Remittances, financial development and poverty reduction in Sub-Saharan Africa: Implications for post-COVID-19 macroeconomic policies

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Abstract: To design and implement effective post-COVID-19 macroeconomics policies to tackle poverty in sub-Saharan African (SSA), policymakers need to understand the factors shaping poverty in the region. This paper investigates the effect of international remittances and financial development on poverty alleviation in 44 SSA countries from 2010 to 2019. The instrumental variable generalised method of moment technique results indicated that while remittances increase poverty, financial development contributes significantly to poverty reduction. The results consistently revealed that remittances increase both male and female poverty rates, while financial development significantly reduces male and female poverty rates. Other factors such as economic growth, foreign direct investment, and trade openness contributed significantly to reducing poverty. In contrast, government expenditure and foreign aid were found to increase poverty rate in SSA. These results are robust to the Lewbel two-stage least squares estimator. The practical implications of these findings for post-COVID-19 macroeconomic policies in SSA are discussed.

1. Introduction

The agenda 2030 makes it a priority for countries to reduce extreme poverty and reduce at least half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions[1]. The UN (2020) report on the Sustainable Development Goals (SDGs) indicates that extreme global poverty declined from 15.7% in 2010 to 10% in 2015. It was estimated that extreme global poverty in 2019 was 8.2% and 8.8% in 2020. The 2020 extreme poverty rate was the first rise in global poverty since 1998 and close to the 2017 level. Thus, with the COVID-19 pandemic, approximately 71 million additional people will be living in extreme poverty. Because of the COVID-19 pandemic, it is projected that extreme poverty in Southern Asia and sub-Saharan Africa (SSA) would be increasing astronomically, with an additional 32 million and 26 million people, respectively, living below the international poverty line (UN, 2020).

Also, the pandemic has exacerbated working poverty across the globe due to workplace closure which negatively affected 81% of employers and 66% of own-account workers in 2020 (UN, 2020). The gender poverty gap has also been widening, and young workers are exposed to poverty more systematically than adults due to inadequate earnings and job deficits. In 2019, 12.8% of workers between the ages of 15 and 24 lived in poverty, compared with 6.3% of workers over 24 (UN, 2020). The working-age poverty gap is expected to worsen by the pandemic. These indicate that the target of ending poverty in 2030 is likely to be missed. Therefore, eradicating poverty requires an understanding of the factors that influence it. Traditionally, policymakers have attempted to alleviate poverty in developing countries through economic growth. However, it is argued that eradicating poverty in developing countries, especially in SSA, requires not just economic growth (Anderson, d'Orey, Duvendack, & Esposito, 2018). Thus, poverty reduction requires other economic factors that cause a structural change in the economy and the significant factors that can cause structural change are remittances and financial sector development. Therefore, it is vital to explore the role of remittances and financial development on poverty eradication in developing countries, especially SSA countries.

Theoretically, the impact of remittances on poverty reduction is ambiguous. For instance, it is argued that remittances can contribute to poverty reduction by improving human capital, economic growth, credit constraint, household disposable income, savings, investment and household's expenditure on health and education in remittance-receiving countries (Azizi, 2018, 2021; Konte, 2018; Masron & Subramaniam, 2018; Terrelonge, 2014). Contrarily, remittances could worsen poverty if it is skewed, favouring more affluent households' income (Azizi, 2021). Thus, when remittances contribute to income inequality in remittance-receiving countries, it can spur poverty. Anyanwu (2011) unveiled that international remittance increases income inequality such that a 10% increase in remittance flows is associated with a 0.013% increase in income inequality in Africa. It is also claimed that remittances are not always used for investment purposes; however, most remittances are used for consumption purposes (Acheampong, Erdiaw-Kwasie, & Abunyewah, 2021; Ssozi & Asongu, 2016). This suggests that when remittances are used to finance consumption rather than investment, it can worsen human development and poverty in remittance-receiving countries. In addition, Azam and Gubert (2006) argue that remittances flow can spur poverty for two major reasons. First, the authors argue that migration is a collective decision made by extended family, which involves the strategic sending of offspring away to diversify its risk and build a social network. Because of this, remittances to SSA are to support family consumption in case of adverse shocks rather than investment. Second, the authors contend that remittances involve some moral hazard, as those remaining behind tend to exert less effort to take care of themselves, knowing that

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[1] un.org/sustainabledevelopment/poverty/

migrants will compensate for any consumption shortfalls. Such moral hazard makes those left behind lazy and earns less income.

From the trickle-down theory, it is argued that financial development could contribute to poverty reduction by facilitating economic growth. Thus, as a well-developed financial system contributes to economic growth, the benefits of the economic growth generated— such as job creation, increasing households' income, reducing income inequality, and provision of tax revenues for funding pro-poor projects — contribute significantly to poverty reduction (Abosedra, Shahbaz, & Nawaz, 2016; Zhuang et al., 2009). Also, financial development can improve poverty since it enables poorer households to have access to credit, which can increase the assets owned by the poor (Abosedra et al., 2016; Jalilian & Kirkpatrick, 2002). On the other hand, financial development can increase poverty, especially in developing countries, when borrowing costs are high, and income inequality increases. For instance, Jauch and Watzka (2016) and Tiwari, Shahbaz, and Islam (2013) indicated that financial development contributes significantly to income inequality.

It is challenging for policymakers to formulate sound policies towards poverty eradication in the face of the conflicting theoretical argument on the effect of remittances and financial development on poverty reduction. Therefore, to inform policies geared towards poverty alleviation, it is essential to empirically evaluate the poverty reduction effect of remittances and financial development in SSA. Therefore, this study investigates the impact of remittances and financial development on poverty reduction using a panel of 44 SSA countries from 2010 to 2019. We focused on SSA since the poverty rate in the regions has been increasing. For instance, about 40% of the SSA population are living below the US% 1.90 a day poverty line in 2018, accounting for two-thirds of the global extreme poor population[2]. Also, the available data suggests that international remittances flow to SSA has been below any other region (see Ratha et al., 2020). In addition, remittances to SSA declined by 0.5% between 2018 and 2019 to remain close to $48 billion, and with the COVID-19 pandemic causing many SSA migrants to lose their jobs, remittances were estimated to decline by 23.1% in 2020 to reach $37 billion (Ratha et al., 2020). Also, SSA has a weak financial system compared to other regions, although there have been some improvements recently (Mlachila, Jidoud, Newiak, Radzewicz-Bak, & Takebe, 2016). With these justifications, this study focusing on SSA will add significantly to knowledge and inform post-COVID-19 macroeconomic policies that seek to address poverty in the region.

This study makes three (3) principal contributions to the literature in the following direction. First, this study uses a novel panel data approach to provide new empirical evidence on the impact of remittances and financial development on poverty reduction in SSA. Second, this study examines the effects of remittances and financial development on different working-age population cohorts' poverty in SSA. Third, this paper also extends the literature by exploring the gendered poverty effect of remittances and financial development in SSA. Our empirical results indicate that while remittances increase poverty, financial development contributes significantly to poverty reduction. The results consistently reveal that remittances increase both male and female poverty rates, while financial development significantly reduces male and female poverty rates. Other factors such as economic growth, foreign direct investment, and trade openness contributed significantly to reducing poverty. In contrast, government expenditure and foreign aid increased poverty rate in SSA. These results are robust to an alternative econometric estimator. These results have important implications for informing post-COVID-19 policies for achieving poverty eradication in SSA.

