Diaspora Contribution and Challenges: Evidence from the Ghanaian Economy

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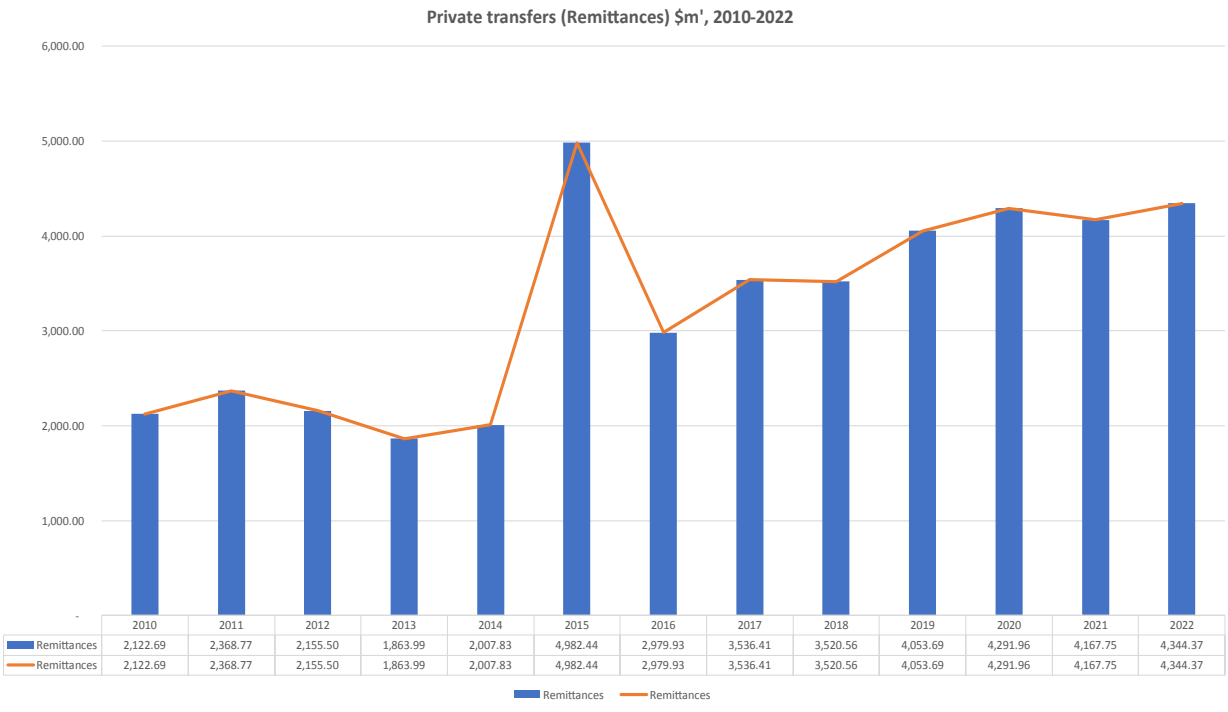
Abstract

International migration has been a crucial component of globalization in recent times. According to estimates, 1.5 to 3 million Ghanaians migrate to other countries. Therefore, this paper examines the role of remittances from the diasporas to the national development. The paper uses United Nations Economic Commission for Africa (ECA) Macroeconomic model developed for Ghana to simulate and forecast the various impacts of diasporas contribution to the macroeconomic variables. The study revealed that remittance contributed about 0.7 percent to Ghana's GDP growth in 2023 and expected to contribute 0.87, 1.1 and 1.32 percent in 2024, 2025 and 2026 respectively. Employment 0.02 percent (2023) and investment 1.81percent(2023)To enhance more inflow from the diasporas, there is the need to develop more diaspora programmes, remittance linked programmes to empower the recipients, simplify and improve payment systems.

