a meager

US$1.18 billion in 1999, remittance inflows into the country are estimated to be about US$10.58 billion in 2006. As at end 2007, remittance inflows stand second only to oil receipts, making them a prime foreign exchange source for the country. But even more importantly, it has been found to be very critically linked to poverty reduction as the average remittance-receiving household is relatively more comfortable than the average non remittance-receiving household. At the macro level, the rate of growth of remittances has been phenomenal over the last decade or so, necessitating special attention by monetary and financial authorities to improve instruments for data collection on remittances. Between 2004 and 2007, growth rates have consistently been above 50 percent annually, even though this might in part reflect improved data collection mechanisms than growth in actual remittances. Table 1 below shows the trends (volumes and annual growth rates of remittances between 1996 and 2006.

Table 1: Remittance Inflow to Nigeria (US$ Million)

YEAR	Remittance (US$ Million)	Annual Growth Rate (%)
1996	832.9	
1997	1,773.7	113
1998	1,439.4	-18.8
1999	1,181.8	-17.9
2000	1,618.0	36.9
2001	1,237.5	-23.5
2002	1,349.8	9.1
2003	1,061.7	-21.3
2004	2262.3	113.1
2005	6,475.8	186.2
2006	10,577.1	63.3
2007	17,945.94	69.67

Source: Central Bank of Nigeria,

At nearly $18 billion US Dollars as at 2007 (CBN 2007), remittance inflows into the country significantly outpace all forms of foreign flows with the exception of oil receipts. Given the figures in table 1, migrant remittances stand at about 7.5 percent of GDP compared to FDI at 3.2 percent of GDP and portfolio flows at less than 1 percent of GDP as at 2006. The implications of these numbers are not difficult to conjecture. FDI and portfolio flows have helped (nay can help) growth in their thousands but remittances can help (nay has helped) growth in its tens of thousands. Though the contribution of the latter has hardly been calculated, it is nonetheless an economic fact attested by multitudes that remittances do help growth and poverty reduction.

Remittances differ from other private flows in more significant ways than one – which eventually impact on the growth benefits that they can engender to an economy. While FDI and Portfolio flows are top-down flows, remittances are bottom-up flows. Funds and consequently returns from FDI and portfolio flows are significant capital concentrated in the hands of a few compared to remittances which are small funds spread over the hands of large population. While FDI can potentially provide formal, high earning employment for a few individuals with the expectation that the flows should trickle down to the rest, remittances provide relatively lower sources of income for a much larger proportion of the population and potentially leads to more efficient resource allocation as private agents naturally work to maximize individual utility. Therefore, the capacity of remittances to alleviate poverty across a wider spectrum of the poor is much higher than the capacity of any other kind of flow to do the same.

But the link between remittances and growth at present is much weaker than ought to be on account of several factors. For example, remittance transfers face dire constraints because of the segmented and oligopolistic structure of the service industry. Transfer-related costs could be as high as 20 percent of the total amount being remitted. In addition, the financial services sector treats remittance services as auxiliary and hardly makes attempts either at linking services in the sector with the rest of financial services or improving on the instruments available to remittance recipients. Policymaking on remittances is merely tangential so much so that the data collection instrument for remittance transfers is weakly designed and does not comprehensively cover direction and quantity of flows. There are little, if any, incentives for private agents to optimize the use to which remittance proceeds are put or pool remittance resources for targeted investment purposes. At the macro level, there are no specific instruments designed to attract remittance flows towards specific developmental programmes of the government or communities.

But importantly too, studies on the channels of impact of remittances on growth are lacking or largely deficient. Table 1 above clearly indicates a surge in remittance flows into the country between 2004 and 2007 for example. Interestingly, this period coincides with both banking sector consolidation exercise and a phenomenal growth in the stock exchange. Prior to then, it is possible, but not confirmed that the bulk of remittances are used for consumption. But whether the increased remittance flows for this period went into the stock market and what impact it might have had on the market are not clear. Was remittance partially responsible for the surge and did the surge (and consequent growth in the price index) attract more remittances? On the whole, what benefits accrue to overall economic growth on account of such flows and the use to which they are put are all issues under question. Do remittances impact on consumption and in what ways? Do such impacts on consumption increase total growth and what could be the channels for such impact? These are few of the many questions that need to but are hardly being asked in both research and policy circles in Nigeria but which on the whole hold potentials not only for the growth of the industry but equally for harnessing developmental resources for growth in other sectors.

III. The Economics of Remittances and Growth

Even with substantial restriction on “globalization and liberalization of human movement” relative to financial and trade liberalization, migration and consequently remittances have grown phenomenally since the end of World War II. With that has also come significant interest in the nature, causes and administration of remittance flows in the literature. This interest ranges from evaluation of theoretical and conceptual issues (as in Crisp, 1999; Boswell, 2002; and Grabel, 2008; etc) to empirical studies assessing the size and direction of flows (as in Ratha, 2003; World Bank, 2005; Mutume. 2005, etc). Even the World Bank has drafted a *general principles* handbook to guide definition and administration of remittances across countries (World Bank 2007). Policymakers are not left out. Many Central Banks have disentangled remittances from other flows in the balance of payment records and initiated processes for more efficient remittance data collection. In some developing countries like Brazil, Mexico and the Philippines, policies have gone further and been more proactive, putting in place incentives to attract more remittances and subtly guide the use to which they are put.

As the phenomenon advances, so do thoughts on it advance. Massey (1993) outlined five groups of views on migration to include neoclassical micro and macro theories which respectively focus on rational individual choices based on cost-benefit assessment of net return and geographic differences in the supply and demand for labour in origin and destination countries as factors driving migration and consequently remittances. The New Economics of Migration School views migration as family strategy to diversify income sources, minimize risks and enhance access to capital for the household while the Dual Labour Market theory holds that demand for low-level workers in more developed economies is the main driving force for international migration. The last of the views on this, often referred to as the World Systems theory holds that it is rather the penetration of capitalism through the combined efforts of neo-colonial governments, multinational firms and national elites which disrupt traditional systems that lead to global migration.

Todaro’s postulation that migration is an economic phenomenon, driven principally by differences in expected and not necessarily actual earning opportunities, has remained a landmark assessment that underpinned analyses on migration and remittances. The premise is simple – potential migrants consider various opportunities in the labour market of their country of origin vis-à-vis labour receiving countries and rationally choose the option that maximizes expected gains over the long run. But the motive for consistent link with the country of origin and for regular remittance of funds to those left behind has been one of intense enquiry. Becker (1974) and Cox (1987) present two contending models, the first focused on altruism and the second on payment for services provided. Becker’s (1974) model conceives the utility of the migrant to be optimized only within the context of the wellbeing of the rest of the household. Consequently, rising income gaps between the migrant and the rest of the household left behind create remittance pressures and such pressures reduce with reduced income gaps. In turn, Cox (1987) conceptualizes transfers as return for services rendered which may include support to enable the migrant achieve his aims as well as other intangible services that the migrant has received over time from those he left behind.

Latter discussions and literature on motivation for remittances slightly refined the terms to include altruism, risk sharing and a combination of altruism and risk sharing. Altruism is defined in the sense of the migrant being a part of spatially dispersed large household and remittance is near-obligatory. Remittances are viewed as responsibilities and indications of affection for the rest of the household. For the risk sharing school of thought, remittances are part of individual hedging and risk management programme since the migrant may ultimately come back to his home country. Prominent works in this direction include De Haan (2000), Agrawaal and Horowitz (2001) and Chimhowu et al (2003) on altruism, Stark and Lucas (1988) and Stark (1991) on risk sharing and Clarke and Drinkwater (2001) and Ballard (2001) which think remittances consist of both risk-sharing and altruistic motives. The latter group particularly classifies remittances as tempered altruistic projects consisting of inter-temporal, mutually beneficial contractual arrangement between the migrant and the household in the country of origin based on investment and risk which are self-enforcing. The household is the initial insurer as the migrant works to find his footing, but afterwards, there is a change of roles between the two.

