Assessment of the Response of Per Capita Growth to Remittance Net-Flow in Nigeria

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Abstract
This study assessed the response of per capita growth to remittance net-flow in Nigeria from 1980 to 2017. The study employed VAR impulse response methodology using the data from World Bank Remittance fact book, Central Bank of Nigeria statistical bulletin and the World Bank indicators. Result from the analysis showed that per capita growth response to shocks from the remittance net-flow in Nigeria was mostly positive in the periods under review. However, introducing exchange rate regime switch dummy into the model the response did not produce consistent positive effect on per capita growth in Nigeria. Based on these, the study recommended that the government need to remove unnecessary restrictions and cost of movements especially when it involves the movement of her nationals to places like where most of the remittance inflows comes from especially when migrating as a professional.
Keywords: Per capita growth, remittance net-flow, impulse response, exchange rate, Nigeria.

I. Introduction

Migration has become an important strategy for household subsistence and economic diversification.Through migration, households have boosted their welfare level due to the remittances that migrants send back home to their families. Remittances have also become significant private financial resources for individuals in countries of origin of migrant (UNCTAD, 2011). The magnitude of remittance flow usually affects both the host and the receiving countries. For the host countries, remittance is seen as outflow while, the receiving country, see it as inflow. The net flow of remittances in any nation shows how that country has gained from liberalization. Remittances allow households the opportunity to diversity their income source, hence hedge against risk and increase their economic wellbeing (Nyarko and Kwabena, 2010). In doing this the net flow of remittances becomes a source of increasing economic capita growth rate of any country.

In Africa, Nigeria, as the most populated country, plays a key role in its migrations. She has become increasingly involved in international migration to Europe, the Gulf countries and South Africa, yet Nigeria is also a source and destination country migration within west-Africa (Adepoju, VanNaerssen and Zoomers,2006). Considering the key role Nigeria plays in African migration systems, its role as destination, transit and source country, and considering the fact that it is both confronted with the negative and positive dimensions of migration; improved systematic insight in the views and interests of Nigerian state and non-state stakeholders is essential in designing more effective migration and economic capita growth (Afaha, 2011).

On the other hand, Remittances have become significant private financial resources for households in countries of origin of migration although they cannot be considered as a substitute for foreign direct investment (FDI), official development assistance (ODA), debt relief or other public sources of finance for growth. Evidence from the World B1ank Migration and Remittance Factbook (2011) shows that in Africa, Nigeria was ranked sixth and fifth in emigration and immigration respectively. This shows that the net flow of remittance as well as the liberalization and total remittance of earning prevalent in the country will be of major source of concern for the Nigeria.

Evidence from World Bank Development Indicators (2007), shows that the stock of Nigerian emigrants in some selected developed countries from 1977 to 2008 shows that Nigerians emigrated more to Italy from 1977 to 2005, except between 1990 to 1995 where US toppled for a while. The dominance of the destination of Nigerian emigrants to US also resurfaces again between 2005 to 2008 as can be seen below on figure 1.

**Figure 1Stock of Nigeria Emigrants in selected developed countries**
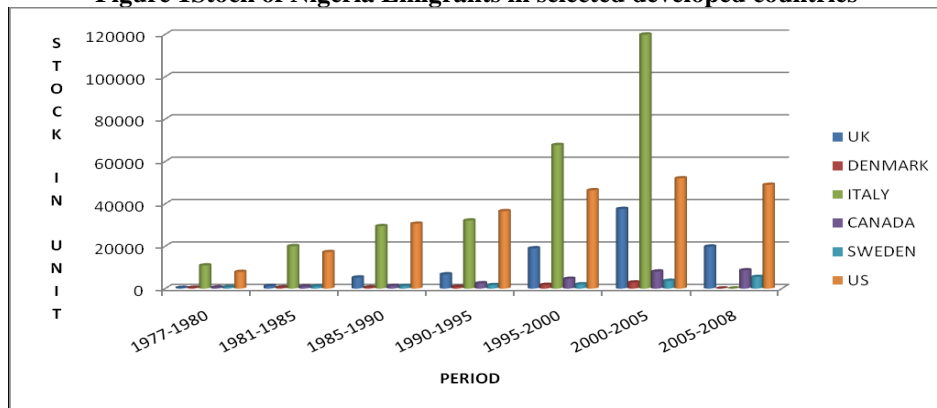
Source: Computed underlying data from immigration statistics yearbooks of Canada, & UK, the US Statistical Abstract and World Bank Development Indicators (2007).