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[2] https://blogs.worldbank.org/opendata/number-poor-people-continues-rise-sub-saharan-africa-despite-slow-decline-poverty-rate

The remainder of the paper is outlined as follows: Section 2 presents a brief literature review. Section 3 presents data and methodology, while Section 4 reports and discusses the empirical results. Section 5 presents policy implications, while concluding remarks are presented in Section 6.

2. Literature review

2.1 Remittances and poverty reduction

Theoretically, remittances affect poverty through the following channels. First, remittances expand household income and consumption, directly reducing poverty (Wagle and Devkota, 2018; Zaman, Wang and Zaman, 2021). Also, remittances influence poverty indirectly by driving investment, financial development, economic growth, exchange rate, trade, and inflation (Wagle and Devkota, 2018; Das, McFarlane and Jung, 2019; Peprah, Kwesi Ofori and Asomani, 2019; Bird and Choi, 2020; Edwin and Thobeka, 2020; Ekanayake and Moslares, 2020; Sahoo, Sucharita and Sethi, 2020; Chin, Saydaliev and Sirag, 2021). Contrarily, remittances could worsen poverty if it is skewed, favouring more affluent households' income (Azizi, 2021). Thus, when remittances contribute to income inequality in remittance-receiving countries, it can spur poverty. Anyanwu (2011) unveiled that international remittance increases income inequality such that a 10% increase in remittance flows is associated with a 0.013% increase in income inequality in Africa. It is also claimed that remittances are not always used for investment purposes; however, most remittances are used for consumption purposes (Acheampong, Erdiaw-Kwasie, et al., 2021; Ssozi & Asongu, 2016).

Given the inconsistency in the theoretical arguments, there are a plethora of studies on remittances-poverty nexus, with most of the studies documenting remittances to reduce poverty. For instance, Adams and Cuecuecha (2013), using survey data for 3941 households spanning 2005 to 2006, indicated that remittances reduce poverty. However, they noted that international remittances have a higher poverty-reducing effect as compared to internal remittances. Another study by Wagle and Devkota (2018) using longitudinal survey data revealed that remittances contribute to poverty reduction. Musakwa and Odhiambo (2019) also used households' survey data to show that remittances reduce poverty in the short and long runs when poverty is proxied by infant mortality. Also, Musakwa and Odhiambo (2020a), using time series data from South Africa, revealed that remittances reduce poverty when poverty is measured by household consumption expenditure.

In another study, Musakwa and Odhiambo (2020b), using time series data from Botswana, found a bi-directional causality between remittances and poverty proxied by household consumption expenditure. However, the authors indicated a uni-directional causality runs from remittances to poverty when proxied with infant mortality. Gupta, Pattillo and Wagh (2009), also using SSA countries, revealed that remittances contribute to poverty eradication. Their estimates showed that a 1% increase in remittances reduced the headcount ratio, poverty gap, and squared poverty by 0.18%, 0.17%, and 0.15%, respectively. In another study, Akobeng (2016) and Anyanwu and Erhijakpor (2010) reached similar conclusions in SSA countries. Vacaflores (2018), using the panel data approach, uncovered that remittances reduce poverty and inequality for Latin American countries. Similarly, Acosta *et al.* (2008) also revealed that remittances reduce poverty for 10 Latin American countries. Also, Imai *et al.* (2014), using a panel data approach, suggested that remittances reduce poverty in Asian countries. The study of Inoue (2018), Adams and Page (2005), Azam, Haseeb and Samsudin (2016) also indicated that remittances reduce poverty.

2.2 Financial development and poverty reduction

Theoretically, financial development influences poverty alleviation in the following three channels. First, financial development helps the poor access finance by reducing information asymmetry and high borrowing costs (Jalilian and Kirkpatrick, 2002; Appiah-Otoo and Song, 2021). Second, financial development aids the poor to use their savings or borrow money to begin small businesses, stimulating larger financial services entrance, creating extra jobs, increasing incomes and lessens poverty (Naceur and Zhang, 2016; Appiah-Otoo and Song, 2021). Finally, through the trickle-down hypothesis, financial development can reduce poverty by stimulating economic growth (Ho and Iyke, 2018; Appiah-Otoo and Song, 2021).

The empirical literature on finance-poverty can be grouped into two distinctive categories. The first group of studies documents a direct relationship between financial development and poverty. For instance, Rewilak (2017) examined the effect of financial development on poverty reduction in developing countries and revealed that financial development contributes to poverty reduction. Similarly, Donou-adonsou and Sylwester (2016) demonstrated that banks reduce poverty when poverty is proxied by the headcount ratio and poverty gap, whilst microfinance institutions have no impact on poverty irrespective of the proxy of poverty in developing countries. Boukhatem (2016), also using the panel data approach, indicated that financial instability increases poverty in developing countries. Akhter and Daly (2009) further found that financial development reduces poverty in developing countries. In another study, Beck, Levine and Demirguc-Kunt (2004) documented that financial development reduces poverty in developing countries. Also, Odhiambo (2009), using the error-correction model, found that financial development and economic growth causes poverty reduction in South Africa. Odhiambo (2010), also using the time series approach, documented that financial development leads to poverty reduction in Kenya. In Tanzania, Odhiambo (2013) found that financial development alleviates poverty using the autoregressive distributed lag estimator. Uddin *et al.* (2014) also applied the error-correction model to reveal that financial development reduces poverty in Bangladesh. For Ghana, Quartey (2005), using the error correction model, found that financial development reduces poverty.

Further, Rehman and Shahbaz (2014) found that financial development reduces poverty in Pakistan. For Egypt, Abosedra, Shahbaz and Nawaz (2016) indicated that financial development reduces poverty. Sehrawat and Giri (2016a), using the panel data approach, documented financial development reduces poverty in South Asian countries. For India, Sehrawat and Giri (2016b) found that financial development proxied by domestic credit to the private sector decreases poverty. In another study, Inoue (2018), using a panel data approach, found that financial development reduces poverty in developing countries. Seven and Coskun (2016) documented that financial development promotes economic growth for emerging economies but does not significantly reduce poverty.

The final group of studies documents an indirect channel via economic growth, inequality, institutional quality, income distribution, and instability. For instance, Ho and Iyke (2018) documented that financial development reduces poverty via economic and thus confirming that the trickle-down hypothesis exists in China. Also, de Haan, Pleninger and Sturm (2021) documented that financial development does not directly affect poverty; however, it indirectly increases poverty by widening income inequality. Jeanneney and Kpodar (2011) also concluded that financial development worsens poverty by facilitating instability. In another study, using a panel data approach, Cepparulo, Cuestas and Intartaglia (2017) found that financial development and institutional quality reduce poverty, whilst the interaction effect of financial development and institutional quality worsens poverty. Similarly, Kaidi, Mensi and Ben Amor (2019) used a panel data approach to document that financial development exacerbates poverty in a panel of 132 countries. The author also revealed that the interaction

effect of institutional quality and poverty was sensitive for economic freedom, whilst the interaction effect of polity and financial development was insignificant.

