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Foreign capital and food security: role of partnership for the goals in Africa

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Abstract

Purpose – The aim of this study is to test the modulating role of partnership for the goals in the foreign capital and food security relationship.
Design/methodology/approach – The two-step System Generalized Methods of Moment empirical model with linear interaction between foreign capital and partnership for the goals was estimated. This study employed panel data on 48 African countries over 22 years (2000–2022).
Findings – The study found that the conditional effect of foreign capital on food security is positive. Thus, partnership for the goals acts as a moderator on the relationship between foreign capital and food security in Africa. The study's principal implication is that partnership for the goals reverses the negative unconditional effect of foreign capital on food security.
Research limitations/implications – The study recommends strengthening public–private partnerships in the agricultural sector to boost productivity, alongside reforms to external debt arrangements that safeguard funding for food security initiatives and social protection programs.
Originality/value – This study contributes to the existing literature by investigating the moderating role of Partnership for the Goals (SDG 17) in the relationship between disaggregated foreign capital inflows and sustainable food security in Africa. Furthermore, the findings reveal that SDG 17 partnerships serve as an important catalyst in enhancing the effectiveness of foreign capital in promoting sustainable food security outcomes across the continent.

Keywords Food security, Sustainability, Foreign capital, Partnership for the goals
Paper type Research article

1. Introduction

Food security remains a critical challenge in Africa, with nearly 280 million people about 20% of the population experiencing undernourishment (FAO, 2023). The situation is particularly severe in Sub-Saharan Africa, where low agricultural productivity, climate shocks, conflicts and weak distribution systems limit food availability and access. These challenges are further exacerbated by high inflation, especially in food prices, which diminishes household purchasing power. In 2022, many African countries recorded average food inflation above 10%, with some exceeding 20% (FAO, 2023; Sogah *et al.*, 2025), driven by currency depreciation, global supply disruptions and rising input costs. Consequently, Africa continues to face persistent food insecurity despite substantial foreign capital inflows (Aloui and Maktouf, 2024).

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Foreign capital, including external debt, foreign direct investment (FDI), remittances and portfolio investment, play a significant role in financing agricultural transformation and strengthening food systems in Africa (Hasudungan *et al.*, 2024; Ding *et al.*, 2021; Aloui and Maktouf, 2024). These financial inflows have the potential to enhance agricultural production, improve infrastructure and support social protection systems. However, the effectiveness of these inflows largely depends on how resources are allocated. For example, FDI directed toward non-agricultural sectors may provide limited benefits to rural communities, excessive external debt may constrain government spending on productive investments, remittances may reduce labor participation in agricultural activities and unstable portfolio investments may contribute to fluctuations in food import costs. Although foreign capital inflows continue to increase with remittances surpassing $95 billion in 2021 food security outcomes across Africa remain inconsistent.

From the perspective of the Modernization Theory, Africa can achieve sustainable food security through the effective utilization of foreign capital (Adenle *et al.*, 2019). The theory posits that foreign capital can improve food security by facilitating investments, technological transfer and technical expertise that enhance agricultural productivity, infrastructure development and access to sufficient and nutritious food (Adenle *et al.*, 2019). Through modernization, developing economies can adopt advanced agricultural techniques and strengthen their food systems to support long-term sustainability.

In contrast, the Dependency Theory suggests that foreign capital may adversely affect food security when African economies become heavily reliant on external investors, multinational corporations and foreign assistance (Mihalache-O'Keef and Li, 2011). Foreign investments often prioritize export-oriented agriculture and cash crop production rather than domestic food production (Mihalache-O'Keef and Li, 2011; Mawutor *et al.*, 2023). Such a situation may shift land, labor and financial resources away from local food systems, increase dependence on food imports and expose economies to external vulnerabilities. Consequently, food insecurity may worsen when foreign investments are driven primarily by profit motives rather than local food needs.

Despite the recognized importance of foreign capital for food security outcomes, existing studies have largely focused on its effects on food availability, accessibility, affordability and utilization (Dhahri and Omri, 2020; Wardhani and Haryanto, 2020; Aloui and Maktouf, 2024; Hasudungan *et al.*, 2024; Sogah *et al.*, 2025), with limited attention to the sustainability dimension of food security, which is central to Sustainable Development Goal 2. This goal emphasizes ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture by 2030. In addition, previous studies appear to have overlooked both the direct effect of foreign capital on sustainable food security and the interactive role of Sustainable Development Goal 17 in shaping this relationship in the African context (Cassimon *et al.*, 2023; Doppen *et al.*, 2024; Ghufran *et al.*, 2025; Ofori, 2025). This study addresses these gaps by providing new empirical evidence on the relationship between foreign capital and the sustainability of food security. Accordingly, the study specifically investigates the moderating role of partnerships for the goals in the relationship between foreign capital and food security in Africa. The hypothesis tested is that partnerships for the goals have a significant moderating effect on the relationship between foreign capital and food security in Africa.

The study contributes to the literature in several important ways. Beyond examining the direct effects of foreign capital and partnership for the goals on sustainable food security, it further investigates the interaction effect between foreign capital and partnership for the goals on sustainable food security in Africa. Partnership for the goals promotes global cooperation and collaboration among governments, the private sector, civil society and international organizations through resource mobilization, knowledge sharing and capacity building aimed at achieving sustainable development objectives. Examining this interaction is important because it reveals whether the impact of foreign capital on sustainable food security varies depending on the level of partnership for the goals.

Understanding how partnership for the goals shapes the relationship between foreign capital and sustainable food security is essential for effective policy formulation. Improvements in the inflow and management of foreign capital alone may not sufficiently enhance sustainable food security if partnerships are weak. Strong partnerships can ensure accountability and transparency by reducing the diversion of resources intended for agricultural development toward private interests (Leal Filho *et al.*, 2024). In addition, collaborations among governments, businesses and civil society organizations can attract foreign capital into the agricultural sector, encourage sustainable agricultural practices and improve food security outcomes. Furthermore, partnerships can contribute to strengthening institutional quality within economies. Countries with stronger governance systems often demonstrate greater commitment, efficiency and accountability in resource management (Acemoglu *et al.*, 2005; Kaufmann *et al.*, 2010; Kaufmann *et al.*, 2011). Effective partnerships can ensure that foreign capital is directed toward productive areas such as sustainable agricultural investments, technology transfer, infrastructure development and capacity enhancement. Consequently, such partnerships can mitigate the concerns raised by dependency theory while reinforcing the positive outcomes suggested by modernization theory, thereby contributing to improved and sustainable food security outcomes across Africa.