Similarly, the immigration of foreigners into the country has also been on the increase. Evidence from Afaha, (2011) shows that most of the immigrants in the country mostly those from Africa which greater part of them where from neighbouring West African countries has been on the increase. This shows that Nigeria is indeed a country of source and receiver of remittances and migration.

Just like emigration and immigration, inflow and outflow (net flow) of remittances have also been on the increase and has equally become positive. The figure below shows the periods of negative net flows and when net remittance flow became positive in Nigeria. The figure showed a clear picture of the inflow, outflow and net flow of remittances in the country, and it shows that not until 1990 that Nigeria had her first positive remittance net flow. But since 1990, the remittance net flow has been positive. What this means is that the size of remittance inflow into the country has toppled the size of outflow. This could equally be seen below on figure3.

Figure2 Figure of remittance inflow, outflow and negative net flow of Nigeria.
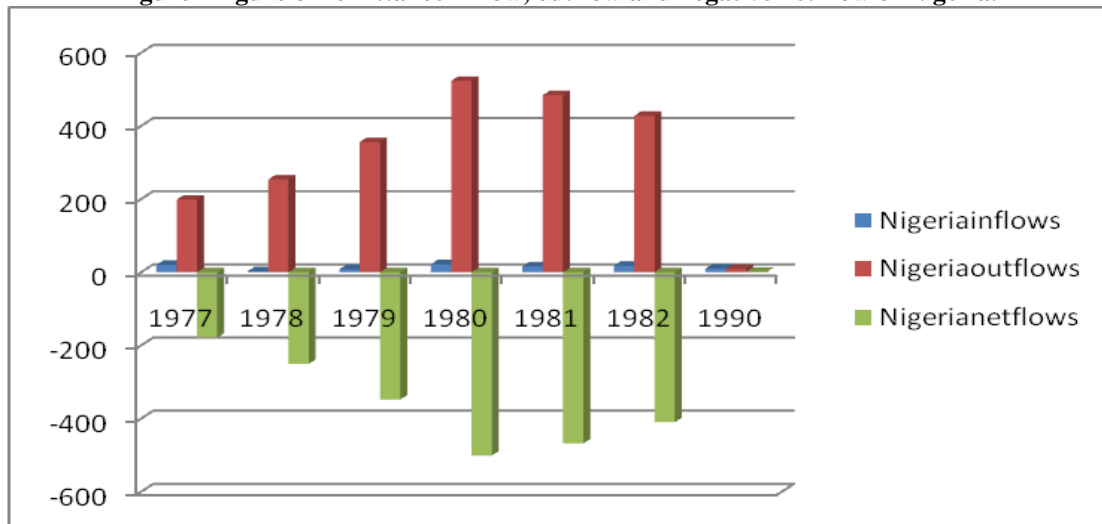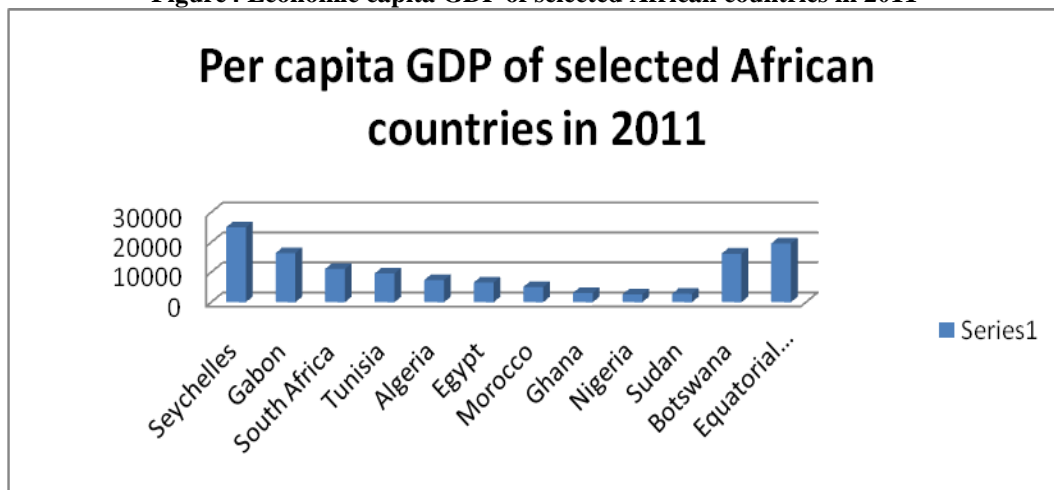