Going beyond the micro concerns about the motivation for remittances to the broader impact on long term economic growth is more problematic and consensus here is much weaker – both theoretically and empirically. Conceptually, a number of features of remittance flows and the segment of the society that have the capacity to migrate lend them to concerns about their overall impact on economic growth, poverty reduction and of course reduction in income inequality. First, the significant up-front costs of migration may mean that the poorest of the poor are not capable of bearing the costs of migration thus implying that overall, it is the same rich who can that ultimately get the benefits from remittances. For example, initial costs of migration may mean that only the relatively well-to-do can afford them. Thereafter siblings of migrants for whom initial costs have been substantially reduced will follow suit, implying a dynastic bequest of migration capacity among the rich and leaving out the poor. This argument has been pushed by a number of theorists and empirical findings including Funkhouser (1992) who worked on Nicaragua as well as Taylor (2006) and De Hass (2005).

Beyond the income distribution of potential migrants, it is generally known that remittance proceeds are mostly spent on consumption goods, particularly food, housing, healthcare and education. The proportion of remittances spent on these items range from slightly above 40 and 80 percent as reported by several studies in many parts of the developing world (Lopez-Cordova and Olmedo, 2006, Solimano, 2004, Burgess, 2007, World Bank, 2006, among others). Even in cases where remittance proceeds go into investment, it is usually after basic needs have been met. What effect this has on growth is an issue at two levels. First, what are the consumption items on which the proceeds are spent? A corollary to this is the potential spill-over effects of the consumption on production and distribution in the rest of the economy. The second issue is that on the whole, remittance recipients may develop dependency syndromes occasioned by consumption patterns leading to lowered productivity over the long term. Such impact has been noted in small countries where both the proportion of the population and the proportion dependent on remittances are both very high (possibly beyond 20 percent) like

Samoa and Cape Verde and even in some bigger countries as contained in the conclusions by Chami et al (2005) with data from 113 countries over 29 years. Grabel (2008) notes that the question of the nature of the multiplier effects of remittance-financed consumption has received limited attention in the literature. Following the thinking by Kapur (2004), she notes that the overall multiplier impact will depend on what proportion of remittance-induced consumption are domestically produced goods. This necessitates research on the precise nature of leakages (through imports), multiplier and tax implications of remittance consumption before settling the question of the overall impact of remittances on growth.

Taylor (1996) made a case for remittances as a source of income for household savings and investment (including investment in human capital), with potential growth-enhancing effects. Being the next natural recourse after meeting basic needs, savings and investments from remittances are again incontrovertible (see Osili, 2007, Sander, 2003, Ratha, 2007 among several others). Some studies like Adams (2002) and Kapur (2004) have even noted the relatively higher propensity to save among remittance-recipient households compared to their non remittance-recipient counterparts. For developing countries like Nigeria, Brazil, India, Mexico among others where small and medium enterprises form a significant proportion of businesses, remittance receipts often start, fund and sustain whole enterprises with significant employment spillovers. Housing and real estate investments are also favorites of remittance senders and without doubt create employment, and provide potential sources of growth for the recipient countries (Massey and Parrado, 1998 and Woodruff and Zenteno 2004 both reporting on Mexico). Many empirical studies have found that expenditure on education (school fees, etc) rank among the most prominent uses to which remittances are put. It can help cushion shocks that otherwise would have led to school drop-out rate. This is documented in several studies including Ratha (2007), Yang (2005), and Lopez-Cordova (2005). Grabel (2008) summarizes the issues by noting that remittances increase access to working capital through two channels; first through direct provision of resources and secondly through increasing deposits in financial intermediating institutions. Remittances reduce credit constraints and stimulate entrepreneurship (World Bank, 2006).

But there lies the challenge. Ratha (2007) argues that the effects of remittance-financed investments in physical assets and human capital are necessarily indirect and long-term. Besides, management of some of these investments fall far below optimal as the initiator is often not around and those surrounding the investment are siblings whose sense of obligation and expertise for sustainability of the investments may be weak. In effect, many of these initiatives die quickly. Grabel (2008) argues for some secondary impact which she termed *public moral hazard* on the part of developing country governments where remittances encourage governments in developing countries to abandon their traditional responsibilities as remittances fill the voids in state expenditure. Such public moral hazard is most probable in social capital investments – education and health. In cases where remittances replace state investment in such infrastructure, the ultimate burden rests on the poorest segments of the society who may not be able to afford independent provision of these services leading to a netting-out effect on growth and welfare.

Switching slightly to a macroeconomic but equally pertinent question for poor developing countries, a challenge arises on the relationship between remittances and growth through the credit system and/or the capital markets. In theory, the impact of remittances on growth can work either through the financial system or parallel to it. In working through the financial system, agents treat remittances like any other form of savings and allocate them to projects that yield the highest returns whereas in countries with less developed financial systems, remittances might become a significant complement for inefficient or nonexistent credit market by helping local entrepreneurs bypass capital constraints and high lending costs. Using data covering 100 developing countries from 1975 to 2002 Ruiz-Arranz (2006) finds evidence that remittances provide alternative to formal financing of investments i.e. remittances act as substitute to the domestic financial system. In contrast, the study could not find evidence of remittance impacting investment through the financial system. In effect, remittances have near-zero impact on growth in countries with well-functioning financial markets.

Thus far, available studies show limited and often contradictory evidence of impact of remittances on growth (Agunias 2006, Ratha 2007, Grabel 2008). A large proportion of empirical studies find evidence of positive growth effects of remittances. In this group are such works as Solimano (2003) working on Andean countries and Adelman and Taylor working on Albania and (Grabel, 2008). But others like Chami et al (2005) find negative impact on growth. Grabel (2008) in particular doubts that consensus on the impact of remittances on growth may be reached by more empirical research in the near future owing to a number of methodological and empirical discrepancies on the subject matter. But where does this lead us? It certainly only makes the case that enquiry into the relationship between remittances and growth has to be country-specific. There are no general rules about impact and a number of factors, not the least the structure of consumption, investment and savings in any country will determine overall impact of remittances on growth. It creates conceptual, empirical and methodological questions and makes the search for impact of remittances on growth more compelling. For example, most studies either use a point-in-time survey or partial equilibrium models. Systems/general equilibrium models for analyzing impact of remittances are nearly non-existent. But equally, the voice of every country counts in this debate. That study is an attempt to help make contributions to the debate in this direction.

IV. The Analytical Model

We specify a macro-econometric model of four sectors namely production and supply, aggregate demand, external sector and money and prices. The specification in most cases is eclectic, incorporating specific features of the Nigerian economy within broad neo-classical frameworks.

1. Aggregate Supply

Following large-scale oil production, aggregate supply in Nigeria is broadly classified along oil and non-oil sectors. In many modelling projects, this broad classification is often considered convenient as it gives a broad overview and easy classification of activities. Besides, due to the unique characteristics of the oil sector, it becomes easy to single it out for special treatment different from the rest of the economy which may be performing less optimally. For example, despite its relatively lower contribution to value added (below 30 percent), it is the principal source of foreign exchange earnings and government revenue. The non-oil sector is usually divided into the real and service sectors – with the former comprising mainly of agriculture and industry while the latter comprises wholesale and retail trade, communication, banking and a host of others. For the purposes of this study, it is considered better to assume production in the oil sector exogenous. This is consistent with a number of the behavioural patterns of the oil sector, given that the sector is largely delinked from the rest of the economy; imports most of its inputs and employs barely 2 percent of the labour force. It is largely an enclave economy and linkages with the rest of the economy are quite weak. The non-oil sector is modeled following Cobb-Douglas production function with regular inputs of labour and capital. However, owing to data challenges, a number of other inputs may be considered in the place of labour.

a. Non-Oil Production

Production in the non-oil sector is broadly divided into three – agricultural, manufacturing and others. This classification is adopted on account of the principal goal of the work. Agriculture employs a large proportion of the labour force; but in addition, a large proportion of the poor and both potential and actual recipients of remittances are in this group. Manufacturing on the other hand, is a critical sector that has been in the development of the government for many years but which has witnessed very meager improvements over time. It has the potential of benefiting from remittances as well, but it is not clear that it currently does given the large capital outlay required as inputs into the sector vis-à-vis the small amounts in which most remittance flows come. Other services definitely benefit from remittances and probably contribute to the flow of remittances. It may yet be useful in the future to disaggregate services for this purpose, but this work is considered foundational and so begins with an aggregate consideration of the services and other sectors..

