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Article

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Immigrant-led foreign direct investment and the dynamics of cross-border capital allocation in Africa

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ABSTRACT

This study investigates the effect of immigration on Foreign Direct Investment in 21 African countries between 1990 and 2021. Using random effects, fixed effects, and heteroscedasticity-based identification methods in a dynamic panel model, we found that countries with higher levels of past Foreign Direct Investment inflows and a higher proportion of Foreign Direct Investment-bound immigrants are more appealing to new investors. These findings encourage a critical examination of immigration policy aimed at promptly admitting skilled and enterprising immigrants while remaining committed to ethical principles, promoting social equity, and safeguarding fundamental human rights.

IMPACT STATEMENT

Immigrant investors who lead the way serve as strong drivers for Foreign Direct Investment (FDI) inflows to African countries. Our examination of 21 nations in Africa reveals that successfully attracting immigrant investors is linked to higher overall FDI. To maximize effectiveness, policymakers should concentrate on four crucial strategies: designing immigration policies that favor entrepreneurs, creating comprehensive support systems for post-investment needs, establishing special economic zones with tax benefits, and simplifying administrative procedures for initial investors. These specific interventions generate a self-sustaining cycle of FDI attraction, utilizing immigrant networks to propel long-term economic growth while upholding high ethical principles.

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1. Introduction

The role of immigrant investors in driving foreign direct investment (FDI) has been a subject of debate. Several authors, including Wheeler and Mody (1992), Barrell and Pain (1999), Kinoshita and Campos (2003), Popescu (2013), and Agustina and Flath (2020) argue that immigrants can significantly impact host countries by enhancing the agglomeration effects of FDI. As explained by Barry et al. (2003), agglomeration occurs when firms mimic each other's location decisions due to reputation effects. This phenomenon leads firms to reduce search costs and improve efficiency by relocating to other firms, resulting in a concentration of investments in specific areas, a process described by Marshall (1920), Krugman and Venables (1995, 1996), Lin (2012), and Choi et al. (2020).

Critics argue that the benefits of immigrant-driven FDI may be overstated, particularly in Africa. This skepticism arises from several factors: varying agglomeration effects across industries and contexts (Ghemawat, 2001; Jones, 2017); historically low FDI inflows in many African nations (Rathnayake et al., 2023; Sodokin & Tozo, 2020); and investor preference for countries with established investor presence based on expected returns and resource availability (Asiedu, 2006; Barry et al., 2003; Procher, 2011). In sub-Saharan Africa, factors such as resources, markets, and institutional quality play crucial roles in FDI

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decisions (Mijiyawa, 2015). Moreover, policies aimed at improving governance and business climate can significantly boost FDI and agglomeration (Barry et al., 2003), suggesting that the impact of immigrant-driven FDI may be more nuanced and potentially less significant than initially assumed in the African context.

There is a scarcity of studies examining how immigrant investors generate clustering effects in African economies. Existing research often neglects to investigate the factors that encourage or impede these effects and fails to consider how immigration policies could enhance the appeal of foreign direct investment while maximizing economic advantages for local communities in Africa.

To address some of these gaps in the literature, we introduce the concept of First Immigrant-led FDI (FI-FDI) and examine its impact on agglomeration patterns in African countries using a panel dataset of 21 countries from 1990 to 2021. This investigation was conducted using three research questions: How does the agglomeration effect of past FDI influence incoming FDI flow in African countries? What is the impact of overall immigration rates on a country's FDI attractiveness in Africa and how does this impact differ when specifically considering FDI-bound immigrants? How does the interaction between past FDI and immigration rates, along with other factors such as natural resources, trade openness, access to electricity, and political stability, affect new FDI attraction in African developing countries? We use random effects, fixed effects, and heteroscedasticity-based identification strategies in a dynamic panel model to estimate their effects on subsequent FDI inflows. We explore the relationship between FI-FDI, agglomeration patterns in Africa, drawing on research by Brzozowski et al. (2017), Ottaviano et al. (2018), and Lin and Tao (2012). FI-FDI can catalyze agglomeration by leveraging local resources and facilitating knowledge sharing through country-of-origin networks, although the effects may vary across regions and sectors as network relationships evolve over time (Huynh, 2022; Jones, 2017; Melo et al., 2015; Provan & Kenis, 2007; Tan & Meyer, 2011; Zolin et al., 2016).