Source: Researchers computation.
Figure 3 Figure of remittance inflow, outflow and positive net flow of Nigeria.
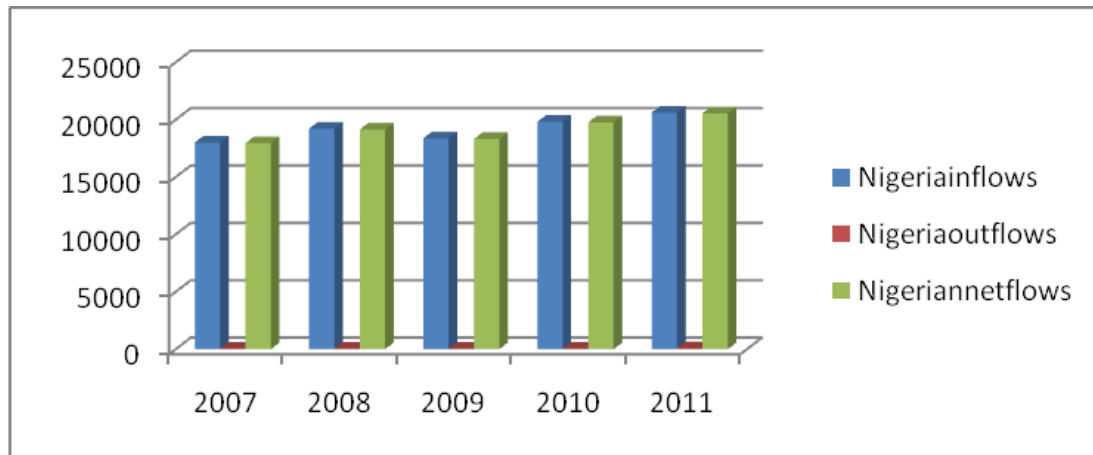
Source: Researchers computation.

Despite the rising positive net remittance flow in Nigeria, the size of the country's economic capita growth is still very low when compared to her counterpart. For instance, the nation's economic capita gross domestic product (GDP) has not fared well when Nigeria is compared with other countries in Africa aspiring to be among the top economies in the world. Evidence from CIA World Fact book (2012), showed that in 2011, Nigeria was ranked 177th in the world and 17th in the continent. This could be seen on figure 4 below. Figure4 below shows that despite the increase in remittance net-flow to Nigeria (even after recording the highest inflow of remittance in Africa in 2011), she is still by far less than her mates in terms of improving the aggregate welfare of the users of remittances.

Figure4 Economic capita GDP of selected African countries in 2011

Source: Researchers computation.

From the discussions above, one could see that Nigeria remains a source and destination country for remittances but the inflow of remittances into the country have surpassed its outflows. Similarly, the high positive net flow has equally not measured quite well with GDP per capita when compared to other countries. Considering the nature of remittances as being used by households and its ability to genuinely affect household welfare, the response of remittance net-flowand per capita economic growth becomes important. This therefore becomes the thrust of this study.