The essence of partnership for the goals in solving food insecurity in indispensable, partnership for the goals will create synergies that drive systemic change, enhance food systems and contribute to achieving global food security. Secondly, it reveals the magnitude effect of foreign capital on sustainable food security, hence, it shows whether the magnitude effect is positive or negative.

The rest of the paper is organized as follows: Section 2 reviews the relevant literature; Section 3 describes the methodology employed; Section 4 presents the empirical results and Section 5 concludes with policy recommendations derived from the findings.

2. Literature review

Studies exploring the relationship between FDI and food security began gaining attention in the early 1980s, with scholars drawing on two competing theoretical frameworks: the dependency theory and the modernization theory. These theories offer contrasting perspectives on how foreign capital influences economic development and welfare outcomes, particularly in developing countries.

Proponents of the dependency theory argue that reliance on foreign investment can negatively impact economic growth and income distribution. For example, Bornschier and Chase-Dunn (1985), cited in Adams (2009), contend that FDI facilitates the dominance of monopolies, leading to underutilized productive capacity. Amin (1974), also referenced by Adams, posits that foreign control over an economy results in disarticulated growth, where demand is unevenly distributed across sectors, ultimately stagnating broader development. Adams (2009) explains this through the multiplier effect, where a boost in one sector does not sufficiently stimulate demand in others, perpetuating structural imbalances in developing economies.

On the other hand, modernization theorists focus on the developmental benefits of both internal and external drivers of growth. According to Jenkins and Scanlan (2001), internal factors such as domestic investment, education and industrialization foster modernization and social welfare. Meanwhile, external sources particularly FDI bring valuable inputs like technology transfer, managerial expertise and improved access to international markets (Kumar and Pradhan, 2005). These inflows are believed to enhance productivity and promote efficient resource allocation (Graham, 1996).

Both theoretical perspectives have shaped empirical studies that examine the impact of FDI on food security using a variety of indicators. For example, Wimberley (1991) analyzed the effects of transnational corporate investment in 60 developing countries and found that nations with lower levels of FDI penetration experienced greater increases in calorie and protein intake

per capita. This suggests a negative correlation between FDI and food security. Similarly, Wimberley and Bello (1992) found that while economic growth improved food consumption, dependency on FDI and primary exports had adverse effects. Contrastingly, Firebaugh (1992) challenged the dependency view by demonstrating a positive link between investment rates and economic growth across 76 developing countries.

Later, Firebaugh and Beck (1994) showed that the effect of foreign investment on caloric intake varied depending on the model used highlighting the complexity of the relationship and the need for methodological nuance.

Further empirical work by Ding *et al.* (2021) emphasized that while domestic investment, democratization and economic growth support food supply and reduce hunger, foreign capital and political instability can limit food access. Stiglitz (2021) add that economic growth, particularly when export-led, improves national food security at both macro and micro levels, but only when the benefits are inclusive and reach the poor. Building on this, Doğan (2022) offered a more nuanced sectoral perspective. Their study of 56 developing countries showed that FDI in the primary sector (e.g. agriculture, land use or natural resources) tended to harm food security by increasing unemployment and degrading land use. However, secondary sector FDI (e.g. manufacturing) improved food security through job creation, wage growth and knowledge spillovers (Roy and Paul, 2022).

The impact of tertiary sector FDI (e.g. services) was more ambiguous, depending on whether the labor force was skilled or unskilled. For unskilled rural workers, tertiary FDI could trigger urban migration and erode access to subsistence farming, ultimately worsening food insecurity. In contrast, skilled labor benefitted through higher incomes and improved nutrition.

Country-specific evidence supports these mixed findings. In Ghana, Djokoto (2012) employed the ARDL model and found both short- and long-term negative effects of agricultural FDI on food security, measured by daily energy and protein consumption. From an environmental perspective, Akabzaa and Darimani (2001) observed that FDI in Ghana's mining sector led to water pollution and ecological degradation, adversely affecting community health and access to safe food and water.

2.1 The relationship between foreign remittances and food security

A growing body of empirical research indicates that remittances generally enhance household food security by increasing disposable income and strengthening resilience to economic and price shocks. Studies by Subramaniam *et al.* (2022) and Azizi (2018) show that remittance inflows improve food consumption and support investments in human capital, particularly in rural and low-income households. Similarly, Sogah *et al.* (2025) and Thow *et al.* (2016) find that remittances function as informal safety nets, enabling households to smooth consumption during food price volatility and improve diet quality. However, this positive narrative is not universal. Sunam and Adhikari (2016) caution that excessive dependence on remittances may weaken labor supply and reduce agricultural productivity, thereby posing long-term risks to food security. Moreover, Awad *et al.* (2024) highlight that the effectiveness of remittances in improving food security is highly contingent on institutional quality and governance structures, while Green *et al.* (2019) show that gender dynamics particularly women's control over remittance income significantly shape nutritional outcomes.

While these studies provide valuable micro-level insights, they largely examine remittances in isolation and give limited attention to the broader institutional and partnership frameworks through which remittance flows are translated into sustainable food security outcomes. In particular, existing research rarely considers how Partnerships for the Goals (SDG 17) through financial inclusion initiatives, diaspora engagement policies and coordination between governments, financial institutions and development partners can enhance or constrain the food security impacts of remittances. This study extends the literature by integrating remittances into a comprehensive foreign capital framework and empirically examining the moderating role of SDG 17 partnerships, thereby offering new evidence on how

coordinated institutional arrangements can strengthen the contribution of remittances to food security in Sub-Saharan Africa.

2.2 The relationship, between external debt and food security

Empirical evidence on the relationship between external debt and food security reveals a nuanced and conditional association. On the positive side, several studies indicate that when effectively managed, external debt can enhance food security by financing critical investments in agriculture, rural infrastructure and social protection programs. For example, Sogah *et al.* (2024) and Toriola *et al.* (2024) find that debt-financed public spending in African countries improves agricultural productivity and food distribution. Conversely, a growing body of literature shows that excessive or poorly structured debt undermines food security by diverting public resources toward debt servicing, thereby crowding out investment in essential sectors such as healthcare and agriculture (Baptista *et al.*, 2022; World Bank group, 2020). Moreover, loan conditionalities associated with structural adjustment programs have historically exacerbated food insecurity by removing subsidies and reducing support for smallholder farmers (Alawode, 2025).