3. Data and Methodology

3.1. Data description

This paper explores the effect of remittances and financial development on poverty alleviation using a comprehensive panel dataset for 44 SSA countries between 2010 to 2019[3]. This study relies on the International Labour Organization (ILO) working poverty dataset. According to the ILO, the working poverty rate is the percentage of employed persons living in poverty despite being employed using the international poverty line of US$1.90 per day in purchasing power parity. This dataset is essential for this study because it provides disaggregated data for different working-age populations and gender. Also, the ILO poverty dataset covers the majority of SSA countries studied. To contribute significantly to knowledge and policy, the poverty rate indicator used in this paper is categorised into the proportion of the working population below the international poverty line (%) aged 15+, 15-24 and 24+. For the key independent variables, personal remittances received as % of GDP was used to measure international remittances. Also, three different proxies to capture financial development, including domestic credit to the private sector as % of GDP, domestic credit to the private sector by banks % of GDP and monetary sector credit to the private sector as % GDP to present robust results and valid conclusions.

Following existing studies (see, for instance, Anderson et al., 2018; Anetor, Esho, & Verhoef, 2020; Bahmani-Oskooee & Oyolola, 2009; Kwon & Kim, 2014; Magombeyi & Odhiambo, 2018), other variables controlled in the poverty model includes economic growth, foreign direct investment, trade openness, government expenditure, education, and foreign aid. For the control variables, GDP per capita at constant 2010 US dollars was used as a proxy for economic growth while net foreign direct investment inflows as % of GDP was used to measure foreign direct investment. Also, trade openness was measured using total trade volume as % of GDP, and government expenditure was measured using general government final consumption expenditure as % of GDP. Education was also measured with school enrollment, secondary as % gross enrollment while foreign aid was proxied with net official development assistance and official aid received at constant 2018 US dollars. Apart from the poverty data, the remaining data were obtained from the World Development Indicators.

Table 1: Variable descriptive statistics.

Variable	Symbols	Mean	Sd	Min	Max
Poverty rate of working population aged 15+	povb	35.751	23.231	0.050	94.350
Poverty rate of working population aged 15-24	povm	39.497	23.466	0.070	96.160
Poverty rate of working population aged 24+	pov25p	34.681	23.062	0.040	93.720
Economic growth	rgdpc	2361.660	3064.741	208.075	18254.100
Foreign direct investment	fdi	4.843	9.687	-11.625	103.337
Trade openness	tra	70.965	29.512	16.141	150.209
Government expenditure	govgdp	14.784	6.448	3.588	40.554
Secondary School enrolment	sec	48.315	22.147	13.043	109.444
Foreign Aid	odac	918,000,000	925,000,000	360,000	5,300,000,000
Remittances	remit	3.802	5.308	0.000	31.908

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[3] Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Dem. Rep., Congo, Rep., Cote d'Ivoire, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Somalia, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe.

Domestic credit to the private sector	dcp	23.494	24.894	3.724	140.541
Domestic credit to the private sector by banks	dcpb	21.502	18.001	3.698	106.260
Monetary sector credit to the private sector	mscp	21.700	18.029	3.724	106.306

The descriptive statistics presented in Table 1 suggest that poverty 15+ has a mean of 35.75 while the average poverty rate for the working population aged 15-24 and 24+ is 39.497 and 34.68, respectively. The implication is that the poverty rate for the working population aged 15-24 is relatively higher than the working population aged 15+ and 24+. On the other hand, the working population aged 24+ has the lowest poverty rate. Also, between 2010-2019, SSA has an average GDP per capita of 2361.66 at constant 2010 US dollars while the mean of net inflow of foreign direct investment is 4.84 as % of GDP. On average, trade openness in SSA for the period under study is 70.97 % of GDP. Also, government spending in the SSA has been low, with an average of 14.78 % of GDP. Thus, approximately 15% of SSA gross national income was spent by the government for the period under study. The descriptive statistics further indicate that the average ratio for gross secondary school enrollment is 48.315. It is an indication that less than 50% of the SSA population have a secondary school background. Also, foreign aid to SSA has been high, with an average of $918 million between 2010 to 2019. Table 3 further suggests that, on average, international remittances received in SSA between 2010 to 2019 is 3.80 % of GDP. For the financial development indicators, the mean for domestic credit to the private sector is 23.50 % of GDP and for domestic credit to the private sector by banks is 21.50 % of GDP. In addition, the average monetary sector credit to the private sector is 21.70 % GDP. Comparatively, these statistics indicate that access to financial services is relatively higher than remittances received in SSA.

3.2. Estimation strategy

This section uses a panel data approach to examine the effect of remittances and financial development on poverty reduction in SSA. Following Adams and Page (2005) and Ravallion (1997), we augment the poverty-economic growth model with remittances and financial development. Thus, Eq. (1) is the augmented poverty-economic growth model used to empirically explore the impact of remittances and financial development on poverty reduction in SSA.

$$lnpov_{it} = \alpha_0 + \beta_1 lnrgdpc_{it} + \beta_2 lnremit_{it} + \beta_3 lnfd_{it} + \beta_j lnX_{it} + \varepsilon_{it} \qquad (1)$$
$$(i = 1, \ldots, N; t = 1, \ldots, T)$$

Where $lnpov$ is the natural log of poverty measure, α_0 is the constant parameter, $lnrgdpc$ is the natural log of economic growth measure, $lnremit$ is the natural log of remittances measure, $lnfd$ is the natural log of financial development measure, lnX is the natural log of the control variables (foreign direct investment, trade openness, government expenditure, education, and foreign aid) and ε_{it} is the stochastic error term. Also, β_1 captures the elasticity of economic growth, and this is expected to be negative. Also, β_2 captures the elasticity of poverty with respect to remittances, and this is expected to be negative. Also, β_3 captures the elasticity of financial development on poverty, and this is expected to be negative. Also, β_j captures the elasticity of poverty with respect to the control variables.

Azizi (2021) indicated that the major challenge in estimating the effect of remittances and financial development on poverty in developing countries is endogeneity. Therefore, we employ the Baum, Schaer, and Stillman (2002) instrumental variable generalised method of moment (IV-GMM) to estimate Eq. (1). The IV-GMM is vital for this study since it controls endogeneity from measurement errors, reverse causality, and variable omissions bias. Further, the IV-GMM is robust to autocorrelation and produces consistent and efficient results in the presence of unknown heteroscedasticity since it uses the orthogonality condition (Baum et al., 2002). We further applied the Lewbel (2012) two-stage least squares (TSLS) estimator to check

the robustness of IV-GMM results. The Lewbel TSLS technique includes internally constructed heteroskedasticity-based instruments generated from the residuals of the auxiliary equation, which is multiplied by each of the included exogenous variables in mean-centred form. Besides, when appropriate instruments are not available or weak for identifying structural parameters in the regression models with endogenous or mismeasured regressors, it is vital to apply the Lewbel TSLS technique. In applied research, the Lewbel TSLS technique does not rely on satisfying standard exclusion restrictions and has been utilised in many empirical studies (see, for instance, Awaworyi Churchill & Smyth, 2017; Mishra & Smyth, 2015).