II. Theories behind Remittance flow

Quite a lot of theoretical postulations have delved into why people remit. However, only a very few of these postulations are often accepted. For instance, the theory of Altruism, this theory according to n a dominant Lopez – Cordova and Olmedo, (2006) was the most dominant and greatest reason why remitters remit to their country of origin. This theory states that the major reason for migration in mostly less developed (especially among poor households) was to improve the welfare of the people at home. Another rationale for remittance flow was self-interest. According to this postulation, migrants remit to help them acquire their own personal belonging like building of houses, buying of lands, cars, setting-up of business, among others. Going further,

some other theorist opines that remitters remit to settle debt. This rationale was because some of the remitters borrowed to travel while some may remit to retrieve their relatives out of indebtedness so they send the money to offset such debt.

Another rationale which determines the flow of remittance is the need to diversify risks in the. Lucas and Stark (1985) argued that families use remittance (a product of the migration of their relatives) as a coinsurance strategy to spread the risks faced by households. Families' value this rationale in the sense that most households in less develop countries always believe that better opportunities lay outside their country. More so, some other theorists have also opined that people remit to pay for services rendered. The rationale behind this may be payment for such services like; taking care of the immigrant's children, house, property among others (Akinpelu et al, 2013). Migrants also remit to their home country with the aim of starting a business with it. Ruiz – Arranz, (2006) supports this rationale by positing that many migrants remit (especially) money to either their relatives or friends to start up businesses for them or even buy financial assets like shares among others. According to Arranz, these people do this because when they convert the currency of their host country to the currency of their home country, they could use it to start at least a small scale business.

III. Methodology

The analysis in this study followed the theoretical formulation of the Mundell-Fleming model for an open economy where the effect of remittances in an economy was best modeled using exchange rate and exchange rate regimes as control variablesfollowing Kireyev (2006)as below;

Y = (C+I) *g* + (C+I) *p* + (X-M+*NCT*+*NY*)……………………………………….……………. (1)

where,

(C+I) *g* and (C+I) *p* are net factor income (NY) and net current transfers (NCT) – which capture the remittances. The (X-M+*NCT*+*NY*) is defined as current account balance (CAB). Remittances, as private flows, firstly affect only private consumption and investment, that is, (C + I) p.

However, following Kireyev(2006) suggestionthat the effect or response of remittance to growth depends on the interaction between the scale of net remittances and the unknown marginal inclination to save. Based on this, growth in economy becomes a function of remittances, exchange rate and exchange rate regime and this relationship is stated below as equation 2.

$$y_t = \beta_0 + \beta_{1t}REM_t + \beta_2EXC_t + \beta_3EXR_t + u_t \dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

where,

Y_t = Per capita growth at time T

B_0 = Constant

Rem_t = Remittance at time T

EXC_t = Exchange rate at time T

EXR_t = Exchange rate regime dummy at time T

μ_t = Error term at time T

By substitution to reflect the purposes of this study, equation 2 above becomes equation 3 where Y at time T will become economic capita growth rate and REM at time T will represent remittance net-flow at T. This relationship is stated below as equation 3;

$$y_t = \beta_0 + \beta_{1t}REM_t + \beta_2EXC_t + \beta_3EXR_t + \beta_4IFL_t + \beta_5FDI_t + u_t \dots\dots\dots\dots\dots\dots\dots\dots\dots(3)$$

To address the objective of this study, the study specified the economic capita growth as a function of remittance net-flow and other explanatory variables (that is, exchange rate, dummy (0, 1) for exchange rate regimes in Nigeria occasioned by Structural Adjustment Programme (SAP), inflation, and foreign direct investment).

The economic capita growth equation is estimated in nominal terms thus, the implicit function of this model takes the form;

Y_t = f(REM_t, EXC_t, EXR_{Dt}, INF_t, FDI_t) …………………………………………………………… (4)

This can be stated in a more empirical function as:

Y_t = Economic per capita growth at time t

REM_t = Remittance net-flow at time t,

EXC_t = exchange rate at time t

EXR_{Dt} = Exchange Rate Regime D at time t

INF_t = Inflation rate at time t

FDI_t = Foreign Direct Investment at time t

In order to examine the response of economic capita growth to the independent variables, the study followed Muftaween&Hussainatu, (2014) to specify the reduced form n-variable VAR model of order k as follows:

$$\Delta G_t = \rho_0 + \rho_i \sum_{i=1}^{n} \Delta G_{t-i} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(5)}$$

where,

G = vector of endogenous variables

ρ_i = parameters ($\lambda, \alpha, \beta, \theta$ and δ) to be estimated

    The impulse responses computed from the VAR estimates was used to ascertain the response of economic capita growth to remittance net-flow and the dynamic effect of shocks on the endogenous variables included in the model. Based on this, the study re-specifies the VAR model in equation (5) as follows:

$$\Delta y_t = \lambda_0 + \left[\lambda_i \sum_{i=1}^{n} \Delta rem_t + \alpha_i \sum_{i=1}^{n} \Delta exc_t + \beta_i \sum_{i=1}^{n} \Delta exr_{d_t} + \theta_i \sum_{i=1}^{n} \Delta \inf_t + \delta_i \sum_{i=1}^{n} \Delta fdi_t \right] + \varepsilon_{1t}..6a$$

$$\Delta rem_t = \alpha_0 + \left[\lambda_i \sum_{i=1}^{n} \Delta y_t + \alpha_i \sum_{i=1}^{n} \Delta exc_t + \beta_i \sum_{i=1}^{n} \Delta exr_{d_t} + \theta_i \sum_{i=1}^{n} \Delta \inf_t + \delta_i \sum_{i=1}^{n} \Delta fdi_t \right] + \varepsilon_{2t}..6b$$

$$\Delta exc_t = \beta_0 + \left[\lambda_i \sum_{i=1}^{n} \Delta rem_t + \alpha_i \sum_{i=1}^{n} \Delta y_t + \beta_i \sum_{i=1}^{n} \Delta exr_{d_t} + \theta_i \sum_{i=1}^{n} \Delta \inf_t + \delta_i \sum_{i=1}^{n} \Delta fdi_t \right] + \varepsilon_{2t}..6c$$

$$\Delta exr_{d_t} = \theta_0 + \left[\lambda_i \sum_{i=1}^{n} \Delta rem_t + \alpha_i \sum_{i=1}^{n} \Delta y_t + \beta_i \sum_{i=1}^{n} \Delta exc_t + \theta_i \sum_{i=1}^{n} \Delta \inf_t + \delta_i \sum_{i=1}^{n} \Delta fdi_t \right] + \varepsilon_{2t}..6d$$

$$\Delta \inf_t = \delta_0 + \left[\lambda_i \sum_{i=1}^{n} \Delta rem_t + \alpha_i \sum_{i=1}^{n} \Delta y_t + \beta_i \sum_{i=1}^{n} \Delta exc_t + \theta_i \sum_{i=1}^{n} \Delta exr_{d_t} + \delta_i \sum_{i=1}^{n} \Delta fdi_t \right] + \varepsilon_{2t}..6e$$

$$\Delta fdi_t = \varphi_0 + \left[\lambda_i \sum_{i=1}^{n} \Delta rem_t + \alpha_i \sum_{i=1}^{n} \Delta y_t + \beta_i \sum_{i=1}^{n} \Delta exc_t + \theta_i \sum_{i=1}^{n} \Delta exr_{d_t} + \delta_i \sum_{i=1}^{n} \Delta \inf_t \right] + \varepsilon_{2t}..6f$$

where, the variables are as explained above.

    The level of variations in economic capita growth from each of the endogenous regressors determine how significant or not, shocks from such variable are to the economic capita growth in Nigeria.The data for this study was gotten from the World Bank Remittance fact book, Central Bank of Nigeria statistical bulletin and the World Bank indicators.

IV. Results and Discussions

    Since the estimated variables were time series, the study subjected the variables to Augmented Dickey-Fuller test for unit root at the 5% critical value to ensure they become stationary. However, the result for the transmission of structural shocks from remittance net flows to economic capita growthwas presented below as table 1.