While these studies provide important insights, they largely focus on the direct fiscal effects of external debt and give limited attention to the institutional and coordination mechanisms that determine whether debt-financed resources are effectively translated into food security outcomes. Although Akobeng (2020) highlights the role of governance quality and fiscal transparency in shaping debt effectiveness, empirical evidence remains scarce on how broader partnership and coordination frameworks influence the debt–food security nexus. This study extends the existing literature by integrating external debt into a comprehensive foreign capital framework and explicitly examining the moderating role of Partnerships for the Goals (SDG 17). By doing so, it goes beyond earlier debt-focused analyses and shows how multi-stakeholder partnerships and institutional coordination can enhance the productive use of external debt for food system development, particularly in Sub-Saharan Africa.

2.3 Foreign portfolio investment and food security nexus

Empirical evidence on the relationship between foreign portfolio investment (FPI) and food security remains limited and inconclusive, reflecting the indirect and context-dependent nature of this form of foreign capital. Existing studies largely focus on the macroeconomic effects of FPI, noting that although it primarily targets financial markets rather than the agricultural sector, it may indirectly support food security by stimulating economic growth and expanding fiscal space for agricultural and social expenditures in relatively stable environments (Anwar *et al.*, 2019). However, the short-term and highly volatile nature of FPI introduces significant risks. Mohamed *et al.* (2023) show that excessive reliance on FPI heightens macroeconomic instability during external shocks, which can erode food affordability and access.

While these studies provide valuable insights, they largely examine FPI in isolation and give limited attention to the institutional mechanisms that condition its transmission to food security outcomes. Evidence by Akobeng (2020) suggests that transparent financial markets and strong institutions are essential for converting FPI inflows into sustainable development gains, yet the specific channels through which governance and coordination frameworks shape the FPI–food security nexus remain underexplored. This study extends the existing literature by situating FPI within a broader foreign capital framework and explicitly examining the moderating role of Partnerships for the Goals (SDG 17). By doing so, it moves beyond the narrow macro-financial focus of earlier studies and demonstrates how coordinated partnerships and institutional arrangements can either amplify or constrain the ability of FPI to support food security, particularly in Sub-Saharan Africa.

2.4 Role of partnership for the goals in the link between foreign capital and food security

Empirical evidence highlights the pivotal role of Partnerships for the Goals (SDG 17) in strengthening the capacity of foreign capital to enhance food security. Although foreign capital through aid, investment or remittances has the potential to support agricultural development, rural infrastructure and social protection systems, its effectiveness largely depends on the strength and quality of multi-stakeholder partnerships involving governments, civil society, the private sector and international organizations. Tambo and Wünscher (2017) demonstrate that agricultural initiatives in Sub-Saharan Africa implemented through robust partnership arrangements yield superior food security outcomes compared to isolated interventions, owing to improved alignment with local priorities and greater sustainability. Similarly, Tshombe *et al.* (2020) find that development finance in East Africa is more effective when channeled through public–private partnerships, while Binns and Nel (2019) show that collaborative platforms enhance the targeting and efficiency of foreign aid. Reinforcing these findings, the World Bank (2021) notes that institutionalized SDG 17 frameworks facilitate the translation of donor resources into measurable gains in nutrition and agricultural productivity. Nevertheless, partnerships are not inherently beneficial; Davis *et al.* (2015) caution that partnerships dominated by external or political interests may weaken inclusivity and accountability, thereby diminishing the developmental impact of foreign capital.

Despite the extensive literature on individual components of foreign capital, relatively little attention has been given to the institutional and coordination frameworks through which these capital flows are transformed into improved food security outcomes. In particular, existing studies have largely neglected the role of Sustainable Development Goal 17 as a key facilitating and moderating mechanism that influences how foreign capital is mobilized, allocated and governed within food systems.

Emerging evidence highlights the growing importance of multi-stakeholder partnerships involving governments, donors, private investors, civil society organizations and local communities in aligning foreign capital with national food security priorities. Tambo and Wünscher (2017) and Smyth *et al.* (2021) show that agricultural investments implemented through strong partnership arrangements tend to generate more sustainable food security outcomes, largely due to improved targeting, stronger accountability and more effective knowledge sharing. In a similar vein, Binns and Nel (2019) and the World Bank (2021) find that institutionalized partnerships enhance aid effectiveness and agricultural productivity by strengthening coordination and fostering long-term commitment.

However, partnerships do not automatically produce positive outcomes. Davis *et al.* (2015) caution that poorly structured or externally dominated partnerships may lead to elite capture and weakened accountability, thereby reducing their developmental effectiveness. Consistent with this, Cassimon *et al.* (2023) provide cross-country evidence indicating that strong partnership frameworks enhance the positive effects of foreign investment on food security, while weak coordination and governance lead to inefficiencies and missed development opportunities.

Against this background, the present study makes three main contributions to the literature. First, it adopts a comprehensive approach by jointly examining FDI, remittances, external debt and FPI, rather than analyzing these flows in isolation. Second, it explicitly incorporates Sustainable Development Goal 17 as a moderating mechanism, thereby addressing a key institutional gap in the existing food security literature. Third, by focusing on Sub-Saharan Africa, the study provides policy-relevant insights for a region where food insecurity remains persistent despite substantial and unevenly governed foreign capital inflows. By integrating these dimensions, the study moves beyond the traditional dependency–modernization debate and demonstrates that the effectiveness of foreign capital in enhancing food security is fundamentally contingent on the strength of partnerships, institutional coordination and governance quality. In doing so, the study contributes both theoretical and empirical insights aligned with the Sustainable Development Goals agenda.

3. Methodology

3.1 Estimation techniques

The Generalized Method of Moments (GMM) was employed in this study due to key features of the dataset and the dependent variable, as highlighted in the growth literature (Asongu *et al.*, 2021a, b; Ahmad and Khan, 2019). The panel consists of 48 countries over 22 years, 2000–2022 ($N > T$), and food security shows high persistence, with a correlation exceeding 0.8 between current and lagged values (Mawutor *et al.*, 2022, 2025; Ofoeda *et al.*, 2025; Blundell and Bond, 1998; Gborse *et al.*, 2026). These characteristics make GMM particularly suitable for dynamic panels, as it efficiently addresses endogeneity, corrects biases from unobserved heterogeneity and handles cross-sectional variation (Roodman, 2009; Asongu *et al.*, 2021a, b). Among GMM variants, system GMM was chosen over difference GMM due to its robustness and efficiency in managing endogeneity and persistence in the data (Blundell and Bond, 1998), and the two-step estimator was used to improve standard error efficiency (Roodman, 2009). Statistical tests (Table 4) confirm the appropriateness of this approach for the study.