4. Results and Discussions
We present and discuss the empirical results in this section. It must be noted that the natural logarithms of variables were used for the estimation; hence their coefficients should be interpreted as elasticity.

4.1 The effect of remittances and financial development on total poverty reduction
We present the IV-GMM results for total poverty across the working-age cohorts in Table 2. In Table 2, Columns (1)- (3) show the results for the effect of domestic credit to the private sector (***lndcp***) on the working population aged 15+, 15-24 and 24+ poverty, respectively. Columns (4)- (6) present the results for the effect of domestic credit to the private sector by banks (***lndcpb***) on the working population aged 15+, 15-24 and 24+ poverty, respectively. Columns (7)- (9) present the results for the effect of monetary sector credit to the private sector (***lnmscp***) on working population aged 15+, 15-24 and 24+ poverty, respectively.

From Table 2, the estimates suggest that remittances have a statistically significant positive effect on poverty across all the working-age cohorts. This result implies that international remittances drive poverty in SSA. Azam and Gubert (2006) argue that remittances flow to SSA can spur poverty for two major reasons. First, the authors argue that migration is a collective decision made by extended family, which involves the strategic sending of offspring away to diversify its risk and build a social network. Because of this, remittances to SSA are to support family consumption in case of adverse shocks rather than investment. Second, the authors contend that remittances involve some moral hazard, as those remaining behind tend to exert less effort to take care of themselves, knowing that migrants will compensate for any consumption shortfalls. Such moral hazard makes those left behind lazy and earns less income. Further, international remittance can increase poverty in SSA by retarding economic growth. Chami, Fullenkamp and Jahjah (2005) demonstrated that remittances are not profit-driven but compensatory transfers and have a negative effect on economic growth. This suggests that remittances may not serve as a source of capital for investment and economic development but instead for consumption purposes (Chami et al., 2005). This result is expected because remittances flow to SSA has been associated with rising income inequality. In the context of SSA, it is established that international remittances increase income inequality such that a 10% increase in remittance flows is associated with a 0.013% increase in income inequality (Anyanwu, 2011). This empirical result coincides with reality as international remittances to SSA mostly increase the income gap between poor and rich people, thereby increasing poverty. Also, it indicated that remittances to SSA do not always improve living standards since they are mostly used for consumption purposes and not an investment (Acheampong, Erdiaw-Kwasie, et al., 2021; Ssozi & Asongu, 2016). This empirical result contributes significantly to existing literature, given that existing studies have mostly reported that remittances reduce poverty (Wagle & Devkota, 2018; Zaman, Wang & Zaman, 2021). Thus, this result contradicts the findings of existing studies such as Musakwa

and Odhiambo (2019), Anyanwu and Erhijakpor (2010) and Gupta, Pattillo and Wagh (2009), which showed that remittances contribute to poverty alleviation in SSA.

The results also show that the financial development indicators significantly reduce poverty across all the working-age cohorts. The estimated coefficients suggest that a 1% increase in domestic credit to the private sector (*lndcp*) reduces the working population aged 15+, 15-24 and 24+ poverty rate by 0.946%, 0.882% and 0.952%, respectively. Similarly, the estimated coefficients suggest that a 1% increase in domestic credit to the private sector by banks (lndcpb) reduces the working population aged 15+, 15-24 and 24+ poverty rate by 1.020%, 0.954% and 1.028%, respectively. Also, the findings suggest that a 1% increase in monetary sector credit to the private sector (lnmscp) reduces the working population aged 15+, 15-24 and 24+ poverty rate by 1.049%, 0.978% and 1.058%, respectively. These results suggest that irrespective of the financial development indicator used, financial development reduces poverty in SSA. One could expect financial development to increase the poverty rate in SSA because of its underdeveloped financial system. However, SSA has recently seen a significant improvement in financial technologies, changing its financial landscape (Sy et al., 2019). The development and spread of financial technologies in the region have improved financial accessibility and inclusion (Amponsah, Agbola, & Mahmood, 2021; Sy et al., 2019). Financial development plays a significant role in poverty reduction in SSA because it enables poorer households to access loans, enabling them to set up smaller businesses that increase their income (Jalilian and Kirkpatrick, 2002; Appiah-Otoo and Song, 2021; Naceur and Zhang, 2016). Additionally, from the trickle-down hypothesis, financial development contributes to poverty reduction by spurring economic growth. The policy implication is that creating enabling environment that improves the stability and efficiency of the financial system is vital for reducing SSA poverty. Our finding adds to previous studies that claim that financial development is fundamental for eradicating poverty in developing countries (Boukhatem, 2016; Rewilak, 2017; Rehman and Shahbaz, 2014; Seven and Coskun, 2016).

Consistent with the trickle-down hypothesis, the estimates show that economic growth reduces poverty across all working-age cohorts. The estimated coefficient on economic growth ranges between 0.317% to 0.420%. This indicates that economic growth in SSA has been pro-poor. Thus, similar to Dollar and Kraay (2002) argument, our results suggest that poverty declines as economic growth improve. This is because robust economic growth generates employment opportunities, improves households' earnings, and further provides the government with the financial resources (tax revenue) to undertake pro-poor policies and investments. The policy implication is that structural policies implemented to boost SSA economic growth would not conflict with the region's poverty reduction strategies. This finding is similar to previous studies that highlighted that economic growth is conducive for alleviating poverty (Dollar & Kraay, 2002; Mastromarco, Peragine, Russo, & Serlenga, 2014; Santos, Dabus, & Delbianco, 2019).

Our results also reveal that foreign direct investment contributes significantly to poverty alleviation across all working-age cohorts. This result suggests that foreign direct investment is instrumental for alleviating poverty in SSA since it provides job opportunities, stimulates technological transfer, human capital, and economic growth. This result indicates that policies that impede foreign direct investment would worsen poverty in SSA. Therefore, creating an enabling environment and improving institutional quality and macroeconomic stability would ensure a successful foreign investment flow and, thus, contribute to poverty reduction in SSA. The role of foreign direct investment in reducing poverty aligns with the results of Dhrifi, Jaziri, and Alnahdi (2020), Fauzel, Seetanah, and Sannassee (2016), Fowowe and Shuaibu (2014) and (Ucal, 2014). However, this finding is odd with the empirical results of Magombeyi and Odhiambo (2018), which suggested that foreign direct investment has a neutral effect on poverty reduction in South Africa. Similarly, the estimate indicates that trade

openness reduces poverty but is only significant for people aged 15+ cohort. Thus, trading activities in SSA is crucial for reducing poverty concentrated among younger people aged 15+, which confirms Magombeyi and Odhiambo (2018) findings that trade openness contributes to poverty alleviation.

Contrary to the claim that foreign aid is critical for poverty alleviation in developing countries (see, for instance, Bahmani-Oskooee & Oyolola, 2009; Collier & Dollar, 2002), our results suggest that foreign aid has a significant positive effect on poverty across all the working-age cohort. Thus, foreign aid to SSA has not been effective in reducing poverty in the region, and this could be attributed to the region's chronic poor institutional quality, volatile macroeconomic environment, and poor growth-enhancing policies. The policy ramification of this evidence is that enhancing the institutional quality and efficient mechanism for allocating foreign aid to critical sectors that are poverty enhancing are needed. This finding contradicts the empirical results of Bahmani-Oskooee and Oyolola (2009), Mahembe and Odhiambo (2021) and Anetor et al. (2020), which showed that foreign aid contributes significantly to poverty reduction in SSA and other developing countries.