Introduction

International migration has been a crucial component of globalization in recent times. The number of people migrating abroad has dramatically increased since the early 1990s.Among the top ten nations in the world with the largest diasporas is Ghana. An estimated 1.5 to 3 million Ghanaians migrate to other countries, according to estimates. Of this total, approximately one million Ghanaian migrants live in Nigeria, as well as in Germany, Italy, the Netherlands, the United Kingdom, Canada, and the United States, Nigeria's neighbors.
In Ghana, it is estimated that 600,000 families rely on remittances, and this generate multiplier effects on consumption such as promoting education, health, and general wellbeing, productive purposes among others. In terms of nexus to development, various empirical estimation has proven a positive link between remittance and growth. Remittance has shown to be one of the key foundations for more sustainable poverty reduction. At community level, remittance is used to finance community development projects and serves as an important source of funds in foreign currency to the country which helps to reduce the current account deficit as well as the external debt of the country.

According to various Bank of Ghana report, Ghana's remittances inflow was US$1.5 billion (2005), US$2.1 billion (2010), US$4.9 billion in (2015) (13.2% GDP) but declined to US$2.98 billion in 2016 and raising to 3.54 billion in 2017 (7.7%GDP) and US$4.29 billion in 2020 (6.3%GDP). In 2022, it was estimated that Ghana received US$4.6 billion equivalent to 6 per cent of its GDP (World Bank, 2022). Though the per cent share decrease from 2017 level, the quantum of remittance transfer increased and on average per year Ghana received US$2 billion. Figure 1 shows remittance inflows for Ghana from 2010 to 2022.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Remittances	2,122.69	2,368.77	2,155.50	1,863.99	2,007.83	4,982.44	2,979.93	3,536.41	3,520.56	4,053.69	4,291.96	4,167.75	4,344.37
Remittances	2,122.69	2,368.77	2,155.50	1,863.99	2,007.83	4,982.44	2,979.93	3,536.41	3,520.56	4,053.69	4,291.96	4,167.75	4,344.37

Source: BoG, 2024

Despite the key role play by remittance in the Ghanaian economy, it inflows has some challenges such large portion going through friends, relatives, self-carry, hiding, use of informal channels makes it difficult for the state to moniter, high cost of transferring money through the formal sector among others.

To enhance the inflows of remittance to the economy, various Government have implemented series of strategies such as; creation of diaspora Support Unit within the Ministry of Foreign Affairs and Regional Integration (MFARI), Celebration of Emancipation Day and Pan-African Festival of Arts and Culture (PANAFEST),The home coming summits, passage of Act 699 of 2006, Representation of People's (Amendment) Act (ROPAA) and the Development of Diaspora Engagement Policy (DEP).

Despite the vary empirical literature of the nexus between remittance and national development, to the best of my knowledge, none of the studies forecasted or simulated the impact remittance has on growth, employment, and investment of the economy. Knowledge about the exact contribution of remittance to employment, investment and growth would be very relevance for policy formulation.

Methodology

The model adopted for this study follows the structural macro-econometric model developed to undertake a sustainable development plan under the auspices of the United Nation Economic Commission for Africa (UNECA). The UNECA model, just like the IMF GEM model is highly flexible in structure and easily adaptable. The UNECA model is a type of multiple time series model that estimates the speed at which a dependent variable returns to its equilibrium after a shock to one or more independent variables. This type of model is useful, as it estimates both the short- and long-run effects of variables (UNECA 2020). It is characterized by a long run neoclassical supply-side and a short run Keynesian demand side. The long run behaves like the classical one sector economy under Cobb-Douglas technology with the economy having a natural growth rate, which is determined by capital stock, labour supply adjusted for human capital, and total factor productivity. The demand side agents are the household who consume, save, as well as supply labour and capital services to the firms; firms produce output and hire labour; government implements fiscal policy and a central bank that implements monetary policy The supply-side ensures that prices adjust fully and the equilibrium is determined by supply factors. The model links Ghana to the rest of the world through trade[1], interest rates and exchange rates, commodity prices[2] and the world price of manufactured goods.

Firms are assumed to set prices given output and capital stock, but the labour market is characterized by imperfect competition. The behavioral equations in the model are specified in an Error Correction Model (ECM) framework. All the variables involved are I (1). This method ensures a fitted short-run model to the data and equilibrium in the long run. The policy variables are modelled with flexible options for discretionary actions whenever necessary. The approach allows policy analysis and forecasting to be compressed in the same framework.