Agglomeration effects involve the geographic concentration of foreign firms, yielding economies of scale, shared labor, and supplier access, which attract more investment (Feenstra & Hanson, 1997; Huynh, 2022). Immigrant-led FI-FDI represents pioneering investments that create conditions for further investment flows, boosting regional competitiveness.

Our research yielded three findings that addressed our main hypotheses regarding the agglomeration effect of past FDI on incoming flows, the impact of overall immigration rates on a country's FDI attractiveness, and the interaction between past FDI and immigration rates affecting new FDI attraction in African countries. First, it reveals that countries with higher levels of past FDI inflows and a greater proportion of FDI-bound immigrants are more attractive to new investors. Second, this study introduces and empirically tests the concept of FI-FDI in an African context, highlighting the pioneering role of immigrant investors in catalyzing FDI flows. Finally, the research demonstrates the interaction between immigration rates and FDI inflows, suggesting that this relationship is contingent upon the engagement of immigrants in cross-border investment activities.

The remainder of this paper is organized as follows. Section 2 presents stylized facts and reviews literature on the determinants of FDI attractiveness. Section 3 describes the methodology, including the sampling, econometric models, variables, and data sources. Section 4 reports the empirical results of the econometric analysis. Section 5 discusses the results and presents implications for economic policy. Finally, Section 6 concludes the paper by summarizing its main contributions and limitations.

2. Stylize facts and literature review

2.1. Stylized facts

Figures 1 and 2 present stylized facts concerning the unequal distribution of FDI flows globally and within Africa. They highlight the low level of FDI in Africa compared to other regions of the world as well as the significant disparities in the distribution of FDI among African sub-regions. These facts raise questions about the determinants of the attractiveness of certain African countries to FDI, and the existence of agglomeration effects that concentrate FDI in a few locations.

Figure 1 provides a longitudinal analysis of the distribution of FDI on a global scale segmented by continent from 1970 to 2021. It shows significant growth in global FDI flows over the past few decades,

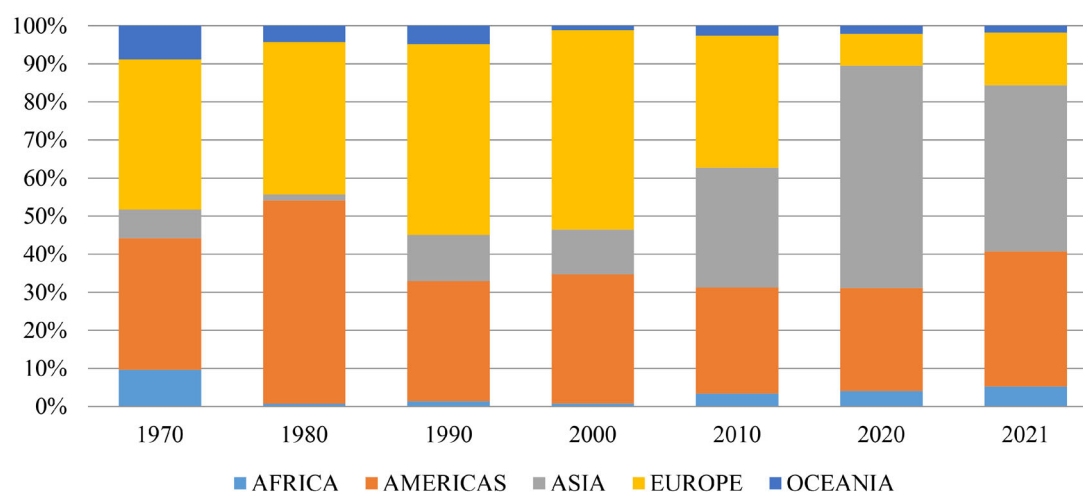


Figure 1. Percentage share in world FDI inflow by continent (1970-2021).

Source: Authors' compilation and graph (Data from UNCTADstat).