Also, our results indicate that education has a neutral effect on poverty across all working-age cohorts. This finding can be attributed to the mismatch between the skills provided by the current education system and the actual skills needed to drive prosperity in the SSA. For instance, the Africa Centre for Economic Transformation report indicated that 50% of graduate remains unemployed in SSA[4]. Therefore, for education to promote poverty reduction in SSA, there should be monumental changes in its existing knowledge-based curriculum to a skilled-based curriculum, which is critical for driving economic growth and reducing poverty. The lesson is that policymakers need to re-orient the SSA current education system towards an education system that primarily equipped students with ready-market technical skills. Our result is odd with the plethora of empirical studies such as Awan, Malik, Sarwar, and Waqas (2011) and Okojie (2002), indicating that education has effectively uprooted poverty in developing countries.

The results also suggest that government expenditure has a statistically significant positive effect on poverty across all the working-age cohorts. The implication is that government spending has not been pro-poor in SSA. Thus, consistent with Anderson et al. (2018) argument, fiscal policy has played a limited redistribute role in developing countries. It is argued that government spending is supposed to alleviate poverty by increasing households' disposable income and reducing income inequality (Mosley, Hudson, & Verschoor, 2004; Stefano, Anand, & Tiongson Erwin, 2005). However, this has not been observed in SSA since government spending has been associated with higher income inequality and poor economic growth (Acheampong, Dzator, & Shahbaz, 2021; Ibrahim & Alagidede, 2018). This result suggests that for government spending to alleviate poverty in SSA, government spending, especially on subsidies and transfers, should be effectively designed to reach the targeted population. This finding aligns with earlier results that indicated that government spending had increased poverty in SSA and other developing countries (see, for instance, Anderson et al., 2018). Contrarily, this result does not support studies claiming that government spending contributes to poverty eradication (Kwon & Kim, 2014; Mosley et al., 2004).

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[4] https://acetforafrica.org/highlights/unemployment-in-africa-no-jobs-for-50-of-graduates/

Table 2: The effect of remittances and financial development on total poverty reduction (IV-GMM Results)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Poverty rate of the working population					
	15+	15-24	24+	15+	15-24	24+	15+	15-24	24+
lnrgdpc	-0.367**	-0.317*	-0.383**	-0.410***	-0.354**	-0.425***	-0.405***	-0.352**	-0.420***
	(0.165)	(0.168)	(0.165)	(0.151)	(0.153)	(0.151)	(0.149)	(0.151)	(0.149)
lnfdi	-0.147**	-0.179***	-0.141**	-0.149**	-0.182***	-0.144**	-0.149**	-0.181***	-0.144**
	(0.065)	(0.069)	(0.064)	(0.062)	(0.066)	(0.062)	(0.061)	(0.066)	(0.061)
lntra	-0.347*	-0.098	-0.389*	-0.238	0.004	-0.279	-0.228	0.013	-0.268
	(0.207)	(0.234)	(0.204)	(0.203)	(0.230)	(0.199)	(0.204)	(0.232)	(0.200)
lngovgdp	1.443***	1.283***	1.462***	1.279***	1.134***	1.298***	1.291***	1.143***	1.311***
	(0.281)	(0.289)	(0.280)	(0.236)	(0.242)	(0.235)	(0.235)	(0.241)	(0.234)
lnsec	-0.050	-0.129	-0.024	-0.179	-0.250	-0.154	-0.158	-0.230	-0.133
	(0.225)	(0.223)	(0.227)	(0.233)	(0.228)	(0.236)	(0.231)	(0.226)	(0.233)
lnodac	0.703***	0.675***	0.701***	0.620***	0.598***	0.617***	0.623***	0.600***	0.620***
	(0.079)	(0.083)	(0.080)	(0.070)	(0.075)	(0.071)	(0.070)	(0.075)	(0.070)
lnremit	0.119***	0.160***	0.104**	0.131***	0.171***	0.116***	0.131***	0.171***	0.116***
	(0.041)	(0.039)	(0.042)	(0.035)	(0.035)	(0.035)	(0.035)	(0.034)	(0.035)
lndcp	-0.946***	-0.882***	-0.952***						
	(0.199)	(0.207)	(0.197)						
lndcpb				-1.020***	-0.954***	-1.028***			
				(0.195)	(0.202)	(0.193)			
lnmscp							-1.049***	-0.978***	-1.058***
							(0.195)	(0.203)	(0.193)
Constant	-8.067***	-8.191***	-7.898***	-5.408***	-5.722***	-5.215***	-5.557***	-5.856***	-5.371***
	(2.445)	(2.569)	(2.457)	(1.980)	(2.120)	(1.990)	(1.965)	(2.111)	(1.974)
Observations	139	139	139	139	139	139	139	139	139
R2	0.835	0.808	0.836	0.840	0.814	0.842	0.843	0.816	0.845
j	0.068	0.048	0.092	0.164	0.118	0.200	0.107	0.076	0.137
jp	0.794	0.827	0.761	0.686	0.732	0.654	0.744	0.783	0.711
F-statistics	1329.029	1329.029	1329.029	1234.840	1234.840	1234.840	1249.883	1249.883	1249.883

Heteroscedasticity robust standard errors in parentheses. J is Hansen J-statistics; jp is the p-value of Hansen J-statistics. F-statistics is the Cragg-Donald/Kleibergen-Paap F-statistics for weak instrument identification. The probability value for the Hansen J-statistics suggests that instruments are not over-identified, while the F-statistics also suggests the instrument are not weak. * p < 0.10, ** p < 0.05, *** p < 0.01

4.2 Do remittances and financial development have a gendered poverty effect?

In this section, we test if the effect of remittances and financial development on poverty vary between male and female poverty in SSA across the working-age cohorts. The results for female poverty across the working-age cohorts are presented in Table 3, while the results for male poverty across the working-age cohorts are shown in Table 4. The results displayed in Tables 3 and 4 suggest that remittances significantly spur both male and female poverty across all the working-age cohorts. However, on average, the estimated elasticity on remittances is higher for female poverty relative to male poverty. This implies that remittances worsen both male and female poverty; however, the incidence is stronger for the female working population. It is also observed that the financial development indicators significantly reduce male and female poverty across all the working-age cohorts. However, on average, the estimated elasticity on financial development is higher for male poverty relative to female poverty. This result indicates that the poverty reduction effect of financial development is stronger for the male working population than the female working population. The disproportional impact of financial development on male and female poverty conforms to the global observation that there is a 9% gap between female and male access to finance. This is not different for SSA, as 37% of females have access to finance while 48% of males have access to finance, and this gap is expected to widen over the years (Morsy, 2020). From a policy perspective, closing the poverty gap between the female and male working populations requires policymakers to strengthen financial literacy and financial inclusion policies in SSA. Also, the estimates show that economic growth and foreign direct investment reduce both male and female poverty across all working-age cohorts for the control covariates. In contrast, foreign aid and government expenditure worsen male and female poverty across all the working-age cohorts. It is observed that trade openness and education have a neutral effect on male and female poverty across all the working-age cohorts.