Key assumptions of the model

In developing the model, some key assumptions were made to capture the characteristics of the model to explain how the model will react to economic innovation. These key assumptions include:

a. the model assumes that the long-run growth rate is determined by the supply side factors-productivity, labour and capital – and attempts to raise growth by boosting demand, only leads to higher prices. The economy behaves like the classic one sector economy under Cobb-Douglas technology where the level of potential output at any point in time is defined by the capital stock, labour supply adjusted for human capital, and total factor productivity;
b. changes in wages are fully passed through to prices and real wage is determined by productivity growth;
c. investment equations are underpinned by the Tobin's Q ratio, such that the investment rate is determined by the return relative to the opportunity cost, adjusted for taxes and allowances.
d. consumer spending is assumed to be consistent with Life Cycle/Permanent Income theories where spending patterns change over the course of an individual's lifetime;
e. in the long run, inflation is seen as a monetary phenomenon, the vertical Phillips curve is assumed and implemented. This implies that expansionary demand policies place upward pressure on

[1] Exports were driven by the weighted matrix of trading partners' import demand.

[2] Example include oil, gas and coal prices depend on supply/demand balance; metal prices depend on growth in industry output.

inflation. This means policymakers cannot stimulate the economy without consequence in terms of higher inflation. Due to the negative consequences of inflation, the monetary policy variable is modelled as endogenous. The monetary policy is underpinned by Taylor's rule, captured using an inflation target, such that interest rates are assumed to rise when inflation is above the target rate, and/or output is above potential;

f. exports of countries are assumed to be small (in the global market) and determined by aggregate demand so countries can't determine their term of trade. Trade volumes are combined with price indices to partially determine the current account balance;
g. expectations are modelled as an adaptive process which makes the model susceptible to the Lucas Critique. To address the issue, exogenous variables are assumed to be known as *a prior* variable.

Key equations characterising the model

The model is structured into four main sectors with several underpinning sub-sectors. These together generate an equilibrium position (aggregate demand and supply) of the model and they are linked through equations (behavioural and identities) to form a system. We, therefore, present the various equation blocks which constitute the model.

Demand-side

The aggregate demand is modelled as an identity relationship, summing the components of expenditure (private consumption ($CONS_t$), investment (IF_t), government consumption (GC_t), stock building (SCR_t), exports (X_t) less imports (M_t). Export deviations are modelled as part of the global linkage system of the model. The aggregate demand equation is given as:

$$AD_t = GDP_t = CONS_t + IF_t + GC_t + SCR_t + X_t - M_t$$

with GDP_t being the real GDP of the economy. We postulate that, in the short-run, output is determined by the country-wide demand which can deviate from its potential level of supply. These deviations are measured by the output gap which is defined as the ratio of actual to potential output.

Private consumption expenditure (CONS)

The dynamic specification of household consumption expenditure is modelled as a continuum of households who consume a bundle of goods and also supply labour services to all the sectors of the economy. The private consumption expenditure is estimated with weight and could be endogenized for experimental purposes. Households are made up of a share that can access the financial markets, trade in government bonds, accumulate physical capital and rent capital services to sectoral firms. They partially smoothen their consumption over their life cycle. The household consumption expenditure is determined by population growth and maintaining a constant rate of per capita consumption. Households are allowed to respond to inflation uncertainties in the short-run with a stabilising mechanism that tries to lower the inflationary gaps. The remaining households do not have access to the financial markets and consume all their disposable income. These households also supply the bundle of labour services that firms demand in the economy at a wage rate. This simple Keynesian relationship between disposable income and consumption is expressed as:

$$\Delta logCONS_t = \varphi_0 - \gamma[logCONS_{t-1} - logPEDY_{t-1}] + \varphi_1 \Delta logPEDY_t + (1-\varphi_1)\Delta logPOP_t + \varphi_1 INFGAP_t$$

where $CONS_t$ denotes country-specific consumption expenditure, $PEDY_t$ is real personal disposable income, POP_t is population and $INFGAP_t$ is inflationary gap which is measured as the difference between actual and expected inflation level a period ahead. Real disposable income is adjusted to take into account the terms-of-trade impact on income.