3.2 Model specification

Building on the Dependency Theory, Modernization Theory and relevant empirical literature (Mawutor *et al.*, 2023; Asongu *et al.*, 2021a), the present study examines the effect of foreign capital on food security sustainability in Africa, as specified in the following models:

$$FS_{it} = \alpha_0 + \alpha_1 FS_{it-1} + \alpha_2 FC_{it} + \alpha_3 SDGP_{it} + \alpha_4 GDP_{it} + \alpha_5 GCF_{it} + \alpha_6 GEA_{it} + \alpha_7 PG_{it} + \alpha_8 UB_{it} + \epsilon_i + \eta_{it} \quad (1)$$

Where FS = food security; FS_{it-1} = the lagged value of food security; FC = foreign capital (FDI; remittances, FPI and external debt); $SGDP$ = partnership with the goal; UB = urbanization; GEA = Government expenditure on agriculture; GCF = Gross Capital Formation; PG = Population Growth; α = coefficient of the variables; i = Number of countries; t = the time period; ϵ = the error term; η_{it} = unobservable individual-specific effect.

3.2.1 Moderating effect model specification. To investigate the moderating role of partnership for the goals on the relationship between foreign capital and food security as in Model 1, the study introduced the moderator in Model 2.

$$FS_{it} = \alpha_0 + \alpha_1 FS_{it-1} + \alpha_2 FC_{it} + \alpha_3 SDGP_{it} + \alpha_4 (FC{*}SDGP)_{it} + \alpha_5 GDP_{it} + \alpha_6 GCF_{IT} + \alpha_7 GEA_{it} + \alpha_8 PG_{it} + \alpha_9 UB_{it} + \epsilon_i + \eta_{it} \quad (2)$$

Where, $FC * SDGP$ represents the moderation between foreign capital and partnership for the goals. Theoretically, when the coefficient of $(FC * SDGP)$ or α_4 is positive and significant, could conclude that improving the partnership with the goal of a country i at time t in the region being studied is good for the food security agenda and vice versa. Again, when both α_2 and β_3 are positive and significant, it indicates that a country with a higher partnership with the goal and higher foreign capital flows greatly impacts the country's food security.

3.3 Data and sources

The study employs panel data covering 48 African countries over the period 2000–2022. The dependent variable is food security, which reflects the sustainability of food access, availability, utilization and affordability. It captures a country's progress toward achieving Sustainable Development Goal (SDG) 2, with a focus on food security sustainability. The variable is measured on a scale from 0 to 100, where 0 indicates poor sustainability performance and 100 represents strong or high-quality sustainability outcomes. The data are obtained from the United Nations Department of Economic and Social Affairs. Although this

measurement is relatively recent, the United Nations SDG 2 index/score provides a valuable tool for policymakers, researchers and development practitioners to assess progress in food security, identify gaps requiring policy attention and design targeted strategies to achieve the objectives outlined under SDG 2 (Guo *et al.*, 2022; Davis *et al.*, 2015).

The main explanatory variable in this study is foreign capital, which is proxied by external debt as a percentage of GDP, FDI inflows as a percentage of GDP, foreign remittance inflows as a percentage of GDP and FPI as a percentage of GDP. FDI in sectors such as agriculture, infrastructure and agribusiness can enhance food production, strengthen supply chains and generate rural employment, thereby improving food availability and access (Mawutor *et al.*, 2023).

Concessional and external debt, when effectively managed, can provide governments with fiscal space to invest in agricultural development and food systems; however, excessive or poorly managed debt may crowd out critical social expenditures, including food and nutrition-related programs, thereby undermining food security outcomes (Sogah *et al.*, 2024, 2025). Remittance inflows tend to directly increase household incomes, enabling families to afford more stable and higher-quality food, while also serving as an important buffer against food price volatility and climate-related shocks (FAO, 2018). Although relatively more volatile, FPI can contribute to macroeconomic stability and improve a country's capacity to import food when properly regulated. Conversely, sudden capital reversals may destabilize financial markets, leading to increased food price volatility and reduced affordability.

In addition, Partnership for the Goals captures a country's level of engagement in global partnerships under SDG 17. This variable is sourced from the United Nations Department of Economic and Social Affairs and is measured on a scale ranging from 0 to 100, where 0 indicates weak partnership performance and 100 represents strong and effective partnership relations (Horan, 2022; Makhura, 2024).

The study controlled for government expenditure on agriculture as a percentage of GDP, gross capital formation as a percentage of GDP, urbanization as a percentage of the total population and annual population growth rate. Further details on the studied variables are found in Table 1. The findings on the descriptive statistics and the correlation matrix are reported in Tables 2 and 3 respectively. According to the results in Table 3, all correlation values were less than 0.7 threshold suggesting absence of multicollinearity issue. Accordingly, this threshold caveat has been supported in literature (Mawutor *et al.*, 2023; Asongu *et al.*, 2021a, b). Thus, the correlation between the explained variable and its own lag is greater than 0.8 suggesting the engagement of the GMM is apt.

4. Results and discussion

4.1 Difference and system GMM model selection

The results in Table 4 show that the coefficient of the lag dependent variable (FS) in the two-step differenced GMM model is less that the same coefficient in the upper bound estimator (POLS) and the lower bound estimator (FE). This indicates that the difference GMM is an inefficient and biased to estimate the features of the data (Bond *et al.*, 2001). Hence, the system GMM is econometrically efficient and is deployed in the study.

4.2 Foreign capital and food security

The results of the two-step system GMM dynamic panel estimations are presented in Tables 5–7. The *p*-values of the Arellano–Bond AR(2) and Hansen tests indicate that the null hypotheses of no second-order serial correlation and valid over-identifying restrictions cannot be rejected, confirming the suitability of the instruments used to address endogeneity.