Table 3: The effect of remittances and financial development on female poverty reduction (IV-GMM Results)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Poverty rate of the working population								
	15+	15-24	24+	15+	15-24	24+	15+	15-24	24+
lnrgdpc	-0.382**	-0.362**	-0.386**	-0.419***	-0.402***	-0.423***	-0.415***	-0.399***	-0.419***
	(0.170)	(0.171)	(0.170)	(0.155)	(0.156)	(0.155)	(0.153)	(0.154)	(0.153)
lnfdi	-0.176**	-0.177**	-0.177**	-0.179***	-0.179***	-0.180***	-0.178***	-0.179***	-0.180***
	(0.069)	(0.070)	(0.069)	(0.067)	(0.067)	(0.067)	(0.066)	(0.067)	(0.066)
lntra	-0.155	-0.074	-0.169	-0.054	0.024	-0.068	-0.045	0.033	-0.058
	(0.229)	(0.236)	(0.227)	(0.224)	(0.232)	(0.222)	(0.225)	(0.234)	(0.223)
lngovgdp	1.337***	1.238***	1.361***	1.190***	1.087***	1.213***	1.201***	1.096***	1.224***
	(0.290)	(0.292)	(0.291)	(0.242)	(0.243)	(0.242)	(0.241)	(0.242)	(0.241)
lnsec	-0.146	-0.161	-0.138	-0.265	-0.281	-0.258	-0.245	-0.261	-0.238
	(0.225)	(0.221)	(0.226)	(0.232)	(0.228)	(0.234)	(0.230)	(0.226)	(0.231)
lnodac	0.706***	0.683***	0.710***	0.630***	0.607***	0.633***	0.632***	0.610***	0.636***
	(0.081)	(0.080)	(0.082)	(0.073)	(0.073)	(0.074)	(0.073)	(0.073)	(0.073)
lnremit	0.122***	0.147***	0.116***	0.133***	0.158***	0.127***	0.133***	0.158***	0.126***
	(0.043)	(0.040)	(0.044)	(0.037)	(0.035)	(0.037)	(0.037)	(0.035)	(0.037)
lndcp	-0.870***	-0.861***	-0.877***						
	(0.209)	(0.212)	(0.209)						
lndcpb				-0.942***	-0.922***	-0.951***			
				(0.204)	(0.208)	(0.204)			
lnmscp							-0.969***	-0.946***	-0.978***
							(0.204)	(0.209)	(0.204)
Constant	-8.334***	-7.998***	-8.411***	-5.899***	-5.570***	-5.958***	-6.035***	-5.696***	-6.096***
	(2.542)	(2.517)	(2.565)	(2.089)	(2.079)	(2.106)	(2.080)	(2.072)	(2.097)
Observations	139	139	139	139	139	139	139	139	139
R2	0.826	0.818	0.827	0.831	0.822	0.832	0.833	0.824	0.834
j	0.104	0.072	0.104	0.199	0.153	0.201	0.143	0.106	0.144
jp	0.748	0.788	0.747	0.656	0.696	0.654	0.705	0.745	0.704
F-statistics	1329.029	1329.029	1329.029	1234.840	1234.840	1234.840	1249.883	1249.883	1249.883

Heteroscedasticity robust standard errors in parentheses. J is Hansen J-statistics; jp is the p-value of Hansen J-statistics. F-statistics is the Cragg-Donald/Kleibergen-Paap F-statistics for weak instrument identification. The probability value for the Hansen J-statistics suggests that instruments are not over-identified, while the F-statistics also suggests the instrument are not weak. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: The effect of remittances and financial development on male poverty reduction (IV-GMM Results)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Poverty rate of the working population								
	15+	15-24	24+	15+	15-24	24+	15+	15-24	24+
lnrgdpc	-0.371**	-0.297*	-0.392**	-0.414***	-0.333**	-0.434***	-0.409***	-0.330**	-0.429***
	(0.163)	(0.168)	(0.163)	(0.149)	(0.154)	(0.150)	(0.147)	(0.152)	(0.147)
lnfdi	-0.137**	-0.185***	-0.125**	-0.139**	-0.188***	-0.128**	-0.139**	-0.188***	-0.128**
	(0.063)	(0.069)	(0.063)	(0.061)	(0.067)	(0.060)	(0.060)	(0.066)	(0.060)
lntra	-0.415**	-0.103	-0.490**	-0.304	-0.000	-0.376*	-0.293	0.009	-0.365*
	(0.201)	(0.235)	(0.199)	(0.197)	(0.232)	(0.194)	(0.198)	(0.233)	(0.195)
lngovgdp	1.477***	1.290***	1.516***	1.309***	1.144***	1.350***	1.322***	1.153***	1.364***
	(0.277)	(0.292)	(0.278)	(0.234)	(0.244)	(0.235)	(0.232)	(0.244)	(0.234)
lnsec	-0.010	-0.100	0.028	-0.142	-0.221	-0.104	-0.120	-0.201	-0.083
	(0.228)	(0.225)	(0.232)	(0.236)	(0.229)	(0.239)	(0.233)	(0.227)	(0.236)
lnodac	0.701***	0.671***	0.698***	0.616***	0.593***	0.612***	0.619***	0.595***	0.615***
	(0.080)	(0.086)	(0.080)	(0.071)	(0.077)	(0.071)	(0.070)	(0.076)	(0.070)
lnremit	0.118***	0.170***	0.100**	0.130***	0.180***	0.113***	0.130***	0.180***	0.112***
	(0.040)	(0.039)	(0.042)	(0.034)	(0.035)	(0.035)	(0.033)	(0.034)	(0.035)
lndcp	-0.968***	-0.889***	-0.984***						
	(0.191)	(0.206)	(0.191)						
lndcpb				-1.043***	-0.967***	-1.067***			
				(0.188)	(0.201)	(0.188)			
lnmscp							-1.074***	-0.992***	-1.099***
							(0.188)	(0.202)	(0.187)
Constant	-7.935***	-8.299***	-7.681***	-5.206***	-5.820***	-4.925**	-5.366***	-5.959***	-5.088***
	(2.450)	(2.620)	(2.456)	(1.990)	(2.164)	(1.987)	(1.971)	(2.154)	(1.967)
Observations	139	139	139	139	139	139	139	139	139
R2	0.835	0.800	0.836	0.841	0.806	0.842	0.844	0.808	0.845
j	0.083	0.031	0.065	0.191	0.089	0.167	0.126	0.053	0.105
jp	0.774	0.861	0.799	0.662	0.765	0.683	0.722	0.818	0.746
F-statistics	1329.029	1329.029	1329.029	1234.840	1234.840	1234.840	1249.883	1249.883	1249.883

Heteroscedasticity robust standard errors in parentheses. J is Hansen J-statistics; jp is the p-value of Hansen J-statistics. F-statistics is the Cragg-Donald/Kleibergen-Paap F-statistics for weak instrument identification. The probability value for the Hansen J-statistics suggests that instruments are not over-identified, while the F-statistics also suggests the instrument are not weak. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.3 Robustness Check

It is difficult to implement policy in the face of inconsistent results. Therefore, we examine the consistency and robustness of the IV-GMM results using the Lewbel TSLS estimator. The Lewbel TSLS results for total, female, and male poverty across the working-age cohorts are presented in Tables 5-7. The results from the Lewbel TSLS are not different from the IV-GMM results. For instance, the results indicate that while remittances significantly spur poverty across all the working-age cohorts, financial development indicators significantly reduce poverty across all the working-age cohorts. The estimates show that economic growth and foreign direct investment reduce poverty across all working-age cohorts for the control covariates. In contrast, foreign aid and government expenditure increase poverty across all the working-age cohorts. It is observed that trade openness and education have a neutral effect on poverty across all the working-age cohorts.