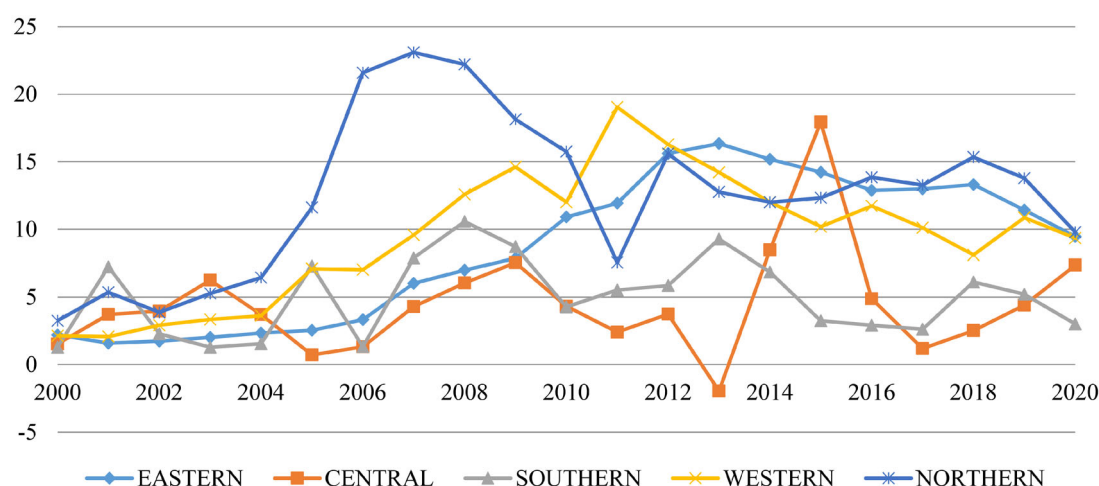


Figure 2. Annual evolution of net FDI inflows across African sub-regions (Billion, current US\$).

Source: Authors' compilation and graph (Data from UNCTADstat).

with estimates from UNCTAD indicating an increase from \$12.4 billion in 1970 to over \$3 trillion in the 2000s. However, FDI flows declined in 2021, dropping to less than \$2 trillion owing to the economic impact of the COVID-19 pandemic. The distribution of FDI across continents is profoundly unequal, with Africa consistently having a low average share of global FDI that has never exceeded 10% since the 1970s. By contrast, Europe, the Americas, and Asia recorded significantly higher shares, ranging from 8.38% to 58.41%. This disparity raises important questions regarding the factors influencing the attractiveness of different regions to FDI.

The adoption of economic liberalization measures by governments, such as the relaxation of protectionist policies, customs tariffs, and trade barriers, is one factor suggested by Figure 1 that can attract FDI. Additionally, the perception of a region plays a significant role in its attractiveness to FDI, with negative media coverage, particularly in Western media, potentially influencing investor perceptions unfavorably.

In Africa, FDI reached a historic high of \$83 billion by 2021, accounting for 5.24% of the global FDI flows. While this increase is a positive development, it still represents a relatively small share compared with other continents. African governments must redouble their efforts to improve their country's perceptions and formulate more effective policies to attract foreign investment, potentially benefiting from the agglomeration effects of FDI and to boost economic development.

Global FDI inflows have experienced significant fluctuations over the past five decades, surging from \$12.4 billion in 1970 to over \$3 trillion in the 2000s, before declining to below \$2 trillion in 2021 due to

the COVID-19 pandemic (UNCTAD estimations). Despite this overall growth, FDI distribution remains notably unequal across regions, with Africa's share never exceeding 10% in stark contrast to Europe, the Americas, and Asia (Dupasquier & Osakwe, 2006).

Several factors contribute to these regional disparities in FDI attractiveness, including traditional locational factors, such as market potential, labor costs, economic growth, government policies, and transport linkages (Dimitropoulou et al., 2013). However, the agglomeration effect, characterized by the presence of established companies in certain regions, has been identified as a significant determinant (Chen, 2009; He, 2002; Li et al., 2018). Agglomeration economies refer to positive externalities and economies of scale resulting from the spatial concentration of economic activities, which can mitigate the information costs and uncertainties faced by foreign investors in host economies (He, 2002; Li et al., 2018).

In Africa, FDI inflows have been on the rise, reaching a record \$83 billion by 2021. However, the distribution within the continent remains uneven, with previous studies pointing to political and macroeconomic instability, weak infrastructure, poor investment promotion strategies (Dupasquier & Osakwe, 2006), and negative perceptions reinforced by Western media (Michira, 2002; Wallace, 2005) as the key determinants.

These regional disparities serve as a catalyst for public policy reflections, with governments in less attractive regions potentially benefiting from studying the factors that make other areas more appealing to foreign investors and adjusting their policies accordingly (Dimitropoulou et al., 2013). Understanding the complex interplay of factors influencing the geography of FDI, including agglomeration economies, information costs, and regional disparities, is crucial for policymakers aiming to attract more foreign investment, and scholars seeking to further dissect the intricacies of global FDI flows.