Firm and investment behaviour (IF)

Investment in the model follows a simple accelerator model which links investments to terms-of-trade adjusted to GDP. The trade adjustment term helps to cushion the model against a drop in commodity prices on investment in the commodity market. The investment equation also incorporates a lagged dependent variable that allows for persistence to capture the highly cyclical nature of investment.

$$\Delta log(IF_t) = \varphi_0 - \beta_1[log(IF_{t-1}) - \log(GDI_{t-1})] + +\varphi_1 \Delta \log(GDI_t) + \varphi_2 \Delta log(I\Delta F_{t-1})$$

with IF_t representing the volume of gross fixed capital formation and GDI_t being the gross domestic income or terms-of-trade adjusted GDP. Gross capital formation (investment) depends on gross domestic income (GDI_t), household consumption expenditure, government consumption, exports of goods and services given the deflator.

Government consumption expenditure (GC)

Government consumption is determined by capacity or potential output and gross domestic income. In some instances, it is set exogenously (as a policy variable) as part of the process of constructing a forecast baseline which corresponds to current government consumption plans. In case there are no government spending plans, a simple model equation is applied to maintain the share of government spending in aggregate demand. With this in mind, we modelled the government spending as a weighted average of potential output growth and term-of-trade adjusted GDP growth.

$$\Delta log(GC_t) = \upsilon \Delta log(YHAT_t) + (1-\upsilon) * \Delta log(GDI_t)$$

where GC_t is the volume of government consumption expenditure which feeds directly into both GDP identity and government budget balance with a weight (υ).

Real Inventory Change (SCR)

The inventory change or stock building in this model is a function of the population and the gross domestic product or as the residual on the national income accounting. As such, it also takes into account any discrepancies that arise from the various national income accounting approaches. The inventory equation is specified as:

$$SCR_t = SCR_{t-1} - \vartheta \left[SCR_{t-1} - \left(log\left(\frac{POP_t}{POP_{t-1}}\right) + \chi \right) GDP_{t-1} \right]$$

SCR_t represents the volume of inventory accumulation, parameters ϑ and χ are estimated for each to ensure the stability of the model.

International Trade (X-M)

International trade variables serve as the bilateral trade sensitivities and also provide the global linkages to the model. Trade variables are modelled on the assumptions underlying bilateral trade matrix that captures bilateral trade flows between Ghana and other countries

The import demand function is specified following the imperfect substitute framework. Under this assumption, real import demand is determined by expenditure from all the economic agents[3] and imports which are not perfect substitutes for domestic goods. We also take into consideration the price of import relative to domestically produced goods and services. The import function is defined specifically as:

$$\Delta logM_t = \phi_0 - \beta \left[logM_{t-1} - \alpha_1 logTFE_{t-1} - \alpha_2 log\left(\frac{PMGNOIL_{t-1}}{PGDP_{t-1}}\right) + \phi_1 \Delta logX_t + \phi_2 \Delta logCONS_t + \phi_3 \Delta logIF_t + \phi_4 \Delta logGC_t \right]$$

where M_t is the volume of imports of goods and services, TFE_t is the total final expenditure defined as GDP plus imports, $PMGNOIL_t$ is the non-oil import price deflator in US$ and $PGDP_t$ is the GDP deflator. The long-run income elasticity parameter β is restricted to fall between 1 and 1.2 to allow for further globalisation while ensuring the long-run stability of the model (Hong, 1999). Oil price is excluded from the price of imports, as it tends to be highly volatile, while the price elasticity of oil demand is usually very low. This allows for more reliable estimates of the price effects on real import demand.

Exports rest on two simplifying assumptions: a weighted average of import demand with its trading partners, and any shift in competitiveness which may affect the country's export market share. If demand for imports rises and relative export prices remain unchanged, we would expect exports to rise proportionally to their historical share. In this very simple scenario, export shares would remain constant in both value and volume terms. However, as soon as export prices are allowed to diverge, an explicit assumption must be made on the sensitivity of trade volumes and values to relative prices. The functional form follows as:

$$\Delta logX_t = \Delta logWDR_t + (1 - OXS_t) * \left(\frac{\phi_0 \Delta logPMGNOIL_t}{WT_t} + \frac{\beta \Delta logPXGNOIL_{t-1}}{WT_{t-1}} - \alpha \Delta logPXGNOIL_{t-2} \right) + logX_{adj}$$

where X_t is the volume of exports of goods and services, WDR_t is global demand for goods and services, OXS_t is the oil share of export, $PXGNOIL_t$ is non-oil export price deflator, WT_t denote global prices and X_{adj} denotes export adjusted to world prices.