i. Agricultural Value Added

In Nigeria, agriculture is largely seasonal and depends on rainfall. Critical inputs into agricultural production include fertilizer which often comes with government support in many areas. In addition to supporting fertilizer distribution, government buys for strategic reserve. Consequently, government expenditure is an important factor in agricultural production. Like other sectors, farmers depend on credit which can be in the form of guaranteed credit under the agricultural credit guarantee scheme fund (ACGSF) or through independent arrangements with banks. We introduce remittances as a source of support funding for poor farmers. As such, agricultural output is modeled to be determined by rainfall, credit to agricultural sector (CREDA), prime lending rate (PLR), government expenditure (GEXP) and remittances (REM) as follows:

$$Y_a = C_1 + \alpha_1 R + \beta_1 CREDA + \chi_1 PLR + \delta_1 REM + \eta_1 GEXP + \mu_1$$

ii. Manufacturing Value Added

Critical inputs into the manufacturing sector include credit and imported inputs. Such imported inputs include both machinery and raw materials. Beyond credit availability, the cost is also critical to the sector as most operators complain of lack of long term facilities as well as the inability of producers to meet the high rates of interest charged on commercial loans. While the sector faces a number of challenges in terms of weakness of support infrastructure leading to high cost of doing business, a number of industrial surveys in the country seem to confirm that energy supply is a critical impediment to output in the sector. Consequently, manufacturing value added is modeled to be determined by prime lending rate (PLR), credit to manufacturing sector (CREDM), non-oil imports (Mno), and index of electricity production (IEP)

$$Y_m = C_2 + \alpha_2 PLR + \beta_2 CREDM + \chi_2 M_{NO} + \delta_2 MK + \eta_2 IEP + \mu_2$$

iii. Other Non-Oil Output

This models other non-oil output including services and other tertiary non-oil activities. Like the other aspects of productive activities, they depend on domestic credit system. In particular, wholesale and retail trade makes intensive use of credit from the banking sector. The exchange rate is equally important in determining both volume and trends in these services. Government purchases a significant proportion of output from this sector hwile imported inputs are utilized in most activities for such sectors as building and construction. Remittances come in as an external driver first as a input into setting up of businesses within the system and as a support to demand of services in the sector. Other non-oil output is modeled to be determined by prime lending rate (PLR), credit to other sectors of the economy (CREDO), exchange rate (ER), government expenditure (GEXP), imports (M), and remittances (REM).

$$Y_{no} = C_3 + \alpha_3 PLR + \beta_3 CREDO + \chi_3 ER + \delta_3 GEXP + \eta_3 M + \pi_3 REM + \mu_3$$

2. Aggregate Demand

The basic modelling framework for aggregate demand is Keynesian. It is taken to be the sum of private consumption, private investment and government net expenditure.

a. Private Consumption

The specification of private consumption function is based on utility optimization with income constraints among private agents. The model incorporates standard determinants in the literature including income (Y) and prices movements (measured by inflation rates - INF). However, other economy-specific factors like the lending rate (PLR), capitalization of the stock exchange (KSE) and migrant remittances (REM) are included to incorporate the rising significance of credit in present consumption, impact of investment options as alternative to present consumption and inflows from migrant remittances from abroad for a rising proportion of households respectively in the determination of household consumption. The latter is increasingly shown in the literature to be a major factor in determining income capacity of households with members earning income abroad and supplementing domestic expenditure.

$$PC = C_4 + \alpha_4 Y + \beta_4 INF + \chi_4 PLR + \delta_4 KSE + \eta_4 REM + \mu_4$$

b. Private Investment

All private investment is lumped into one and follows neoclassical accelerator principles. However, variables to incorporate sunk costs and impact of macroeconomic uncertainty in investment decisions are incorporated to signify their importance in an unstable economy like Nigeria's in determining overall trends in private investment. The cost of capital is incorporated using prime lending rate. Government is very significant in determining overall trends in private investment particularly given the weak (and largely dependent) private sector as its expenditure generally drives private behaviour and sends important signals to the private sector. But importantly too, it could motivate private expenditure if such expenditures are targeted at sectors that facilitate improved returns to private investment. Credit to the private sector is considered an important facilitator to private investment. Given the growing significance of the external sector, remittances are brought in as a major determinant of private investment. This is considered important particularly for such aspects as housing, as well as investment in human and social capital. Given the above, investment decisions are modeled to be determined by income (Y), government expenditure (GEXP), prime lending rate (PLR), remittances (REM) and inflation (INF).

$$INV = C_5 + \beta\alpha_5 Y + \beta_5 PLR + \chi_5 GEXP + \delta_5 CREDP + \eta_5 REM + \pi_5 INF + \mu_5$$

c. Government

Private sector growth is largely reliant on government revenue and expenditure projections captured in the budget. Besides signaling to the private sector the direction of economic activities, government is a significant patron of private services. Government debt stock and servicing programmes also impact on infrastructure for private enterprise and social sector development. Even though the debt stock has substantially diminished, most of the sample period under consideration falls within the period of the debt crisis with external and domestic debt stock in excess of 80 percent of export earnings. Consequently, three aspects of relevant government behaviour shall be modeled. These are: government revenue, expenditure and debt service. Owing to data limitations on consolidated revenue, expenditure and debt service for all tiers of government, government fiscal activities in the model are captured by Central Government Fiscal activities.

i. Government Revenue

In Nigeria, government revenue is largely affected by three major items: indirect taxes from tariffs on imports, domestic value added tax that depends largely on output growth and performance, and crude oil sales. The latter is particularly significant in determining government revenue. So government revenue is specified to be a function of the three as follows:

$$GREV = C_6 + \alpha_6 Y + \beta_6 TAR + \chi_6 OILS + \mu_6$$

Where Y is output, TAR is tariff and OILS is sales from oil given as the product of oil export and price.

ii. Government Expenditure

Both recurrent and capital expenditure are nearly evenly split over time in Nigeria. Under certain circumstances, government expenditure could be assumed to be exogenous. However, in the model here, it is assumed to be affected by government revenue alongside a number of other variables. For example, it has been severally observed that government generally ratchets its expenditure up during periods of boom implying that government expenditure is not wholly independent of its income. However, the model recognizes that government often resorts to the domestic financial system for financing in periods of lean resources – at such times often competing with the private sector. To capture impact of previous expenditures and the incremental nature of public expenditures, the lag of the dependent variable, not explicit in the specification, will be experimented with in the estimation. Broad macroeconomic variables like output growth and inflation can equally lead to procyclical or countercyclical action on the part of government as a key part of aggregate demand.

$$GEXP = C_7 + \alpha_7 GREV + \beta_7 CREDG + \chi_7 Y + \delta_7 INF + \mu_7$$

iii. Debt Service

Both external and domestic debt stocks have historically been very high in Nigeria. However, following negotiations, the external debt stock has been substantially reduced (nearly eliminated) in recent years, but domestic debt stock has remained fairly high. So it makes sense to include both domestic and external debt stocks in one model. In both cases, government expenditure on debt servicing, impacts substantially on resource availability for other aspects of spending and depending on their size, can impede economic growth. In the present model, government debt service is assumed to be impacted by both domestic and foreign interest rates, the first proxied by the treasury bills rate (TBR) and the latter proxied by London Interbank Rates (LIBOR). Government revenue also determines its capacity to service debts while external reserves and exchange rates impact on servicing of foreign debt. The relative debt stocks equally determine amounts spent on debt servicing giving the model as

$$DSERV = C_8 + \alpha_8 TDSK + \beta_8 TBR + \chi_8 FIR + \delta_8 GREV + \eta_8 RES + \pi_8 ER + \mu_8$$

Where DSERV is debt service, TDSK is total debt stock, TBR is treasury bills rate, FIR is foreign interest rate, GREV is government revenue, RES is reserves and ER is exchange rate.

3. The External Sector

The external sector is broadly divided into trade, current and capital accounts. Oil is a significant component of the trade account accounting for a large proportion of exports. However, imports are diversified and range from intermediate goods to final products.