Finally, stylized facts confirm that the distribution of FDI inflows within Africa varies according to sub-regions (Figure 2). This picture suggests that foreign investors are mainly drawn to the Northern, Western and Eastern regions. More granular investigation could reveal that only few countries in these regions are the center of gravity for FDI inflows, and this for peculiar reasons. According to Barry et al. (2003) and Choi et al. (2020), the possibility of agglomeration arises only when existing firms send signals to new investors regarding the reliability and attractiveness of a host country.

2.2. Literature review

In a contemporary globalized economy, transnational companies strategically optimize their operations by identifying optimal production locations, a process that interacts with government policies, and emerging challenges. This optimization entails leveraging country-specific production factors and deriving location-specific advantages driven by locational competitiveness (Buch et al., 2014; Tan & Meyer, 2011). The concept of 'economic agglomeration' or 'neighborhood effects of the localization of industry,' initially articulated by Marshall (1920), refers to production cost reductions that occur when economic activities are geographically concentrated (David & Rosenbloom, 1990; Ravix, 2014; Rosenthal & Strange, 2004). Government policies play a crucial role in shaping such dynamics. Khan and Hye (2014) demonstrate that liberalization policies can significantly increase FDI flows, while Hakim et al. (2022) reveal important differences in the effects of direct and indirect taxes on FDI across development levels. Sharmiladevi (2023) emphasized the importance of sector-specific policies, showing a strong interrelation between agricultural policies, FDI, and economic development in India. The impact of FDI extends to structural and sectoral developments. Emako et al. (2022) analyze FDI's role of FDI in economic diversification and industrial development, while Mwinuka and Mwangoka (2023) examine its contribution to the growth of the manufacturing sector in Tanzania. These studies highlight how FDI can influence the spatial distribution of economic activities, potentially reinforcing the agglomeration effects. Recent research has also addressed emerging challenges related to FDI, including technological and environmental factors. Jakada et al. (2023) studied the moderating effect of Information and Communication Technology (ICT) on FDI and environmental quality, while Zhang et al. (2024) explored digitalization's impact on FDI attraction. Environmental concerns are gaining importance, as shown by Shaari et al. (2022) in their study of corruption, environmental degradation, and FDI. Do et al. (2024) examined FDI's spatial effects of FDI on wage inequalities, highlighting its complex implications for income distribution and potential agglomeration patterns.

2.2.1. Influence of agglomeration economies on Foreign Direct Investment location choices

The extant literature presents diverse perspectives on the determinants of FDI location choices. Duranton and Puga (2000) elucidate the advantages of geographical clustering for firms in enhancing capital and labor productivity, while Ghemawat (2001) introduces skepticism through his psychic distance theory, cautioning against overvaluing foreign market appeal and emphasizing the challenges posed by diverse markets. Lin (2012) observes that investors often demonstrate reluctance to venture into new territories despite possessing the requisite internal capabilities.

Notwithstanding these divergent viewpoints, consensus has emerged regarding the profound influence of agglomeration economies on FDI, as acknowledged by Wheeler and Mody (1992), Barrell and Pain (1999), Head et al. (1995), and Cheng and Kwang (2000). This impact is particularly evident in the investment patterns of the U.S. and Japanese manufacturing sectors in the U.S. and Chinese markets. Dae-Young and Lee (2015) refine this concept by demonstrating agglomeration's positive correlation with vertical FDI and the inverse effect on horizontal FDI. Kinoshita and Campos (2003) and Popescu (2013) further corroborate the relevance of agglomeration economies in transitional and Romanian economies. In the African context, Asongu and Odhiambo (2020) empirically demonstrate that FDI, combined with advancements in information technology, significantly enhances economic growth in sub-Saharan Africa. Their research underscores the importance of infrastructure development, particularly ICT, in maximizing FDI benefits. Recent research has deepened our understanding of the relationship between FDI and economic growth across various national contexts, which could affect their attractiveness. Several studies have confirmed the positive impact of FDI on economic growth while highlighting country-specific nuances. Mwakabungu and Kauangal (2023) demonstrate a significant positive effect of FDI on growth in Tanzania, emphasizing the importance of policy reforms. Similar results were observed in Sri Lanka (Sultanuzzaman et al., 2018), Cambodia (Sothan, 2017), Namibia (Sunde, 2023), and Côte d'Ivoire (Iritié & Tiémélé, 2023).

However, some studies have revealed complex relationships that could influence FDI attractiveness. Abdi et al. (2024) identified the asymmetric effects of FDI on growth in Somalia depending on the level of trade openness. In Ghana, Ennin and Wiafe (2023) noted that while FDI in the mining sector contributes to growth, it can also create socioeconomic challenges requiring appropriate regulation. These findings underscore the importance of considering country-specific factors and sectoral differences when assessing the impact of FDI on economic growth and the potential to attract further investment.