Table 5 (columns 1–4) reports the effects of foreign capital external debt, FDI, remittances and portfolio investment on sustainable food security in Africa. Table 6 (columns 1–4) presents the impact of Partnership for the goals (SDG 17) on sustainable food security, while Table 7 (columns 1–4) examines the moderating role of SDG 17 in the relationship between foreign capital and sustainable food security. Across all specifications, the lagged dependent

Table 1. Variable description, measurement source and expected sign

Variable	Description	Data source	Expected sign
Food security (FS) sustainability	It captures a country's progress towards achieving sustainability food security (SDG2). It is measured on a scale from 0 to 100. Where 0 indicates poor sustainability, and 100 represents quality sustainability	United Nations Department of Economic and Social Affairs	N/A
Independent variable			
External debt	Measured as external debt flows as a percentage of GDP	WDI	+
Foreign direct investment (FDI)	Measured as FDI flows as a percentage of GDP	WDI	+
Remittances (RM)	International remittances as a percentage of GDP	WDI	+
Portfolio investment (PORT)	Foreign portfolio investment flows as a percentage of GDP	WDI	+
Moderating variable			
Partnership for the goals	It captures a country's progress towards partnership with other goals (SDG 17). It is measured on a scale from 0 to 100. Where 0 indicates poor partnership relationship, and 100 represents quality partnership relationship	UNDESA	+
Control variables			
Gross domestic product (GDP)	Gross domestic product annual growth rate	World Bank	+
Gross capital formation (GCF)	Gross capital formation as a percentage of GDP	World Bank	+
Government expenditure on agriculture (GEA)	Government expenditure on agriculture as a percentage of GDP	ReSAKSS	+
Population growth (PG)	Population growth as a percentage of GDP	World Bank	+
Urbanization (UB)	Urban population as a percentage of the total population	World Bank	+

Source(s): Author designed, 2025

Table 2. Descriptive statistics

Variables	Observation	Mean	Maximum	Minimum	Std. Dev
FS	1,008	26.57426	95.89900	12.0000	20.57136
GDP	1,008	3.839601	63.37988	−36.39198	5.419668
GCF	1,008	17.89927	76.78231	10.000000	12.38128
GEA	1,008	2.881077	9.247593	4.20987	3.109656
PG	1,008	38.96538	90.09200	0.120000	17.03736
UB	1,008	3.670559	89.368037	4.502432	1.533196
HCE	1,008	55.90371	89.1094	10.000000	33.02063
SGDP	1,008	53.19501	82.45740	25.00000	10.94896
DEBT	1,008	0.34855	0.4519	02.000000	0.92286
FDI	1,008	0.283509	0.3374	0.29224	0.046528
RM	1,008	0.11444	0.82640	0.000000	0.682800
PORT	1,008	0.23 E+08	0.43 E+10	0.96 E+10	0.89 E+09
FC	1,008	0.40625790	3.58 E+09	4.91 E+09	4.73 E+0

Source(s): Author design, 2025

Table 3. Correlation matrix

	FS	GDP	GNI	HCE	PG	SDGP	UB	GFC	DEBT	FDI	PORT	RM
FS	1	0.9										
GDP	−0.03	1										
GEA	−0.07	0.5	1									
HCE	0.09	−0.05	0.19	1								
PG	0.31	−0.07	−0.05	−0.14	1							
SDGP	0.22	0.05	0.01	0.01	0.2	1						
UB	−0.03	0.28	0.11	0.008	0.01	−0.01	1					
GCF	−0.02	0.05	0.25	0.38	0.2	0.21	0.06	1				
DEBT	0.07	−0.12	−0.12	−0.1	0.06	−0.08	0.02	−0.21	1			
FDI	−0.05	0.17	0.02	−0.2	0.16	−0.01	0.07	0.05	0.03	1		
PORT	−0.07	0.03	0.04	0.02	−0.11	−0.13	0.05	0.03	0.12	0.16	1	
RM	0.03	−0.02	−0.07	0.04	−0.04	0.27	−0.12	−0.09	0.11	0.14	0.01	1

Source(s): Authors estimations, 2025

Table 4. Model selection between difference-and-system-GMM

VAR	POLS	FE	Two-step DGMM
FSL(−1)	0.96*** (0.009)	0.65*** (0.02)	0.402*** (0.03)
GDP	0.03 (0.04)	0.003* (0.04)	0.07*** (0.004)
GCF	0.02 (0.04)	0.01 (0.04)	0.08*** (0.003)
HCE	−0.006 (0.006)	−0.004 (0.01)	0.003*** (0.001)
PG	0.0002 (0.01)	0.06 (0.06)	0.01*** (0.01)
SDG17	0.0002 (0.02)	0.03 (0.06)	−0.07*** (0.01)
UB	0.012 (0.12)	0.01 (0.25)	−0.06*** (0.01)
GCF	0.01 (0.02)	0.03 (0.02)	0.02*** (0.003)
FM	3.56 (2.18)	14.8 (7.25)**	16.88*** (0.59)
C	1.07 (1.05)	9.9*** 3.94)	
Year dummies	–	–	YES
R-squared	0.933	0.944	
Number of countries	48	48	48
p-value: AR (1)			0.067
AR (2)			0.364
Sargan			0.567
Hansen			0.110

Note(s): Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
Source(s): Field Data, 2025

Table 5. Foreign capital and sustainable food security in Africa

	1	2	3	4
FS(−1)	0.93*** (0.09)	0.93*** (0.07)	0.86*** (0.04)	0.79*** (0.06)
GDP	−0.19*** (0.03)	−0.19*** (0.07)	0.15*** (0.04)	−0.06 (0.05)
GCF	0.29*** (0.03)	0.032*** (0.04)	0.022*** (0.04)	0.21*** (0.04)
GEA	0.08 (0.05)	0.35*** (0.08)	0.18*** (0.03)	0.23*** (0.054)
PG	1.03*** (0.20)	0.01 (0.12)	0.17*** (0.03)	−3.1*** (0.12)
UB	−1.40 (0.88)	−1.89*** (0.70)	−0.74*** (0.08)	−0.001 (0.78)
DEBT	−0.14*** (0.03)			
RM		−1.22*** (0.23)		
FDI			−0.25*** (0.11)	
PORT				−5.5 (3.87)
Observations	912	912	912	912
No. of groups	48	48	48	48
AR1(*p*-value)	0.084	0.098	0.012	0.008
AR2(*p*-value)	0.112	0.112	0.743	0.893
Hansen (*p*-value)	0.643	0.692	0.269	0.394
Sargan (*p*-value)	0.657	0.657	0.410	0.331

Note(s): Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
Source(s): Field Data, 2025

variable (column 1) is positive and statistically significant, indicating strong persistence in sustainable food security over time. Coefficient values exceeding 0.7 in most cases further confirm this persistence, suggesting that higher levels of sustainable food security in the previous period contribute to improved outcomes in the current period. Consistent with this interpretation, a positive coefficient on any explanatory variable implies an improvement in sustainable food security.

The key explanatory variable foreign capital including external debt, FDI, remittances and portfolio investment have negative and statistically significant effect on sustainable food security except for portfolio investment which is found not to be significant.