The current account balance is a two way flow of services both between the country and its major partners and is largely diversified in terms of composition. Relatively higher imports of services in the current account are often counterbalanced by favourable trade accounts particularly in times of oil price rise. Consequently, substantial impact of the current account is hardly felt in the economy. On the other hand, capital flows into the country, particularly following the return to democracy and the subsequent reforms have been tremendous and highly impactful. In particular, private flows in terms of foreign direct investment, foreign portfolio investment and remittances aimed towards taking the expanding opportunities in the real sector, burgeoning capital market and for consumption and other purposes have been significant in recent time. Consequently, the present model shall capture flows in the trade and capital accounts. In particular, modelling of the capital account shall take into account these recent and growing flows. In addition, given the focus of the present paper, the major item is the consideration of the two-way causality between broad macroeconomic fundamentals and remittances. As such, attention shall be focused on the capital account relating same to key macro variables.

a. Trade Balance

This is grouped into exports and imports. Exports are mainly oil driven (output and price) and the consequent terms of trade and are specified to reflect this dominance. Other variables included are the terms of trade and exchange rate. Quantity of oil sales is multiplied by the dollar value to get the equivalent value from oil sales represented in the model as OILS. Imports are more diversified and depend on domestic income level (Y), the exchange rate (ER), terms of trade (TOT), tariff (TAR) and the domestic cost of funds captured by the prime lending rate (PLR) as well as the terms of trade.

i. Exports

The exports equation is given as

$$X = C_9 + \alpha_9 OILS + \beta_9 TOT + \chi_9 ER + \delta_9 Y + \mu_9$$

ii. Imports

Total imports comprise imports of raw materials, intermediate goods and final products. The behaviour of all these components is not exactly alike as the first two reflect production demands while the last reflects consumption demands. However, their determinants are nearly the same comprising income, exchange rate, tariff rates, access to finance and the cost of funds and the terms of trade. However, we include remittances which are likely to influence overall imports through the imports of final products. As such, the imports equation is specified as:

$$M = C_{10} + \alpha_{10} Y + \beta_{10} ER + \chi_{10} TAR + \delta_{10} PLR + \eta_{10} TOT + \pi\ REM + \mu_{10}$$

b. The Capital Account

Most of the variables to be modeled in the capital account are private flows consisting of foreign direct investment, foreign portfolio investment and remittances.

a. Foreign Direct Investment (FDI)

Historically, a sizable chunk of independent real flows into Nigeria goes to the oil sector. However, in recent times there have been massive flows into the banking and telecommunications sectors following reforms of the two sectors. The modelling of foreign direct investment therefore shall be eclectic incorporating elements of neoclassical framework for the determination of investment on account of flows to these 'new' sectors, but equally incorporating the peculiar characteristics of oil flows and the relative risk factors that might have been retarding flows to the domestic economy. Consequently, FDI is made a function of oil production and price (OILS), non oil output (Y_N – particularly services output shall be experimented with in the estimations), exchange rate (ER) and domestic inflation (INF) reflecting risk perception by the investing foreign community.

$$FDI = C_{11} + \alpha_{11} OILS + \beta_{11} Y_N + \chi_{11} ER + \delta_{11} INF + \mu_{11}$$

b. Foreign portfolio inflows

Portfolio flows have equally become significant in recent years following growth in the stock market and openings for investment in government securities. In sum, options for alternative investment in the country have grown since 1999 and the global investing community has responded to these with relatively massive flows over the last couple of years. However, risk factors are still considerably high and continue to impact on the size and direction of these flows. For example, prior to and following the global economic crisis, there has been significant outflows from the country and inward investors have been quite cautious, partially leading to a slump in the Nigeria stock exchange. Consequently, the modeling of portfolio flows in the country shall equally be eclectic capturing both standard theoretical variables as well as country-specific features that have shown up in recent years as important. The principal variables shall include the exchange rate (ER), domestic interest rate measured by the treasury bills rate), price index in the Nigeria Stock Exchange (measured by the all-share price index – ASPI), capitalization of the stock exchange (KSE) and a measure of macroeconomic risk (in this case, inflation rate) giving the following equation

$$FPI = C_{12} + \alpha_{12} ER + \beta_{12} TBR + \chi_{12} ASPI + \delta_{12} KSE + \eta_{12} INF + \mu_{12}$$

c. Remittances

Migrant remittances are a critical consideration in the present work and are assumed to impact on and be impacted on by a number of real, monetary and external sector influences. It has significantly risen in both quantum and significance as a source of development finance. Estimates about the size of remittances from both formal and informal sources vary widely, but there is a consensus that it demands a lot of attention as a possible alternative to regular sources of development finance for poor countries like Nigeria[2]. There are indications that recent surge in the value of remittances in Nigeria owes both to improvement in statistical instruments for capturing the flows as well as the growth in domestic stock market working alongside other reform measures of

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[2] In Nigeria, remittances are now the second largest source of foreign exchange after oil. In 2007, total remittances stood at US$18 billion (CBN, 2008)

government. Consequently, remittances are modeled to be impacted by output in agriculture (Ya) and other sectors (Yno) as well as investment (INV) and private consumption (PC) in the domestic economy (particularly consumption and investment in health, education and housing), the exchange rate (ER), stock market capitalization (KSE) and a measure of macroeconomic stability (again using inflation rate - INF).

$$REM = C_{13} + \alpha_{13}Y + \beta_{13}ER + \chi_{13}KSE + \delta_{13}INF + \mu_{13}$$

4. Money and Prices

The last sector to be modeled in this work is money and prices. As in many other aspects of economics, there are competing approaches to modelling money and prices and perceptions about their short and long term impacts vary widely – the regular monetarist and Keynesian approaches are just few prominent ones among these. In addition to the literature though, the Nigerian financial system is growing quickly to become a major segment of economic activities. But a worrisome aspect of the persistent growth in this sector is that it has seemingly been isolated from the real sector leading to questions about its key drivers and relationship with other segments of the macroeconomy. Consequently, modeling money and prices in a growing, disjoint and complex economy like Nigeria's could be difficult. However, given the purposes of this work, the modelling structure adopted shall be relatively simple and aim to pick up what are considered the most important factors and relating them to the issues under consideration, without unnecessary details about other complex but relatively irrelevant interrelationships in the economy. As such, the model shall comprise of domestic credit divided into credit to the private and public sectors, net foreign assets, the stock market, exchange rate and inflation. Net domestic credit is modeled following the regular money supply identity while net foreign assets and other assets net are derived as exogenous residuals; the all share price index is demand driven and price equations follow standard determinants in the literature.

a. **Credit to the Private Sector**

Until recently, government was a major drain on domestic resources, with its borrowings apparently crowding out private credit. Oligopolistic banking structure and high cost of doing business also meant historically high interest rates post liberalization. Other macroeconomic risks worked alongside poor growth of the real sector to keep credit to the private sector relatively subdued. However, with government being reined in following the reforms, this trend is largely changing. But equally, remittance inflows goes a long way to ease funding constraint and so could be a source of alternative funding for private consumption and investment purposes for a number of households. In this work therefore, credit to the private sector is made a function of deficit financing by government (GDF), output growth (Y), the lending rate (PLR), imports (M), inflation (INF) and remittances (REM) as follows:

$$CREDP = C_{14} + \alpha_{14}GDF + \beta_{14}\Delta Y + \chi_{14}PLR + \delta_{14}M + \eta_{14}INF + \pi_{14}REM + \mu_{14}$$

b. Credit to Government

Government borrows from both the Central Bank and domestic money banks with the former acting as first option for many years and later as a lender of last resort. From either source whatever, government borrowing impacts the rest of the economy in a number of ways, including but not limited to potential crowding out. Depending on the source and use to which the credits are put, they can also be a major complement to private sector development. Government borrowing in the model therefore shall be made a function of the size of its deficits, Central Bank portfolio and available deposits in the rest of the banking sector and the lending rates giving:

$$CREDG = C_{15} + \alpha_{15}GD + \beta_{15}NFA + \chi_{15}DL + \delta_{15}PLR + \mu_{15}$$

Where CREDG is credit to government, GD is government fiscal deficits, NFA is the net foreign assets of the Central Bank, DL is deposit liabilities and PLR is prime lending rate.

c. Net Foreign Assets

We add net foreign assets (NFA), made up of those of the Central Bank and deposit money banks (DMBs), to other assets net and assume them to be a residual of the monetary identity. For the purposes of this modelling, we assume these components exogenously determined and simply add them to domestic credit to get total money stock.