Furthermore, Zhang (2021) elucidates the distinct impacts of South-South FDI, particularly from China to Africa, on host economies, revealing that Chinese investments in infrastructure exert a more significant effect on economic development than FDI from the Global North. The framework for understanding FDI in emerging markets, particularly in sub-Saharan Africa, has been expanded through various investigations of specific influencing factors. Asongu et al. (2021) emphasize the moderating role of trade dynamics on FDI, highlighting the importance of import activities in enhancing the positive effects of FDI on economic growth. Complementing this perspective, Yimer (2023) revisits the relationship between FDI and economic growth in Africa using a dynamic common correlated effects (dynamic-CEE) approach. This analysis offers a more robust understanding of the FDI-growth relationship from 1990 to 2016. These studies suggest the potential agglomeration effect of past FDI.

Although numerous studies have explored the influence of agglomeration economies on FDI location choices, a significant research gap persists. Specifically, there is a dearth of in-depth research on the unique impact of agglomeration economies on FDI within the African context, particularly in sub-Saharan Africa. This gap underscores the need for targeted research to fully elucidate the nuanced relationship between agglomeration economies and FDI in Africa's diverse economic landscape.

Hypothesis 1: The agglomeration effect of past FDI positively influences incoming FDI flows.

2.2.2. Returns on Investment, migrant networks, and country perceptions: Key drivers of Foreign Direct Investment

Scholarly discourse on FDI also centers on the impact of migrant networks and country perceptions. Leblang (2010) and Zhao et al. (2023) underscore the pivotal role of migrant networks in facilitating FDI by reducing transaction and information costs, whereas Coon and Neumann (2017) and Zardoub and

Sboui (2023) explore the role of remittances and cross-border information asymmetry. These studies have suggested a potential link between immigration and FDI.

There is a broad consensus on the significance of country perception in attracting FDI, with scholars such as Fayissa and Nsiah (2010) concurring that economic stability, political freedom, and institutional integrity are key determinants. Disdier and Mayer (2004) and Carril-Caccia et al. (2019) documented the influence of these factors, particularly political stability and governance. Additionally, there is consensus on the impact of Return on Investment (ROI) and other economic indicators as critical considerations for FDI, supported by empirical studies from Asiedu (2002) and Edwards (1990).

Recent studies have provided further insights into these dynamics. For instance, Boly et al. (2020) analyzed the impact of tax policy on FDI inflows in Africa and demonstrated that reductions in corporate income tax rates can significantly boost FDI. Additionally, the work of Wiredu et al. (2020) highlights the critical role of trade openness and economic stability in attracting FDI to West African countries, emphasizing that these factors are essential for creating a favorable investment climate.

Moreover, Yeboua (2021) emphasizes the critical role of institutional development in shaping the dynamic relationship between FDI and economic growth in Africa. This study shows that well-developed institutions are necessary to harness the full benefits of FDI. Similarly, Ofori et al. (2023) examined how Chinese outward FDI has contributed to reducing income inequality in Africa, highlighting the importance of governance in ensuring that FDI leads to inclusive growth.

The effectiveness of FDI is modulated by various contextual factors, which, in turn, influence its attractiveness. Asafo-Agyei and Kodongo, (2022) demonstrate that corruption limits the benefits of FDI on growth in sub-Saharan Africa, but a developed financial sector can mitigate this negative effect. Other crucial factors affecting the impact and attractiveness of FDI include trade regulations (Gizaw et al., 2023), political instability (Hoque et al., 2018), and exchange rate fluctuations (Arthur & Addai, 2022). Infrastructure plays a particularly significant role in FDI's effectiveness and attractiveness. In their study of ECOWAS countries, Ogundipe et al. (2020) found that infrastructural absorption capacity is essential for maximizing FDI benefits. These findings highlight the complex interplay between various factors that not only influence the impact of FDI on host economies, but also shape their appeal to potential investors.

While these studies have shed light on various aspects of FDI determinants, there remains a gap in the understanding of how the interaction between past FDI and immigration rates might influence new FDI inflows, particularly in the African context.

Hypothesis 2: The overall immigration rate has a positive effect on a country's attractiveness for FDI.

Hypothesis 3: The interaction between past FDI and immigration rates positively affects the attraction of new FDI in African developing countries.