Table 6. Foreign capital, sustainable food security and partnership with the goals

VAR	1	2	3	4
FS (−1)	0.39*** (0.09)	0.94*** (0.07)	0.90*** (0.05)	0.87*** (0.07)
GDP	−0.14*** (0.04)	−0.17** (0.07)	−0.05 (0.05)	−0.64 (0.11)
GCF	0.28*** (0.03)	0.30*** (0.04)	0.15*** (0.04)	0.11*** (0.02)
GEA	0.08 (0.06)	0.32*** (0.07)	0.17*** (0.03)	0.21*** (0.04)
PG	1.18*** (0.22)	0.31 (0.22)	−0.14 (0.16)	−0.15 (0.16)
UB	−0.10*** (0.03	−1.11*** (0.23)	−0.43 (0.89)	−1.12 (0.93)
SDG17	0.02 (0.12)	0.19 (0.12)	0.14*** (0.03)	−0.12 (0.09)
DEBT	−1.48* (0.85)			
RM		−1.1* (0.79)		
FDI			−0.12 (0.03)	
PORT				−4.68 (3.48)
Observations	912	912	912	912
No. of groups	48	48	48	48
AR1(*p*-value)	0.051	0.012	0.010	0.013
AR2(*p*-value)	0.102	0.880	0.466	0.752
Hansen(*p*-value)	0.641	0.383	0.238	0.249
Sargan(*p*-value)	0.873	0.414	0.535	0.471

Note(s): Standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Source(s): Field Data, 2025

Table 7. Role of the partnership of the goal on the nexus between foreign capital and sustainable food security in Africa

VAR	1	2	3	4
FS(−1)	0.44*** (0.11)	0.75*** 0.14)	0.78*** (0.08)	0.78*** (0.12)
GDP	−0.06 (0.07)	−0.26*** (0.09)	−0.09 (0.09)	−0.11 (0.07)
GCF	0.29*** (0.04)	0.23*** (0.05)	1.14*** (0.05)	0.16*** (0.04)
GEA	0.08 (0.08)	0.37*** (0.09)	0.22*** (0.07)	0.26*** (0.078)
PG	1.10*** (0.23)	0.42* (0.24)	0.07 (0.19)	0.26 (0.23)
UB	−1.8* (1.10)	−0.43 (0.94)	1.86 (1.23)	1.68 (1,06)
SDG17	−0.03 (0.03)	14.53*** (0.33)	0.04 (0.21)	9.23* (5.40)
DEBT	−0.09* (0.05)			
RM		−0.75** (0.14)		
FDI			−0.09 (0.17)	
PORT				−1.37 (1.01)
c.DEBT#c.SDG17	6.16*** (3.18)			
c.RM#c.SDG17		1.12*** (0.38)		
c.FDI#c.SDG17			17.40*** (4.0)	
c.PORT#c.SDG17				17.55*** (4.40)
Net effect	6.07** (3.01)	0.37*** (0.12)	17.31** (8.21)	16.18** (8.16)
Observations	912	912	912	912
No. of groups	48	48	48	48
AR1(*p*-value)	0.126	0.012	0.014	0.009
AR2(*p*-value)	0.759	0.214	0.168	0.283
Hansen(*p*-value)	0.649	0.923	0.369	0.453
Sargan(*p*-value)	0.873	0.464	0.759	0.759

Note(s): Standard errors in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0$

Source(s): Field Data, 2025

The findings reveal that the key explanatory variable, foreign capital including external debt, FDI, remittances and portfolio investment has a negative and statistically significant effect on sustainable food security. However, portfolio investment stands out as an exception,

showing no statistically significant impact. These findings diverge from previous studies (Sogah *et al.*, 2024; Cassimon *et al.*, 2022) where they found that FDI contributes to food security in SSA. The findings reflect elements of both modernization and dependency theories. The negative and statistically significant impact of foreign capital on sustainable food security supports dependency theory, highlighting how external financial reliance can undermine local food systems and deepen inequalities. At the same time, the results challenge the modernization theory, as the anticipated benefits of foreign capital such as technology transfer and productivity gains appear unrealized, likely due to institutional weaknesses and poor investment alignment. The results show that portfolio investment has an insignificant effect on sustainable food security in Africa, primarily due to its high volatility and short-term nature, which can destabilize local financial markets and increase food import costs. Additionally, portfolio flows are often urban-biased, directed toward financial and non-agricultural sectors rather than rural areas, limiting their direct impact on smallholder farmers and agricultural development (Mawutor *et al.*, 2022; Asongu *et al.*, 2021a, b).

These results can be explained by several factors. First, external debt may divert resources away from critical agricultural and food system investments due to high repayment obligations, thereby undermining efforts to achieve sustainable food security. Second, although FDI and remittances are generally linked to economic growth, their tendency to favor non-agricultural sectors or urban areas can limit their benefits for rural and agricultural development, where food insecurity is most pronounced. Third, the insignificant effect of portfolio investment likely reflects its short-term and speculative nature, which is less effective at addressing structural challenges in food production and distribution. Regarding the control variables, the findings reveal noteworthy patterns: gross capital formation, population growth and government expenditure on agriculture have a positive and significant effect on food security, whereas gross capital formation and urbanization show a negative and significant impact.

These results have practical implications for policymakers, as they suggest both opportunities and challenges in achieving long-term food security. Gross capital formation shows a positive and significant effect on food security, emphasizing the value of investing in agricultural infrastructure and productive assets like irrigation systems and machinery to boost productivity. Similarly, population growth exhibits a surprisingly positive effect, likely due to its role in expanding the labor force and stimulating demand-driven agricultural innovation. While population growth is often viewed as a pressure on food systems, its positive impact in this study can be attributed to several factors: it increases the agricultural labor supply, particularly in labor-intensive rural areas; boosts food demand, which encourages market expansion and adoption of improved technologies and strengthens market density, reducing transaction costs and incentivizing private investment in food production, storage and distribution (Simane *et al.*, 2025; Mergos, 2022). In Africa, where underutilized land and labor coexist with rising food demand, population growth can drive agricultural intensification rather than pose a constraint, particularly when supported by robust institutions and partnerships (McCullough, 2017). This finding is consistent with the induced-innovation hypothesis, which posits that population pressure can spur productivity-enhancing innovations in agriculture (Wong and Zhao, 2023).

Government expenditure on agriculture further reinforces this positive trend, suggesting that targeted public investments in rural infrastructure, input subsidies and research are essential for improving food access and sustainability. However, urbanization presents a significant challenge, with a negative and significant impact on food security. Rapid urban growth often reduces arable land and shifts labor away from agriculture, which can weaken local food systems.