Also, the results on the gendered effect of remittances and financial development are robust to the Lewbel TSLS. For instance, the estimates suggest that remittances also significantly spur both male and female poverty across all the working-age cohorts, while financial development indicators significantly reduce male and female poverty across all the working-age cohorts. For the control covariates, the estimates show that economic growth and foreign direct investment reduces both male and female poverty across all working-age cohorts. In contrast, foreign aid and government expenditure worsen male and female poverty across all the working-age cohorts. It is observed that trade openness and education have a neutral effect on male and female poverty across all the working-age cohorts. The consistency of the results indicates that our findings are reliable for informing policies geared towards poverty eradication in SSA.

Table 5: The effect of remittances and financial development on total poverty reduction (Lewbel TSLS Results)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Poverty rate of the working population								
	15+	15-24	24+	15+	15-24	24+	15+	15-24	24+
lnrgdpc	-0.001	0.058	-0.016	-0.082	-0.016	-0.098	-0.084	-0.018	-0.100
	(0.171)	(0.174)	(0.171)	(0.162)	(0.166)	(0.161)	(0.160)	(0.164)	(0.160)
lnfdi	-0.097*	-0.127**	-0.093*	-0.105*	-0.135**	-0.100*	-0.104*	-0.134**	-0.100*
	(0.056)	(0.059)	(0.055)	(0.054)	(0.058)	(0.053)	(0.054)	(0.058)	(0.053)
lntra	-0.610**	-0.364	-0.652***	-0.404*	-0.162	-0.447*	-0.394	-0.152	-0.436*
	(0.247)	(0.276)	(0.242)	(0.244)	(0.275)	(0.239)	(0.248)	(0.279)	(0.242)
lngovgdp	2.313***	2.185***	2.329***	1.983***	1.872***	1.998***	1.990***	1.878***	2.005***
	(0.329)	(0.342)	(0.326)	(0.285)	(0.297)	(0.282)	(0.286)	(0.298)	(0.283)
lnsec	0.278	0.230	0.293	0.053	0.010	0.068	0.084	0.041	0.099
	(0.208)	(0.202)	(0.209)	(0.215)	(0.210)	(0.216)	(0.212)	(0.207)	(0.213)
lnodac	0.701***	0.669***	0.703***	0.556***	0.526***	0.558***	0.559***	0.529***	0.561***
	(0.075)	(0.079)	(0.076)	(0.062)	(0.066)	(0.062)	(0.062)	(0.066)	(0.062)
lnremit	0.045	0.075**	0.034	0.071**	0.100***	0.061*	0.073**	0.101***	0.062*
	(0.038)	(0.037)	(0.039)	(0.033)	(0.034)	(0.033)	(0.033)	(0.034)	(0.033)
lndcp	-1.767***	-1.742***	-1.766***						
	(0.235)	(0.242)	(0.233)						
lndcpb				-1.864***	-1.852***	-1.860***			
				(0.246)	(0.255)	(0.244)			
lnmscp							-1.889***	-1.876***	-1.885***
							(0.247)	(0.256)	(0.245)
Constant	-10.636***	-10.812***	-10.529***	-5.998***	-6.283***	-5.888***	-6.141***	-6.423***	-6.031***
	(2.713)	(2.847)	(2.716)	(2.126)	(2.280)	(2.124)	(2.124)	(2.282)	(2.121)
Observations	178	178	178	178	178	178	178	178	178
R2	0.777	0.737	0.782	0.782	0.740	0.787	0.785	0.742	0.790

Heteroscedasticity robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: The effect of remittances and financial development on female poverty reduction (Lewbel TSLS Results)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Poverty rate of the working population				
	15+	15-24	24+	15+	15-24	24+	15+	15-24	24+
lnrgdpc	-0.003	0.020	-0.005	-0.078	-0.057	-0.081	-0.080	-0.059	-0.082
	(0.177)	(0.177)	(0.178)	(0.167)	(0.167)	(0.168)	(0.166)	(0.166)	(0.167)
lnfdi	-0.121**	-0.123**	-0.122**	-0.129**	-0.130**	-0.130**	-0.128**	-0.130**	-0.130**
	(0.060)	(0.060)	(0.060)	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)
lntra	-0.436	-0.351	-0.452*	-0.235	-0.151	-0.250	-0.225	-0.141	-0.240
	(0.271)	(0.279)	(0.270)	(0.269)	(0.278)	(0.268)	(0.273)	(0.282)	(0.271)
lngovgdp	2.252***	2.154***	2.280***	1.937***	1.837***	1.963***	1.945***	1.844***	1.970***
	(0.347)	(0.349)	(0.347)	(0.300)	(0.304)	(0.301)	(0.301)	(0.305)	(0.302)
lnsec	0.209	0.196	0.216	-0.010	-0.023	-0.005	0.021	0.008	0.026
	(0.206)	(0.200)	(0.208)	(0.214)	(0.209)	(0.217)	(0.211)	(0.207)	(0.213)
lnodac	0.702***	0.676***	0.707***	0.559***	0.534***	0.564***	0.563***	0.537***	0.567***
	(0.078)	(0.077)	(0.078)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)
lnremit	0.044	0.063*	0.039	0.069**	0.088**	0.064*	0.070**	0.089**	0.065*
	(0.039)	(0.037)	(0.040)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
lndcp	-1.734***	-1.728***	-1.744***						
	(0.245)	(0.246)	(0.246)						
lndcpb				-1.840***	-1.829***	-1.849***			
				(0.258)	(0.260)	(0.259)			
lnmscp							-1.866***	-1.854***	-1.875***
							(0.259)	(0.260)	(0.260)
Constant	-10.966***	-10.608***	-11.073***	-6.445***	-6.094***	-6.526***	-6.591***	-6.236***	-6.672***
	(2.853)	(2.836)	(2.866)	(2.268)	(2.278)	(2.272)	(2.270)	(2.282)	(2.273)
Observations	178	178	178	178	178	178	178	178	178
R2	0.759	0.746	0.761	0.763	0.748	0.765	0.765	0.749	0.767