Table 1 Impulse Response of Economic growth to the Explanatory variables Summarized Result

Periods	LogREM	logEXC	EXR	logINF	logFDI
Year 0	0	0	0	0	0
Year 1	-.364603	.467852	.305279	.227061	.297954
Year 2	.066523	.042659	-.754386	-.11226	-.091832
Year 3	-.038898	.310127	-1.5267	-.05639	-.192625
Year 4	-.081259	.215533	-1.46771	.038849	.030435
Year 5	.015281	.093143	-1.22067	-.077143	.03731
Year 6	.012768	.038143	-.868374	-.0759	.108877
Year 7	.022294	.012647	-.412857	-.025624	.146282
Year 8	.047192	-.019946	-.133048	-.003551	.132644
Year 9	.043252	.00836	-.001435	.010662	.096973
Year 10	.029569	.037043	.040198	.01602	.071092

Source: Researcher's result

    The result on Table 1 shows the summarized impulse response result of the response of economic growth per capita to shocks from the remittance net-flow, exchange rate, exchange rate regime dummy, inflation rate and foreign direct investment. Usually, the impulse response shows the effects of shocks on the adjustment path of the variables. It is of importance to note that this kind of analysis always seek basically to reveal the

effect of one standard deviation shocks on each of the variables over time horizon. What this mean is that the test shows the response of economic growth per capita to shocks in itself as it appeared in the appendix, but the study intend to focus in the one highlighted in the objective of this study as supported by the framework chosen for this study showcased in equation 6a. More so, corresponding graph is in the appendix for better comprehension of the response function. As could be seen in the summarized result above, in the first period (year 0) the response is usually zero for all the variables except when a variable responds to itself as seen in the appendix. Then from the year 1, the response of economic growth to remittance net-flow shocks was negative (-.37) but in year 2 the response became positive (.07). What this means is that in year 1, any shock in remittance net-flow would reduce economic growth in the country while in year 2, any shock in remittance net-flow would increase economic growth in the country. This positive response didn't last as the negative response came again in year 3 and stayed till year 4 from where the response remained positive till year 10.On the other hand, the response of economic growth per capita to shocks in exchange rate from year 1 was positive till year 8 when it showed a negative response (signifying that a shock in exchange rate would lead to a decline in economic growth per capita in year 8 in Nigeria. But as seen on Table 1 above, from year 9, the response became positive till the last year, year 10.

The result for exchange rate regime dummy shock to economic growth per capita showed that apart from in year 1 and year 10, the response of economic growth to shocks from exchange rate regime were all negative. What this means is that the shock transmitted by switching exchange rate regime increased economic growth in year 1 but from year 2 till year 9, the shock reduced economic growth and after that in year 10 it increased economic growth.Furthermore the response of economic growth to shock from inflation as reported on table 1 above showed that the relationship was mostly positive. Specifically, the shock in year 1 was positive while the shocks in year 2 to year 3 were negative. The positive relationship was again witnessed in year 4 but from year 5 through year 8 the relationships were negative. However, in years 9 and 10, the relationship became consistently positive, meaning that the shock transmitted by inflation increased economic growth in those periods.

Going further, the shock transmitted by FDI to economic growth was positive in year 1 but in years 2 and 3, it became negative and from year 4 through to year 10 the shocks transmitted were consistently positive. This showed that the shock transmitted by FDI inflow on economic growth most times were positive. What this means is that shocks from FDI increases economic growth in Nigeria based the period under review.

V. Conclusions

Migration of people has improved household welfare especially in many developing countries through the remittance the migration generates. This has resulted in many families going as far as contributing money to ensure that their family member migrates. The result of theper capita growth response to remittance net-flow in this study showed that remittance net-flow, exchange rate, exchange rate dummy (representing the switch from rigid to flexible exchange rate), inflation rate and FDI inflows all transmit positive and negative shock at various times to economic growth per capita of Nigeria. However the shocks transmitted by remittance net-flow, exchange rate, inflation and FDI inflow to a great level were positive, implying that they affect per capita growth positively. While, the shocks transmitted due to the switch of exchange rate was mostly negative implying a decrease in economic growth in Nigeria.Since remittance net-flow transmits positive shocks to economic growth per capita, unnecessary restrictions in movement of people out of Nigeria need be reduced to encourage emigration and improve household economic welfare. More so, most of the shocks transmitted by the switch in exchange rate regime were negative, hence the country has not benefited so much from the switch, therefore, there is the need for government and policy makers to examine the effectiveness of the system or even go for a managed float.