d. All Share Price Index

The stock exchange is a major link in the work here as well. Its growth has attracted significant investment from the rest fo the world and not the least Nigerians in diaspora. But also, it has shaped domestic investment in profound ways creating an important alternative to real estate and money market investments. For quoted firms, it has become an important source of financing and for households a major repository for wealth. For long periods, the Nigerian stock market was touted among the fastest growing and the highest in returns world over. Even though indices in the market have stunted and slumped over the last one year, it still remains a significant driver of activities in the economy. An important measure of the health of the market is the all share price index. Performance of quoted firms has understandably been important, but reforms in other parts of the financial services sector have led to significant inflows into the market. Some of these flows cannot directly be related to performance of quoted firms and the sources have been quite diverse. For the present work, the all share price index shall be assumed to be driven by income, the number of listed firms, other money market rates, domestic stability measures and funds inflows captured by foreign portfolio flows and remittances. The equation is as follows:

$$ASPI = C_{16} + \alpha_{16}Y + \beta_{16}NOLS + \chi_{16}TBR + \delta_{16}INF + \eta_{16}FPI + \pi_{16}REM + \mu_{16}$$

e. Inflation Rate

Given Nigeria's relative openness and the high volume of imports in its consumption and production baskets, it is assumed that both domestic and external factors interplay to determine domestic inflation rates. In the literature, exchange rate changes affect domestic prices in two main ways – a direct channel which runs through the price of imports and an indirect channel which runs through domestic wage and other production cost structures (see Hufner and Schroder 2002; Hampton 2001; Goldberg and Knetter 1997). It is safe to assume that uncovered interest parity holds in the economy. Meanwhile, given its sheer size, government expenditure is equally critical in determining price changes. Money supply and other price interactions shape movements in overall domestic price levels too. As such, determinants of inflation rate in the present model include oil price and remittances (representing the external sector), government expenditure and broad output (representing domestic influences) and the lending rate and exchange rate (representing other domestic prices). The final price equation is therefore given as:

$$INF = C_{17} + \alpha_{17}Y + \beta_{17}GEXP + \chi_{17}TBR + \delta_{17}ER + \eta_{17}MS + \pi_{17}OILP + \rho_{17}REM + \mu_{17}$$

f. The Exchange Rate

Post liberalization, Nigeria adopted a flexible exchange rate regime. Its experience with exchange rate liberalization has been that of high volatility of the exchange rate. At some point, the country had to adopt guided liberalization and had different exchange rates for official and private transactions. The parallel market equally emerged both to take advantage of arbitrage opportunities as well as provide source points for sale and purchases of small transactions in the market. As such, there are diversities of opinions as to the best exchange rate to model to reflect actual economic activities as well as what the key determinants of such a rate could be. In the present work, the official recorded exchange rate is taken to be the dependent variable partly on account of the high level of recognition and partly because reforms in the market have led to significant volumes of transactions with this rate. Given Nigeria's relative openness and the fairly high level of intervention to stabilize the rates, the modelling shall incorporate elements of uncovered interest parity alongside specific domestic peculiarities that are believed to affect the exchange rate in Nigeria. The exchange rate is therefore assumed to be a function of output growth, inflation rates and government expenditure as domestic variables and oil price and remittances as foreign variables.

$$ER = C_{18} + \alpha_{18}Y + \beta_{18}INF + \chi_{18}GEXP + \delta_{18}OILP + \eta_{18}REM + \mu_{18}$$

5. Identities and Closure Rules

There are a total of 14 identities in the model. The closure rules are kept very simple and reflect the uncomplicated and direct purpose of the model – to evaluate remittance flows and relationships. Oil sector is kept exogenous, both reflecting its true nature and the fact that endogenizing it within this model will not add much value anyway. So, aggregate production becomes the sum of oil and non-oil outputs. Several options were considered in respect of modelling government operations into the rest of aggregate demand. One was constraining its expenditure and debt using changes in domestic tax. But given the small and almost inelastic domestic non-oil tax base, there exists little room for instituting a closure rule by assuming significant changes in the tax structure. Ultimately, therefore, we decided in favour of merging domestic and external debt servicing and letting this be partly determined by the debt stock. In effect, further debt accumulation and lending are considered unsustainable when growth rate (g) is lower than interest rate (r) – the standard financial programming assumption. For the external sector, we merely summed the trade and capital account balances given both the estimable and exogenous variables in the model. For money and prices, definitions were obtained for growth rates, government deficits, total credit to the private sector and total net assets among others.

V. Findings

Appendix table 1 summarizes the unit root properties of the variables used in the estimations for all the sectors covered in the model. Appendix table 2 presents the outcome of cointegration tests on the different equations. For the cointegration tests, the study employs the Engle-Granger two step procedures which estimates static representations of the relationship between dependent and explanatory variables and thereafter test for unit root on the residuals. Following identification of cointegrating relationships in a number of the equations, the specifications incorporated the error correction term.

A. Aggregate Supply

The aggregate supply/production block consists of three equations, agricultural value added, manufacturing value added and other non-oil output. Oil output is treated as exogenous in the model and added to the estimated non-oil sector to get the production identity. Beside the three endogenous variables, there are other 11 exogenous variables bringing the total number of variables in the block to 14. The estimation results of the equations of the model are shown in appendix table 3. Given the structure of production in Nigeria, relationship between the block and the rest of the economy shows up as relatively weak. It was not possible for instance to find agricultural output responsive to any of the variables in the specification. Being low technology in input, the traditional understanding is that agriculture in the country is driven by rainfall and other forms of input. However, neither rainfall nor credit to the private sector and/or the lending rate could be shown to be important in agricultural productivity. Even government expenditure, which is considered necessary for input (particularly fertilizer) subsidies, could not be found to be important.

In contrast, manufacturing value added is determined by the cost of credit (captured by the prime lending rate) and imports of intermediate goods. This is consistent with import-dependent characteristic of the manufacturing sector in the country. Manufacturers regularly refer to finance and the cost of credit as critical impediments to the growth of the sector. However electricity production, which is equally regularly blamed for poor performance of the sector could not be confirmed as significant nor were other variables from the external sector. For other non-oil output (particularly those in the services sector), nominal exchange rate was and government expenditure were critical in defining growth. Here, imports equally played positive and prominent role. The error correction term remained insignificant in the agricultural equation and had to be dropped. For the other two sectors, adjustment rate to short run changes in the equilibrium values of the dependent variables was low (less than 1 percent in both manufacturing and other non-oil output) but significant.

The inclusion of remittances showed only marginal effect in the other non-oil output equation, after one quarter lag. By implication, despite their sizes, remittances do not yet play direct roles in production in the domestic economy. This can be partly on account of the fact that the surge in remittance numbers is a recent phenomenon and their relative relevance can only be captured with samples beginning from the early 2000s as opposed to the current sample which runs from 1990. The results obtained may also reflect the relatively low proportion of the total population that receive remittances and the sectors of the economy where they put the resources to use. In this case, where they consist only a small proportion of the population and hardly use these in direct productive activities, it will be understandable that such direct activities as agriculture, manufacturing, etc do not benefit directly – which seems to be the case in Nigeria.

B. Aggregate Demand

The aggregate demand block has five equations – private consumption and investment, government revenue, expenditure and debt service. Another 11 exogenous variables in the block bring the total number of variables to 16. Model outputs for the block are shown in appendix table 3. Expectedly, the lag of private consumption is quite critical and highly significant in determining its present value – a ratchet effect acknowledged by most literature on consumption. Other important determinants include inflation and output. Domestic cost of credit (proxied by the prime lending rate) could not be confirmed to have significant impact on consumption. This is probably on account of the fact that though growing in relevance, development of money market instruments and the credit system in consumption is still a recent phenomenon and may not have reflected long enough in the data to impact the outcome of the modelling on consumption. The same applies to remittances which is significant only at the 10 percent level. Adjustment rate for disequilibrium in the relationship between consumption and its determinants is equally lower than 1 percent. Private investment is slightly less responsive to the specified determinants. With the exception of output and its own lag, most other variables were only marginally relevant. This includes government expenditure with a probability level of 11 percent and inflation with a probability of 10 percent. The lending rate is much weaker. Remittances could not feature as important determinant of private investment.

Public sector variables were also weakly related to the real economy. This is with the exception of government expenditure for which estimates indicate partial effect of output. Government revenue is simply a function of its own lag, output and tariff, which determines indirect revenue from imports. Beside output which has been referred to earlier, government expenditure is determined by its own lag and revenue. Evidence indicates that government ratchets up its expenditure with revenue increases. Other factors like credit to government and inflation rate did not show up with significant coefficients. Debt service on the other hand responds only to its own lag and the total debt stock, with the first being by far the most critical variable. Again, this is consistent with the history of the country's debt payment and servicing, particularly all through the 1990s where the government simply determines how much it could pick up of present debt based on the amount spent in the previous year. For most of those years, penalties on unpaid principal and interest charges shot up the overall value of the country's debts, particularly for external debts. Bilateral exchange rate of the naira with the US dollar was not significant probably because of the consolidation of both domestic and external debt services in the equation, the former dampening its impact.