Heteroscedasticity robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: The effect of remittances and financial development on male poverty reduction (Lewbel TSLS Results)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Poverty rate of the working population				
	15+	15-24	24+	15+	15-24	24+	15+	15-24	24+
lnrgdpc	-0.005	0.078	-0.029	-0.088	0.007	-0.112	-0.091	0.004	-0.115
	(0.168)	(0.176)	(0.168)	(0.159)	(0.168)	(0.159)	(0.158)	(0.166)	(0.158)
lnfdi	-0.090*	-0.134**	-0.080	-0.098*	-0.142**	-0.088*	-0.097*	-0.142**	-0.087*
	(0.055)	(0.060)	(0.054)	(0.052)	(0.058)	(0.052)	(0.052)	(0.058)	(0.052)
lntra	-0.670***	-0.363	-0.740***	-0.463**	-0.159	-0.533**	-0.453*	-0.149	-0.523**
	(0.239)	(0.278)	(0.233)	(0.236)	(0.277)	(0.230)	(0.239)	(0.281)	(0.232)
lngovgdp	2.336***	2.192***	2.361***	2.001***	1.882***	2.026***	2.007***	1.888***	2.033***
	(0.319)	(0.343)	(0.315)	(0.276)	(0.299)	(0.273)	(0.277)	(0.299)	(0.274)
lnsec	0.307	0.260	0.332	0.080	0.041	0.104	0.110	0.071	0.135
	(0.210)	(0.205)	(0.213)	(0.216)	(0.211)	(0.218)	(0.212)	(0.208)	(0.214)
lnodac	0.703***	0.664***	0.704***	0.557***	0.520***	0.557***	0.560***	0.524***	0.561***
	(0.075)	(0.081)	(0.075)	(0.062)	(0.067)	(0.062)	(0.062)	(0.067)	(0.061)
lnremit	0.047	0.082**	0.033	0.074**	0.107***	0.060*	0.075**	0.108***	0.061*
	(0.037)	(0.037)	(0.038)	(0.033)	(0.034)	(0.033)	(0.033)	(0.035)	(0.033)
lndcp	-1.779***	-1.755***	-1.778***						
	(0.229)	(0.243)	(0.226)						
lndcpb				-1.871***	-1.873***	-1.871***			
				(0.239)	(0.257)	(0.237)			
lnmscp							-1.895***	-1.896***	-1.896***
							(0.239)	(0.257)	(0.237)
Constant	-10.565***	-10.922***	-10.337***	-5.886***	-6.377***	-5.663***	-6.027***	-6.516***	-5.806***
	(2.683)	(2.885)	(2.661)	(2.102)	(2.306)	(2.078)	(2.097)	(2.308)	(2.071)
Observations	178	178	178	178	178	178	178	178	178
R2	0.782	0.727	0.786	0.787	0.730	0.793	0.790	0.732	0.795

Heteroscedasticity robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5. Policy Implications

The COVID-19 pandemic has had a dire consequence on the SSA economy. Due to strict mobility restrictions, the pandemic has led to job losses, reduced household earnings, and increased income inequality and poverty. To design and implement effective post-COVID-19 macroeconomics policies to tackle poverty in SSA, policymakers need to understand the factors shaping poverty in the region. In view of this, our study has examined the effect of international remittances and financial development on the poverty rate in SSA while controlling for economic growth, foreign direct investment, trade openness, government spending, education and foreign aid. The findings from our analysis are important for designing post-COVID-19 macroeconomic policies for reducing poverty in SSA, which are discussed as follows:

Our study has established that financial development contributes to poverty reduction. Therefore, policymakers creating an enabling environment that improves the stability and efficiency of the financial system is vital for reducing SSA poverty. Also, strengthening financial literacy and financial inclusion remains imperative for addressing the financial accessibility gap between the female and male working population in SSA. Also, this study has indicated that international remittances increase the poverty rate in SSA. This evidence stems from the fact that remittances to SSA are used to support family consumption in case of adverse shocks and further involve moral hazards (Azam and Gubert, 2006). The moral hazard makes those left behind lazy and earns less income, and thus increasing poverty. In line with Azam and Gubert (2006) recommendation, policymakers need to implement policies that will make non-migrant families in SSA to be more efficient. Also, establishing entrepreneur and career development centres to train and equip non-migrant families with business skills could encourage non-migrant families to use their remittances for small business set-up, which would enhance their earnings.

Additionally, this study has indicated that economic growth in SSA has been "pro-poor"; thus, structural policies to spur SSA economic growth would not conflict with the region's poverty reduction strategies. Similarly, our result suggests that foreign direct investment is instrumental for alleviating poverty in SSA since it provides job opportunities, stimulates technological transfer, human capital, and economic growth. Therefore, policymakers creating an enabling environment and improving institutional quality and macroeconomic stability would ensure a successful foreign investment flow and, thus, contribute to poverty reduction in SSA. Also, it was evident that foreign aid to SSA has not been effective in reducing poverty in the region, attributed to the region's chronic poor institutional quality, volatile macroeconomic environment, and poor growth-enhancing policies. The policy ramification of this evidence is that enhancing the institutional quality and efficient mechanism for allocating foreign aid to critical sectors that are poverty enhancing are needed.

Further, it is argued that education is essential for reducing poverty; however, our findings suggest that education plays an insignificant role in poverty reduction in SSA. This study, therefore, calls for monumental changes in its existing knowledge-based curriculum to a skilled-based curriculum, which is critical for driving economic growth and reducing poverty. The lesson is that policymakers need to re-orient the SSA current education system towards an education system that primarily equipped students with ready-market technical skills. Also, SSA governments addressing the bottlenecks in the demand and supply of graduates remains imperative for alleviating poverty in SSA.

Finally, this study has demonstrated that government spending has not been "pro-poor" in SSA. In the face of this evidence, SSA governments must minimise spending in regressive areas such as subsidies on fuel and increase spending in "pro-poor" areas such as creating more employment avenues, education and health. Also, government increasing expenditures on

safety net interventions such as conditional cash transfers and labour-intensive project works are crucial for reducing poverty, especially in this COVID-19 period where the SSA labour market is distorted and poverty among the working population increases. Government should not just increase spending on these safety net interventions but should be effectively designed to reach the targeted population.

6. Concluding remarks

To design and implement effective post-COVID-19 macroeconomics policies to tackle poverty in SSA, policymakers need to understand the factors shaping poverty in the region. This paper, therefore, examines the effect of international remittances and financial development on poverty reduction in 44 SSA countries from 2010 to 2019 using the instrumental variable generalised method of moment technique. The instrumental variable generalised method of moment technique results indicated that while remittances increase poverty, financial development contributes significantly to poverty reduction. The results consistently revealed that remittances increase both male and female poverty rates, while financial development significantly reduces male and female poverty rates. Other factors such as economic growth, foreign direct investment, and trade openness contributed significantly to reducing poverty. In contrast, government expenditure and foreign aid were found to increase poverty rate in SSA. These results are robust to the Lewbel two-stage least squares estimator. These empirical results would help guide policymakers in designing post-COVID-19 macroeconomic policies for reducing poverty in SSA. From a policy perspective, our study suggests that SSA policymakers must strengthen existing financial literacy and financial inclusion policies to reduce the absolute poverty rate and further close the financial accessibility gap between females and males in the region. Our study also suggests that establishing entrepreneur and career development centres to train and equip non-migrant families with business skills could encourage non-migrant families to use their remittances for small business set-up, which would enhance their income.

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