Supply-side policies

Supply-side policies are market-oriented and interventions that are designed to increase long-run aggregate supply or full employment level of output. It normally follows Neo-Keynesian and Neo-classical economic

[3] Households, firms, government and the external sector.

perspectives. As it is widely known, the supply side of every economic model determines the long-run growth path of the economy which is critical to the model's performance. Moreover, the interaction between aggregate demand and potential output determines the state of the cycle and the direction of the gap between aggregate demand and potential output.

In our model, the supply side is represented by the productive capacity of an economy which we define by a production function that maps the factor inputs to the final output. By way of conventional wisdom, the model adopted two factors of production of the form:

$$YHAT_t = f(K_t, L_t, A_t)$$

where $YHAT_t$ denotes potential output, K_t is the desired capital stock, L_t is potential labour input and A_t indicate the state of technology which we represent as the total factor productivity (TFP_t). To construct a baseline forecast, potential labour inputs evolve with labour force projections (LS_t) measured as the participation ratio and total population above 15 years. Using total differentials and assuming perfect competition in the factor markets; and a homothetic production function, the growth of potential output can be expressed as a weighted sum of the factor share and the growth of total factor productivity. Under the assumption of constant returns to scale, we decompose the growth of potential output as:

$$\Delta \log(YHAT_t) = \Delta \log(LS_t) + \Delta \log (PRODT_t)$$
$$PRODT_t = \theta_{K_t} \Delta \log(k_t) + \Delta A_t$$

where $PRODT_t$ is trend labour productivity and k_t is the capital per unit of labour input (K_t/LS_t). In most studies, the trend rate of labour productivity can be endogenized and linked to factors that determine capital deepening and total factor productivity growth like the rate of innovations. The trend labour productivity growth is modelled as a simple ARDL model which allows us to avoid the need for an explicit capital stock for which there is very limited data for most developing countries. This equation breakdown potential output growth into contributions from potential labour inputs and trend labour productivity which could further decompose into total factor productivity growth and the rate of capital deepening. The equation above forms the basis of the supply-side trajectory for each country modelled.

To account for potential market imperfections between external demand and domestic supply especially in developing countries and those practising fixed exchange rate regimes, export growth is incorporated into the model to serve as an explicit link to potential output. This leads to a modified potential output equation expressed as:

$$\Delta \log(YHAT_t) = \alpha[\Delta \log(LS_t) + \Delta \log (PRODT_t)] + (1 - \alpha)\Delta \log (X_t)$$

where X_t is the volume of export of goods and services, and α is an estimated weight and it is normally 0.9 or above. Labour force projections are modelled to constituteprojections for the population aged 15+ and labour force participation. Labour force participation equation in the model incorporates an automatic stabilising relationship which guarantees that trend labour productivity growth does not drift too far from actual average labour productivity growth expressed as:

$$PART_t = PART_{t-1} + \alpha_1 \left[\Delta \log\left(PRODT_{3yr-avg}\right)_{t-1} - \Delta \log\ PRODT_{t-1}\right] * 100 \qquad ()$$

with $PRODT_{3yr-avg}$ being the labour force productivity 3-year on average. This automatic adjustment mechanism can also be found in the trend labour productivity equation given as:

$$\Delta \log PRODT_t = \beta_1 \Delta \log PRODT_{t-1} + \beta_2 TREND_t + \alpha_1 \left[\Delta \log\left(PRODT_{3yr-avg}\right)_{t-1} - \Delta \log\ PRODT_{t-1}\right]$$

where $TREND_t$ is an exogenous parameter for the long-run trend rate of productivity growth which is normally set to 0.04 per annum for least developed countries, 0.02 per annum for high-income countries and 0.03 per annum for all other countries.