C. The External Sector

Five equations were equally estimated for the external sector. These include exports, imports, foreign direct investment, foreign portfolio investment and remittances. The block has 14 exogenous variables to bring total number of the variables to 19. Estimation outputs for the block are presented in appendix tables 3. Exports are driven by oil price and nominal exchange rate, both of which are very significant with probabilities of less than 1 percent each. This is in addition to the lag of the dependent variable. Given that over 98 percent of total exports from the country consist of oil, this is not surprising. The significant impact of the nominal exchange rate may not imply changing export volumes in tandem with changes in the exchange rate; it might simply reflect the fact that what is modelled here is the value of exports which is translated to domestic currency using the exchange rate.

Even much more than exports, imports are temporally dependent and previous values of imports impact very significantly on present values. The exchange rate is equally significant. Interestingly, the same could not be said of several other domestic real, monetary and external variables including income, tariff, cost of credit and terms of trade. In particular, standard models bear out income and tariff as the quantity and price variables in import demand. But it seems imports in Nigeria are inelastic to any of these. The prime lending rate was included to reflect the fact that an assumed sizable proportion of credit ot the private sector goes into wholesale and retail trade of imported goods[3]. However, we could not confirm that it is significant as the estimate turns up with a 13 percent probability level. In contrast, remittances are very significant in determining imports. This presents a very interesting perspective to the discussion on leakages of remittance proceeds. The significance of remittances relative to a number of classical determinants shows the rising importance of the variable in the economy, which itself is highly import-dependent.

It was quite difficult to model foreign flows into the economy. This seems to reflect the widely-held view that foreign capital goes to where it wills independent of the actions or inactions of the domestic economy – a fact reflecting in the very high flows to China despite some very austere policies and the low flows to other developing economies despite FDI and other flows promoting policies. Not even the lags of the dependent

[3] Given the relatively high turnover of imports and trade activities which favours short term loans, banks often favour loan applications from these activities. Meanwhile, most agents in the real sector are not able to find profitable investments that can give enough returns to match the high interest rates. Besides, high gestation periods for loans in the real sector often imply higher risks for loans and this equally is unattractive to banks. Therefore formal lending decisions are often in favour of importers and traders.

variables were significant in determining foreign direct investment and foreign portfolio flows. The inclusion of foreign interest rates or interest rate differential equally made little difference. Neither of the flows was responsive to domestic output and macroeconomic variability captured by inflation rates equally did not make any difference. Foreign portfolio investment in particular was not driven by movements in the all share price index and we could not immediately lay hands on data on government instruments to try this as well. It is important to add here that this experience has been the same in successive modelling experiences. Two potential reasons can account for this. It is common knowledge for example that most FDI flows into Nigeria goes into the oil sector and hardly fluctuates with trends in the macroeconomy. The other reason is equally about the sectoral distribution of flows but somewhat related to data. There is hardly data on portfolio investments into government securities from the rest of the world and flows into private services sectors are recent and not fully captured in the data available to us.

Remittances equally exhibit an interesting trend in its determination. Most of the domestic variables included in the specification and assumed to drive remittances including income (later subdivided into consumption and investment) , the all share price index and imports are all positively related to but only marginally significant in driving remittances. It seems the critical determinant of remittances is its previous value. However, such previous value affects the present value of remittances negatively implying that high values of transfers at one point leads to lower values in current periods. But equally the nominal exchange rate impacts on remittance values. The same explanation given to exports/imports equation could apply here, but in addition, this reflects the fact that Nigerians abroad are very sensitive to the value of the exchange rate and exchange rate differentials are important reasons why many Nigerians decide to leave in the first place. Often referred to in everyday parlance as “earning money in hard currency”, the understanding is that even what is considered low income in other (particularly developed countries) can translate to substantial values in naira terms making the income earner rich in relative terms. This equally shows up in the impact of real exchange rate where real appreciation significantly leads to more remittance inflows with probability level of less than 1 percent. It would definitely have been informative to evaluate the impact of stock of emigrants, but time series data on this could not be obtained. On the whole though, the implication is that domestic income, consumption and imports are positively related to remittances but are not the primary drivers of remittances. The flows just keep coming despite trends in these.

D. Money and Prices

The money and prices block consists of five equations – credit to the private sector, credit to government, all share price index, inflation and the nominal exchange rate. There are 16 other (exogenous) variables in the block bringing total number of variables in the block to 21. Estimation results for the block are presented in appendix tables 3. Credit to the private sector is principally driven by its own lag (significant up to two quarters) and the prime lending rate. Income and inflation rates showed relatively weak coefficients even though they are both positive. Again, this underscores the weak relationship between formal credit to the private sector and overall output and financial variables. A constant reference to the weak structure of linkages between the financial and real sectors has been the growth of the banking industry and the declaration of huge profits in the midst of comatose real sector. Credit to government on the other hand is determined by the net foreign assets of government which expectedly leads to lower recourse to the domestic banking sector, the size of fiscal deficits of government and total deposit liabilities of the banking sector. Again, the impacts of most of the variables come with substantial lags (often between 3 and 4 quarters). The impact of total deposit liabilities generally reflects the size of government credit absorption, which naturally weighs heavily on bank deposit liabilities and in part signals crowding out of private sector credit. But equally, it reflects the fact that the government is more liable to the stronger (more deposit cumulating) banks than the weaker ones.

Interestingly, remittances impact heavily on the all-share price index. This effect is significant even when the stock market is modelled using stock market capitalization. It is important to note here that substantial flows into the country apparently contributed to the surge in all share price index between 2003 and 2008. This partially implies that while remittances could not be shown to be very important in determining investment in the real sector of the economy, it definitely is important in determining investment in the capital market. Two other monetary variables show up strong in determining all share price index –the nominal exchange rate and credit to the private sector. The first partially reflects external influence (of remittances and possibly other foreign flows) while the second though relatively less significant (at 7 percent) reflects a growing trend of increasing use of margin facilities for purchase of stocks, a phenomenon that may partially account for the stock market crash. Most other variables, not the least number of listed securities, domestic income and lending rates were all rightly signed but far less significant in the estimated coefficients. The latter was particularly brought into the equation to try to capture the potential trade off between investment in money market instruments and capital market opportunities. While the results indicate existence of some trade off, it could not be confirmed as being significant.

It is often argued in the literature that inflation is a monetary phenomenon. The results from the inflation equation seem to confirm that the most significant driver of domestic inflation is nominal exchange rate and not necessarily domestic production. Most probably though, it is possible that disaggregating domestic production could have raised the impact of one aspect, for instance the non-oil non-tradable sector, but we are not able to do so immediately. The results seem to indicate high pass-through of the exchange rate into domestic price determination. Given large depreciations over the last decade and a half combined with high import dependence, this might not be difficult to understand. Oil price is marginally significant (with probability of about 11 percent). Surprisingly, such variables as government expenditure, interest rates, money supply and remittances did not show up as having impact on domestic inflation. The exchange rate, on the other hand, is critically affected by oil prices. This implies that the influence of oil prices on domestic prices is mainly through the exchange rate in the course of monetization of oil proceeds in the federation account. Feedback impact of inflation rate on the exchange rate could not be confirmed, reflecting high consistency in the model estimates. Government expenditure on the other hand shows up a lot more significant in determining exchange rate (at 9 percent) than it was in the inflation model, again apparently confirming initial impact on the exchange rate through monetization and thereafter into domestic prices. Other factors incorporated into the exchange rate model including domestic output and remittances were not significant.

VI. So What Do We Know about Remittances and the Nigerian Economy?

It is always difficult to come to strong conclusions about the behaviour of specific macroeconomic relationships on the basis of one study. However, we at least have specific trends and messages from the study that would be useful to serialize and which could point to areas for further investigation.

First, the link between remittances and performance of the real sector in Nigeria is still very weak. There is no paucity of studies indicating that remittances offer substantial buffer to the micro household in consumption, savings and investment (particularly micro investments) in many developing countries – including Nigeria (Osili, 2001; Chukwuone et al, 2007; Ratha 2007, among others). But what this amounts to in terms of input into productive activities at the macro level is questionable. For a country like Nigeria with documented evidence of Dutch Disease and poor performance of the real sector, this is even more the case. While remittances have been growing, the real sector has not been performing creditably. With an enclave oil sector, extremely infrastructure-constrained manufacturing sector, and low-technology driven agricultural sector, investments in real sector activities from remittance proceeds are relatively not strong enough to drive developments in the real sector. However, the services sector comparatively benefit more from remittances though taken alongside other major drivers like government expenditure, its impact is relatively weaker. But at least, there is evidence that remittance flows into and overall impact on the services sector is relatively more than in agriculture and manufacturing.