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APPENDIX

Graphs by irfname, impulse variable, and response variable
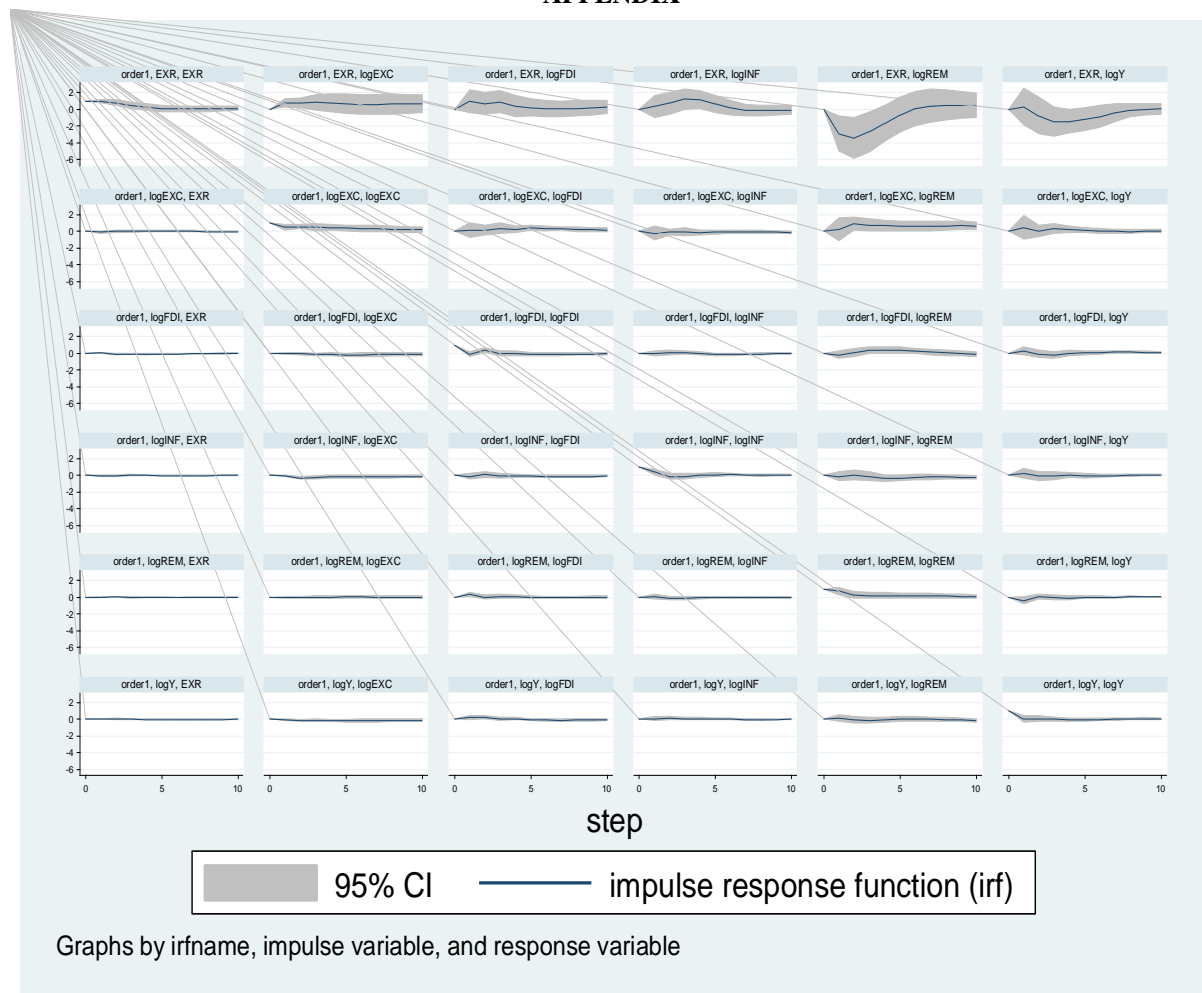
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