Notably, while gross capital formation is generally seen as beneficial, its negative effect in certain contexts suggests that investment priorities matter. When capital is channeled into non-agricultural sectors, it may undermine food security efforts. These findings call for more strategic alignment between economic development policies and food security goals to ensure inclusive and sustainable agricultural growth.

4.3 Foreign capital, food security and partnership for the goals

From column 1 to 4 in Table 6, we realized that the coefficient of foreign capitals is negative for external debt and FDI but is loosely significant at 10%; in the case of remittances and portfolio investment we found that the coefficients are positive but not significant. This implies that the negative effect of foreign capital declines after introducing the partnership for the goals (SDG 17). This supports that hypothesis that partnership for the goals would reverse the negative effect of foreign capital on sustainable food security, hence, the study investigates the moderating effect of partnership as indicated in Table 7.

4.4 Foreign capital, food security and partnership for the goals

The results presented in Table 7 incorporate the level of partnership for the goals within a country. Partnerships for the goals contribute significantly to improving the sustainability of food security by addressing food insecurity through the mobilization of collective resources, expertise and coordinated efforts. However, stakeholders' willingness to implement appropriate reforms in the agricultural sector and provide adequate financial resources remains a critical aspect of the food production and supply transition process. Weaknesses in these areas may be considered limitations within partnership structures and can be recognized as major determinants of the sustainability of food accessibility, utilization, affordability and availability. This is because the achievement of sustainable food security largely depends on the commitment of stakeholders through partnerships for the goals, even when they are not directly involved in financing activities. Stakeholders are essential because they establish frameworks that emphasize the development of global, regional and local partnerships aimed at mobilizing resources, fostering innovation and creating inclusive and equitable solutions for sustainable development.

Strong, effective partnerships are essential to address systemic challenges, build resilience and create inclusive food systems that support long-term development. As Kumar *et al.* (2021) suggest, indigenous knowledge and community involvement are vital, but institutional shortcomings in developing countries can exacerbate risks, particularly when organizational structures are weak or underdeveloped. In the context of SDG 17, the absence or inefficacy of partnerships may undermine Africa's efforts to achieve sustainable food security by restricting access to resources, technology and markets, as well as diminishing policy coherence. As (Beck and Ferasso, 2023) argue, strong, effective partnerships are critical for addressing systemic challenges, building resilience and developing inclusive food systems that support long-term growth and development.

The moderation analysis shows that SDG-17 (Partnerships for the Goals) turns the effect of foreign capital on sustainable food security from negative to positive, with marginal effects of 6.07, 0.37, 17.31 and 16.18, indicating that a percentage increase in foreign capital could raise sustainable food security by 17.31% at a unit level of partnership for the goals. This underscores the crucial role of partnerships in enhancing the effectiveness of foreign capital. Such partnerships promote accountability by ensuring that resources are tracked and outcomes monitored, align interventions with local needs to avoid misallocation and foster multi-stakeholder governance, enabling governments, private actors and civil society to coordinate efforts toward sustainable food systems (Smyth *et al.*, 2021; Horan, 2022). Consequently, the combination of increased foreign capital and stronger partnerships is likely to produce a more substantial long-term impact on sustainable food security in Africa than changes in either factor alone.

4.5 Robustness

4.5.1 Role of institutional quality in the link between foreign capital and food security in Africa. To assess the robustness of the baseline findings, this study re-estimates the moderating effect of institutional quality on the relationship between foreign capital and food security in Africa using the System Generalized Method of Moments (SGMM), with the results reported in Table 8. Institutional quality is proxied by the Institutional Governance Index, constructed from

Table 8. Role of institutional quality on the nexus between foreign capital and sustainable food security in Africa

VAR.	1	2	3	4
FS(−1)	0.91*** (0.011)	0.902*** (0.011)	0.906*** (0.011)	0.910*** (0.122)
GDP	0.91 (0.66)	−0.229 (0.544)	−0.072* (0.043)	−0.029 (0.087)
GCF	−0.28 (0.544)	0.211 (0.130)	−0.257 (0.544)	−0.002 (0.035)
GEA	1.72 (1.19)	0.02 (0.04)	5.038 (3.479)	0.03 (0.117)
PG	0.195 (0.131)	0.06 (0.059)	0.20 (0.130)	0.205 (0.131)
UB	−0.013 (0.035)	−0.22 (0.13)	−0.011 (0.035)	−0.237 (0.546)
IQ	0.16** (0.073)	0.161** (0.07)	2.079* (1.146)	2.152*** (1.147)
DEBT	−0.44*** (0.082)			
RM		−0.451*** (0.08)		
FDI			−0.427*** (0.082)	
PORT				−0.446*** (0.082)
c.DEBT#c.IQ	6.66* (3.776)			
c.RM#c.IQ		2.36** (1.159)		
c.FDI#c.IQ			0.151** (0.072)	
c.PORT#c.IQ				0.155** (0.073)
Observations	912	912	912	912
NO. of groups	48	48	48	48
AR1 (*p*-value)	0.011	0.018	0.090	0.010
AR2 (*p*-value)	0.980	0.564	0.324	0.167
Hansen (*p*-value)	0.672	0.109	0.563	0.171
Sargan (*p*-value)	0.786	0.112	0.789	0.513

Note(s): Standard errors in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0$

Source(s): Field Data, 2025

the Worldwide Governance Indicators (WGI), which combines six governance dimensions: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption, following the approaches of Mawutor *et al.* (2023) and Ofoeda *et al.* (2025). In addition, the study employs the Pooled Ordinary Least Squares (POLS) estimator to further examine the role of Partnership for the Goals (SDG 17) in the foreign capital–food security relationship, with the results presented in Table 9.

The estimates reported in Tables 8 and 9 are consistent with the baseline results in Table 7, confirming the robustness and reliability of the study's findings. Across the alternative estimation techniques, the interaction terms show that stronger institutional quality mitigates and eventually reverses the negative effects of remittances, FDI, external debt and portfolio investment on food security in Africa. This suggests that foreign capital is more likely to improve food security when supported by effective institutions and stronger international partnerships.

These findings imply that high-quality institutions enhance transparency, accountability and regulatory effectiveness, ensuring that foreign capital is directed towards productive sectors such as agriculture, food systems, rural infrastructure and social protection programs, rather than being lost through corruption, inefficiency or rent-seeking activities. Institutional quality therefore acts as a critical governance mechanism that complements the objectives of SDG 17 by improving policy coordination, monitoring and implementation, thereby enabling foreign capital to generate sustainable food security outcomes. The consistency of the SGMM and POLS estimates further strengthens the credibility of the results and provides policymakers with confidence that improving institutional quality and fostering international partnerships are essential for maximizing the food security benefits of foreign capital inflows in Africa and other developing regions with similar socio-economic conditions.