Brought closer to private consumption, the results largely reflect those of surveys, but with impacts diluted by a large population of non-remittance recipients included in the macroeconomic activities under consideration. In gross consumption which includes consumption of domestically produced goods, again, overall impact of remittances is positive but marginally significant at 10 percent. In contrast, remittances have no impact on private real investment, but show up significantly important in – in fact, one of the few critical determinants of –imports. Ostensibly, remittances have tended to favour imports over time. This is understandable given that imports of consumer goods have ranged between 45 and 48 percent between 2005 and 2007 and have been higher in some years prior to those. Indeed, it is most probable that should imports consumer goods be separated from the rest of imports, this impact might be much higher. This takes the discussion back to the point raised in Grabel (1998) following Kapur (2004) on the nature of remittance induced consumption. Given Nigeria’s weak productive base and the structure of consumption basket of the middle class which receives the highest proportion of remittances, this channel of leakage might well be partly responsible for the overall low impact of remittances on domestic production. A vicious cycle is then established where high imports leakages (on consumer goods) lead to low domestic value addition from remittance receipts and thereby reinforce the dependence of remittance recipients on imported products. Breaking this cycle is not usually very easy and so far, there are little indications the government has even seen this as a serious dilemma or presently has any policy aimed at possibly tackling this.

Turning attention to the domestic financial and price variables, we see yet another significant relationship. Remittances impact the all share price index significantly. As noted earlier, significant proportion of recent growth in the Nigeria stock market arose from flows from outside the economy. Much of this flows were by Nigerians living outside who for sundry reasons, including nationalistic and hedging purposes (Agrawaal and Horowitz's, 2002 *altruism and insurance concepts*), sent money to their relatives to invest on their behalf. The listing of many bank shares and the public offers following the consolidation mandate of the Central Bank of Nigeria definitely gave rise to a flurry of flows as agents worked to maximize both holdings and returns from the stock market. But even prior to then, it is common knowledge that since investments in most productive activities would imply regular oversight involving the kind of time and resources not available to most emigrants, they often prefer investments in housing and the capital market. Interestingly though, it could not be confirmed that remittances lead to changes in either the exchange rate or domestic prices. This makes remittances potentially useful as a macroeconomic management tool. Encouraging remittances do not lead to price instability possibly on account of the nature of the flows or the nature of uses to which it is put. Whatever the case though, it signals less harmful effects than some other flows. Compared in particular to the more volatile foreign direct and portfolio flows, this makes remittances more desirable.

Informal remittance services provide an interesting perspective that could further aggravate the leakages in the macroeconomy. While activities of informal remittance service providers are difficult to measure, it is estimated to possibly transact as high as between 30 and 45 percent of total remittance flows into the economy (Agu 2009). Such remittances are not only sent as cash through travelling individuals but also as valuables such as jewelries, electronics, cars, clothing, etc. But besides travelling acquaintances, there are also private merchants who sometimes charge money to do such business. The interesting aspect of such merchants is that most of them are importers. A classical case is that of a clothing/jewelry shop that simply receives money either from outside or within the country on behalf of relatives and puts a call across to his trading partner, also a Nigerian, who pays the next minute. The trading partner uses the money to buy goods for him which he sells. In effect, all such transfers are used to purchase goods outside the country and sold within. Much of these transactions do not enter the formal data, but significantly impact the leakages and define the sectors into which remittance receipts are put.

VII. Conclusions and Some Recommendations

This study sets out to evaluate the relationship between remittance flows and the rest of the economy. To do so, it specifies and estimates a four-sector medium scale macro model with 49 variables comprising of 18 endogenous variables, 31 exogenous variables and 14 identities. It found very weak link between remittances and the real sector as well as components of aggregate demand with the exception of private consumption for which impact is marginally significant. Estimates indicate significant leakages for remittance proceeds through imports, possibly accounting for the weak relationship between remittances and the rest of the domestic economy. This also implies that relative spill-over effects of remittances on domestic output and employment might remain weak if not redirected using specific policies. There are indications that non-subsistent remittances are channelled into the stock market, further entrenching the financial supermarket tendencies in the Nigerian economy. Interestingly, such relationships do not seem to impact prices. In turn, however, it could not be confirmed that any of these macroeconomic variables drive remittances.

A recent survey on the remittance industry (Agu 2009) indicates that the remittance industry is oligopolistic, with global money transfer operators (MTOs) – Western Union, Moneygram and Cash for Africa among others – as key players. Banks feature in the industry, but mainly as agents to the global money transfer firms. Most other channels of transfers (including account to account transfers) are operated with foreign banks and can be quite costly for small transfers, which consist the bulk of remittances. Most banks equally operate under exclusivity agreements with the MTOs, further strengthening the oligopostic structure of the industry and increasing difficulties associated with remittance transfers. Fees can be as high as 20 percent of the value of the funds transferred and almost exclusively determined by the MTOs. So there is room for access improvement and cost reduction in the remittance industry. Definitely, this could come through licensing of bureau de change and inducement of independent service provision by banks among other measures.

But much beyond this, it is not known that there is any incentive towards more productive use of remittance proceeds. The general idea is that remittances are purely private flows (Osili, 2001 and Orozco and Millis, 2008)– but so are foreign direct investment and foreign portfolio flows. Yet, while a number of incentives are lined up for FDI and FPI, there is none for remittances, which is not only more stable, but also emanating from Nigerians and therefore have significant potentials for higher developmental impact. The challenge facing improved impact of remittances on economic growth is not only related to increase in flows, but to effective utilization of the proceeds. While it is not debatable that consumption uses are critical for many families at the lower rungs of the income ladder, there is the danger that Nigeria (and many other developing countries) waste an opportunity to harness what is potentially a great source of development capital. There is definitely a case for improved channeling of the use to which remittance funds are put. As such, leaving entire remittance proceeds to be put into present consumption is ostensibly sub optimal. Here, the government can provide matching grants for small and medium scale investments in the real sector. It is clear that the small and medium enterprise equity investment scheme of the Central Bank has been largely underutilized for many years. This is a potential source of funds for such matching grants for investments in the real sector using remittance proceeds. Glytsos (2002) and Adams (2006) confirm that physical capital investments increase (or at least ought to increase) with remittances. Nigeria is no different.

It was also found in Agu (2009) survey that the link between remittance services and other banking services is near zero. Many banks simply provide a desk where recipients come to pick money. But clearly, they can market other services to these recipients. There are potentials for remittance-related specific instruments that ought to and can be packaged for remittance patrons. For example, Kimani (2007) notes that in response to Obasanjo's Nigerians in Diaspora Organization (NIDO)[4], UBA has designed a "non-resident Nigerian" banking service offering such products as local account maintenance, loan facilities for real estate development, asset management products, and private equity facilities. However, it is not evident that at the end of President Obasanjo's tenure, either NIDO or such banking services have received significant impetus from the government. Nor are there evidence that such programmes are being undertaken by other banks with support from the government. Remittance transfers need not be treated as one-off transactions on every occasion, which is the case now. The recipient can be made to maintain a regular account on a more regular basis with charges similar to other banking services of like nature. Working together with the Central Bank and Mortgage institutions, such remittance patrons can be given an array of options and incentives for investment including diaspora bonds, repatriable foreign exchange accounts, etc (Adenuga and Bala-Keffi, 2005; Ratha et al, 2008, etc).

Finally, while in the short run it might be difficult to curtail import-related leakages from remittance flows, it is possible to have a long term plan to do so. Here again, the key language should be that of incentives. Of course, it will make little sense to use incentives to encourage purchase of domestically produced goods with remittance proceeds if the productive base is not enhanced. As such, it becomes a matter of long term planning on improving broad infrastructure and access to finance for the domestic manufacturing sector. It is important to signal that there is absolutely nothing wrong with financial investments from remittances which seem to be the more pronounced channel. But a development option which emphasizes real sector productivity and retention of inflows in the domestic economy will definitely be more useful for employment purposes and ultimately enhance social stability while creating room for economic growth. For now, the idea of a financial supermarket is not exactly very appealing for a country at Nigeria's level of development and with the country's social and human development indicators.