Trade price and current account

The current account balance is modelled as an identity relationship that sums net trade in the US dollars with a residual category that captures primary and secondary income flows. Tradeprices are decomposed into the global price of oil (set as exogenous) and the price of all other traded goods and services. Total exports (PXG_t) and import (PMG_t) of goods and services deflators are modelled as a weighted average of the global oil price ($WLDPOILU_t$) and non-oil import/export deflators ($PMGNOIL_t$ or $PXGNOIL_t$) which captures the price of all non-oil exports/imports in US$. Deflators for total export and import of goods and services are respectively given as:

$$PMG_t = (\upsilon_1 PMGNOIL_t + (1 - \upsilon_1) WLDPOILU_t) * RXD_t$$
$$PXG_t = (\nu_1 PXGNOIL_t + (1 - \nu_1) WLDPOILU_t) * RXD_t$$

where RXD_t is the exchange rate, υ_1 and ν_1 are weights calibrated from historical trade patterns and are constants for the forecast baseline but can also be changed to allowing the model to capture a decreasing or increasing weight of oil in a country's trade composition. Global non-oil export prices error corrects on a weighted average of domestic prices and global prices WT_t. Both short-term and long-term weights are estimated to allow the model to capture the pricing power of the country. The global non-oil export deflator is given as:

$$\Delta logPXGNOIL_t = \Delta logRXD_t - \kappa_1\left((logPXGNOIL_{t-1} * RXD_{t-1}) - \kappa_2 logPGDP_{t-1} + (1-\kappa_2) * log\left(\frac{WT_{t-1}}{RXD_{t-1}}\right)\right) + \kappa_3 \Delta logPGDP_t + (1-\kappa_3)\Delta log\left(\frac{WT_t}{RXD_t}\right)$$

$$\Delta logPMGNOIL_t = \Delta \log(CMUD_t) + \Delta logRXD_t$$

where $CMUD_t$ is the country's non-oil import price in US dollars.

Government policy instrument

The policy instrument components of the model allow us to address a range of policy questions including both monetary and fiscal policies instrument. The monetary policy component is modelled either through interest rate dynamics with a freely floating exchange rate modelled through interest rate differential relative to the US. Ghana being an oil-exporting country also takes into account an estimated relationship between the exchange rate and oil price movement, while short-term interest rate policy is also included in the model. The policy rate follows a simple Taylor rule specification determined by both inflationary and the output gaps. In specifying the policy function, we include a lagged dependent variable to allow for persistence in the level of the interest rate, which will converge to the country steady-state rate overtime.

On the other hand, fiscal policy rule is introduced to ensure that the deficit and debt stock return to sustainable levels after any shock. This generally takes the form of a feedback loop between the deficit or debt stock on the tax rate, so that a deviation from the targeted level of the debt or deficit initiates an automatic adjustment in the tax rate which widens with the size of the government debt to GDP ratio. The government budget balance (**GLN**) is expressed as an identity relationship that sums total government revenue (**GREV**), government consumption spending and a residual category that captures all other spendings (**GEXPOTH**). The growth rate of total government revenue is modelled as a weighted average between GDP and export (in nominal prices). The weights capture the export sensitivity of government revenue in Ghana.

Sources of Data

On data, the study updated the data in the model developed for Ghana by the UNECA. The data is sourced from both national and international bodies such as Bank of Ghana, Ghana Statistical Service, World Bank among others.

Assumption for the simulation

To estimate the model and examine the impact of remittance on the economic performance of Ghana, according to the world bank report, Ghana received US$4.6 billion in 2022 and it was also projected that on average, Ghana received an annual remittance of US$2 billion. Using an average of US$2 billion per year, the study projected the contributions of remittance to Ghana's growth, employment, and investment over the period 2023 to 2026.

Results

	FORECAST			
VARIABLES	2023	2024	2025	2026
Real GDP Growth(%)	0.7	0.87	1.1	1.13
Investment (%)	1.81	1.83	1.87	1.89
Employment growth	0.02	0.03	0.49	0.7