The findings are consistent with previous empirical studies. For example, Cassimon *et al.* (2022) show that strong institutions enhance the effectiveness of foreign capital in promoting

Table 9. Role of the partnership of the goal on the nexus between foreign capital and sustainable food security in Africa (POLS)

Variables	(1) FS	(2) FS	(3) FS	(4) FS
DEBT	−2.266*			
	(1.261)			
GNI	0.0573	−0.211	−0.130*	−0.0795
	(0.0874)	(0.160)	(0.0722)	(0.0611)
c.DEBT#c.SGD17	0.158*			
	(0.0885)			
PG	0.101	−1.891**	−0.436	−0.278
	(0.763)	(0.760)	(0.744)	(0.747)
UB	−0.394***	−0.277***	−0.416***	−0.402***
	(0.0436)	(0.0462)	(0.0436)	(0.0435)
GCF	0.254***	0.332***	0.281***	0.320***
	(0.0791)	(0.0775)	(0.0785)	(0.0806)
TO	−0.153***	−0.122***	−0.152***	−0.138***
	(0.0202)	(0.0200)	(0.0202)	(0.0205)
GDP	−0.0937	−0.0885	−0.0744	−0.0909
	(0.0916)	(0.0903)	(0.0917)	(0.0916)
TECHNOLOGY	−0.00647	0.0190	0.00792	−0.00513
	(0.0179)	(0.0179)	(0.0184)	(0.0179)
SGD 17	0.0698**	0.152***	0.0889***	0.0868***
	(0.0336)	(0.0332)	(0.0324)	(0.0325)
FDI		0.00166		
		(0.00212)		
c.FDI#c.SGD17		0.217***		
		(0.0326)		
RM				
			0.000674	
c.RM#c.SGD17			(0.000752)	
			0.0288**	
FDI			(0.0125)	−0.189*
				(0.105)
c.FDI#c.SGD17				4.15e−05
				(0.0102)
Constant	111.1***	89.59***	108.6***	108.9***
	(3.356)	(4.323)	(3.281)	(3.262)
R-squared	0.150	0.177	0.149	0.146

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

food and nutrition security in Sub-Saharan Africa. Similarly, Subramaniam *et al.* (2022) identify institutional effectiveness as a key driver of food security outcomes. At the broader development level, Ali *et al.* (2022) demonstrate that institutional quality significantly influences the developmental gains derived from foreign capital inflows in developing countries. Likewise, Ogunniyi *et al.* (2020) find that good governance strengthens the positive contribution of remittances to food and nutrition security in Sub-Saharan Africa.

5. Conclusions and recommendations

This study examines the critical role of Partnerships for the Goals (SDG 17) in shaping the relationship between foreign capital and the sustainability of food security in Africa. Using a two-step System GMM estimation approach, the analysis reveals that the unconditional effect of foreign capital on food security is negative; however, this effect becomes positive when

moderated by strong partnership frameworks. This finding demonstrates that partnerships are not merely complementary but play a decisive role in redirecting foreign capital toward sustainable food systems, underscoring their practical and policy relevance.

By moving beyond the conventional focus on the direct effects of foreign capital, this study contributes to the literature by explicitly incorporating SDG 17 as a moderating mechanism. Unlike prior studies that examine FDI, remittances, external debt and portfolio investment in isolation, the findings show that the effectiveness of these flows critically depends on the quality of multi-stakeholder coordination. In doing so, the study provides new empirical evidence that institutional collaboration among governments, civil society, private actors and international organizations is central to transforming foreign capital into meaningful food security gains. Methodologically, the use of a two-step System GMM estimator strengthens the robustness of the results by addressing endogeneity and unobserved heterogeneity, thereby offering a more credible assessment of the dynamic foreign capital-food security nexus in Africa.

From a policy perspective, the results underscore the importance of fostering inclusive and well-coordinated partnerships to mitigate the adverse effects of poorly managed foreign capital. Well-functioning partnerships enhance the alignment of investments with agricultural development priorities, food access and long-term nutritional outcomes, particularly for vulnerable and marginalized populations. Achieving sustainable food security therefore requires an enabling environment that expands food production, strengthens supply chains and positions partnerships as effective linkages between producers and consumers. Policymakers should promote universal access schemes with clearly defined partnership roles and prioritize food-related legislation that balances efficiency with equity across the four pillars of food security availability, access, utilization and stability.

To amplify the food security benefits of foreign capital, policy actions should include incorporating agricultural protection clauses into debt agreements, channeling remittances toward rural agriculture through targeted financial instruments and leveraging public–private partnerships to scale up irrigation and storage infrastructure. Policymakers can further operationalize these insights by embedding partnership frameworks into foreign capital agreements. For instance, FDI and external borrowing arrangements can be designed to require collaboration with domestic agricultural agencies, farmer organizations and private agribusinesses, ensuring consistency with national food security strategies. Ongoing initiatives such as public–private partnerships in irrigation and storage, agricultural value-chain financing programs and donor-supported climate-smart agriculture projects demonstrate practical pathways through which partnerships can convert foreign capital inflows into tangible food security gains. Similarly, remittance-mobilization mechanisms, including diaspora bonds and matched funding schemes for rural agribusiness, can be strengthened through coordinated engagement among governments, financial institutions and development partners.

Despite these contributions, several limitations should be acknowledged. The analysis relies on aggregate, country-level data, which may conceal important heterogeneity at household, community or sectoral levels. In addition, the measurement of partnerships for the goals is constrained by available macro-level indicators, which may not fully capture the depth or quality of partnership arrangements. Although the System GMM approach mitigates key econometric challenges, the results remain sensitive to instrument selection and data availability, potentially limiting generalizability. Moreover, the study does not disaggregate foreign capital by sector, restricting insights into how partnerships may differentially influence agricultural versus non-agricultural investments.

Future research could extend this work in several directions. Micro-level or mixed-methods studies using household or firm-level data would provide deeper insights into the channels through which partnerships influence food security outcomes. Sector-specific analyses could further clarify where partnerships are most effective, while longitudinal case studies or comparative regional approaches could shed light on how different partnership

models evolve over time. Finally, future studies could examine interactions between SDG 17 and other institutional factors such as governance quality, accountability mechanisms or climate vulnerability or extend the analysis beyond Africa to assess the broader applicability of these findings.

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