[4] The erstwhile President of Nigeria, Chief Olusegun Obasanjo instituted a process for Nigerians abroad to contribute more closely to the development of the country. NIDO was the umbrella organization that worked to bring this vision to reality.

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Appendix 1: Unit Root Tests – Summary Table

Variable	I(?)	ADF Calc	ADF Tab	Sig (%)		Variable	I(?)	ADF Calc	ADF Tab	Sig (%)
ASPI	2	-6.74	-2.61	1		NEER	0	-3.39	-2.90	5
AVA	2	-8.42	-3.53	1		NER	1	-4.48	-3.53	1
CAB	2	-4.67	-3.53	1		NFA	2	-4.18	-3.53	1
CGA	2	-5.24	-3.53	1		Non oil output final	2	-4.92	-3.54	1
CPI	2	-5.65	3.53	1		NOS	1	-3.52	-2.90	5
CPN	2	-2.93	-2.90	5		OANA	2	-4.30	-3.53	1
CPO	0	-4.14	-3.53	1		Oil export	1	-8.70	-2.60	1
CPS	1	-9.08	-3.53	1		Oil Output	2	-5.87	-3.54	1
Export	1	-9.57	-3.53	1		Other non-oil output	2	-7.02	-3.53	1
FDA	1	-3.96	-3.53	1		Output Final	2	-7.36	-3.53	1
FDFA	2	-5.37	-3.53	1		PC	2	-3.86	-3.53	1
FDI	2	-6.31	-3.53	1		PLR	2	-5.17	-3.53	1
FIR	0	-3.34	-2.90	5		PO	2	-3.05	-2.90	5
FPIA	2	-5.35	-3.53	1		Rainfall	1	-2.72	-2.60	1
GEXP	2	-4.42	-3.53	1		REM	2	-4.11	-3.53	1
GREV	2	-4.80	-3.53	1		RER	2	-4.13	-3.53	1
GS	2	-4.08	-3.53	1		RES	2	-4.15	-3.53	1
IEP	2	-4.62	-3.53	1		SAVINGS	0	-3.75	-3.53	1

Imports	0	-4.24	-3.53	1		TAR	0	-3.78	-3.53	1
INF	2	-4.20	-3.53	1		TBR	2	-5.06	-3.53	1
INV	2	-8.82	-3.53	1		TDL	2	-6.29	-3.53	1
IRD	2	-4.49	-3.53	1		TDS	0	-3.07	-2.90	5
KSE	2	-6.24	-3.53	1		TDSK	2	-3.15	-2.90	5
M2	2	-4.67	-3.53	1		TOT	0	-3.90	-3.53	1
MI	0	-3.36	-2.90	5		X	2	-5.37	-3.53	1
MK	0	-2.88	-2.59	10*		Yd	2	-4.25	-3.53	1
MLR	2	-4.85	-3.53	1		Yn	2	-4.10	-3.53	1
MVA	2	-6.28	-3.53	1		Yv	0	-4.80	-3.53	1

Appendix 3 – Model Equations

AGGREGATE SUPPLY

	PLR	RAIN	CPN	MI	YON	NER	GEXP	REM	CPS	M	ECM	R^2	DW
AVA	- 0.001706 (-0.72)	0.000477 (1.71) Lag 1 0.000735 (1.23) Lag 3 0.000810 (1.39)	Lag 1 0.000809 (0.60)									0.07	2.0
MVA	Lag 1 - 0.515258		Lag 2 0.109789	0.070298 (2.15)							-1.78E-05 (-2.47)	0.22	2.62

	(-2.85)		(1.0)	Lag 3 -0.071536 (-2.18)									
YON					Lag 1 0.474127 (5.25)	Lag 2 -0.050152 (-1.20) Lag 4 -0.129878 (-3.07)	Lag 4 0.280957 (3.13)	Lag 1 0.037525 (1.09) Lag 2 0.022406 (0.69)	Lag 1 0.099212 (1.52)	Lag 2 0.002120 (2.57)	-3.28E-06 (-2.15)	0.56	1.78

AGGREGATE DEMAND

	PC	Y	INF	PLR	REM	INV	GEXP	ECM	R2	DW
PC	Lag 1 0.689952 (6.68)	Lag 4 1.347074 (3.33)	Lag 1 0.013228 (2.04)	Lag 1 -0.060129 (-1.11)	Lag 4 0.028255 (1.64)			-1.28E-06 (-2.07)	0.51	2.38
INV		26.56805 (4.49)	Lag 1 -0.102603 (-1.65) Lag 3 -0.077828 (-1.34)	Lag 2 -0.529096 (-1.06)		Lag 1 0.562079 (4.03)	Lag 4 0.720511 (1.62)	-7.43E-06 (-0.71)	0.39	1.89

AGGREGATE DEMAND CONT'D

	GREV	Y	TAR	GEXP	INF	CGA	TDS	TDSK	NER	ECM	R2	DW
GREV	Lag 1 0.536060 (5.44)	Lag 4 4.566060 (5.38)	Lag3 0.005199 (1.14)								0.43	2.09
GEXP	1.039310 (13.34) Lag 4 0.368630 (5.85)	Lag 4 1.531920 (3.20)		Lag 1 0.173504 (3.19)	Lag 1 0.008967 (1.43)	Lag 1 0.003697 (0.69)				-1.96E-06 (-1.77)	0.91	1.29
DEBT							Lag 1 0.997841 (164.74)	lag 4 1.060675 (2.70)	Lag 1 0.335226 (1.33) Lag 3 0.273140 (1.06)		0.76	1.61

EXTERNAL SECTOR

	X	PO	NER	M	PLR	REM	Y	INF	IRD	ASPI	RER	PC	ECM	R2	DW
X	Lag 4 0.217930 (2.46)	0.656499 (3.97)	0.346418 (3.17)										-8.88E-06 (-2.39)	0.38	2.13
M			Lag 4 -0.371176 -2.13	Lag 1 1.002014 316.19	Lag 1 -0.578194 -1.55	Lag 3 0.407093 (3.25)							-1.60E-05 (-2.14)	0.35	2.37
FDI							11.81670 (1.51)	Lag 3 -0.186131 -1.88					-5.01E-05 (-5.70)	0.36	2.00

FPI							21.08561 (1.65)	Lag 4 -0.149097 (-1.00)	Lag 4 1.061444 (1.41)	Lag 2 0.584564			-5.09E-06 (-1.94)	0.15	2.74
REM			-0.809061 (-4.31)	0.003379 (1.57)		Lag 1 -0.582611 (-6.37) Lag 2 -0.508273 (-4.98) Lag 3 -0.485545 (-3.95) Lag 4 -0.373997 (-3.86)				0.168505 (1.17)	-1.492373 (-4.63)	Lag 4 0.532774 (1.23)	-0.000179 (-5.19)	0.64	1.58

MONEY AND PRICES

	CPS	YN	PLR	INF	CGA	NFA	FDA	TDL	ECM	R2	DW
CPS	Lag 1 0.357230 (2.82) Lag 2 0.258049 (2.31)	Lag 2 0.907790 (1.19)	-0.609914 (-3.17)	Lag 1 0.028274 (1.31)					-1.02E-05	0.32	2.02
CG			-0.806088 (-1.21)		Lag 1 -0.324852 (-3.01)	-0.762704 (-3.36) Lag 4 -0.434814 (-1.90)	Lag 3 -0.931498 (-2.38) Lag 4 0.927884 (2.38)	Lag 3 2.272017 (3.92) Lag 4 0.808064 (1.46)	-8.58E-06 (-2.42)	0.45	2.14

MONEY AND PRICES CONT'D

	YN	NOS	TBR	REM	CPS	NER	Y	PO	INF	GEXP	ECM	R2	DW
ASPI	Lag 1 1.043790 (1.28)	Lag 2 1.553487 (1.43)	-0.086415 (-1.14)	0.173315 (2.06) Lag 1 0.130422 (1.68) Lag 4 0.076146 (1.09)	Lag 3 0.242951 (1.85)	Lag 2 -0.202828 (-2.37)					-8.48E-05 (-3.77)	0.31	2.60
INF						Lag 4 1.247103 (3.05)	Lag 3 10.15897 (1.38)	Lag 4 0.857570 (1.63)			-0.007321 (-1.75)	0.22	1.93
NER							-2.794393 (-1.28)	-0.418296 (-2.93)	0.032697 (1.05)	0.367906 (1.69)	-0.001296 (-1.61)	0.23	1.93