3. Methods, data analysis and discussion

3.1. Sample selection

The empirical analysis encompasses a panel of 21 African nations covering the period from 1990 to 2021. Our focus is on middle-income countries (MICs) as benchmarks for other African states, grounded in the belief that a key objective of least-developed countries (LDCs) is to achieve a comparable developmental stage. Although LDCs can derive extensive insights from MICs beyond merely attracting foreign investors, FDI significantly contributes to the growth and development of many developing nations, including African MICs. Our rationale for selecting MICs as benchmarks rests on the hypothesis that the agglomeration effect evident in MICs may also be applicable to LDCs. However, due to data availability constraints, not all MICs were included in our study. We focused on countries that have been classified as MICs for a minimum duration of five years as of 2021, dating back to their ascension in 2016. A five-year span is deemed an appropriate timeframe for the impact of industrial policies to manifest in national development strategies, particularly in terms of initiatives aimed at attracting investors. Utilizing the World Bank Atlas method, we define lower middle-income economies (LMICs) as those with Gross National Income (GNI) per capita ranging from \$1,006 to \$3,955. Upper middle-income economies (UMICs), on the other hand, are characterized by a GNI per capita of between \$3,956 and \$12,235. The

LMICs in our sample, with accessible data, include Cabo Verde, Cameroon, the Republic of Congo, Cote d'Ivoire, Eswatini, Ghana, Kenya, Lesotho, Mauritania, Morocco, Nigeria, Tunisia, and Zambia. The UMICs considered in our research were Algeria, Egypt, Equatorial Guinea, Gabon, Mauritius, Namibia, and South Africa. Further details regarding these categorizations and selections are provided in [Appendix 2](#).

3.2. The econometric models, variables specification and data sources

3.2.1. The econometric models

To investigate agglomeration effects, our methodology aligns with Cheng and Kwan (2000) and Campos and Kinoshita (2003). We examined the interplay between current and historical FDI inflows by incorporating additional pertinent explanatory variables into our model. The function of prior FDI values is conceptualized as a process of partial inflow adjustment. Recognizing that FDI typically requires time to align with an equilibrium or desired level, we articulate the adjustment process as follows:

$$\Delta Y_{it} = a(Y_{it}^* - Y_{it-1}), a > 0 \quad (1)$$

where $\Delta Y_{it} = Y_{it} - Y_{it-1}$ and Y_{it}^* are the equilibrium or steady-state levels of FDI inflow. By rearranging (1), we obtain

$$Y_{it} = (1 - a)Y_{it-1} + aY_{it}^* \quad (2)$$

For stability, we must have $a < 1$. The steady-state level of FDI inflow is determined by X_{it} , a vector of the economic, policy, and institutional variables previously discussed, and is specified in the following subsections. Therefore, it can be expressed as

$$Y_{it}^* = bX_{it} + u_{it} \quad (3)$$

where u_{it} is the error term that includes country-specific and time-specific effects, $i = 1, \dots, n$ the number of countries ($n = 21$), and $t = 2, \dots, T$ the time span (1990-2021). All the explanatory variables included in the model are listed in the following table (see [Appendix 1](#)). The dependent variable is defined as the net inflow of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. In our analysis, it is reported as a percentage of GDP.

3.2.2. Data, descriptive statistics, rational, choice and variables specification

3.2.2.1. Rational, choice and variables specification and justification. The dependent variable in our analysis is net FDI inflow as a percentage of Gross Domestic Product (GDP), a widely used indicator in empirical studies examining the determinants of FDI inflows. This variable typically represents the net investment inflow required to obtain a significant management interest (typically 10% or more of voting stock) in an enterprise operating within an economy that differs from that of the investor. It is computed by summing the equity capital, reinvestment in earnings, other long-term capital, and short-term capital.

The FI-FDI is approximated by the preceding year's net FDI. We posit that FI-FDI, as a pioneering investment, sends a positive signal that triggers an agglomeration dynamic, thereby attracting subsequent FDI. First-mover immigrant investors, with their knowledge of both cultures and transnational social capital, reduce information asymmetries and transaction costs for the following investors. This demonstration effect, combined with network externalities, explains why FI-FDI generates further FDI flows, captured by the lagged variable.

The use of lagged FDI as a proxy for First Immigrant-led Foreign Direct Investment (FI-FDI) represents an innovative methodological approach in the study of international investment flows. This strategy is predicated on the premise that substantial initial investments by immigrants often serve as catalysts for subsequent FDI by mitigating information asymmetries and reducing transaction costs. Immigrants function as cultural and social intermediaries, establishing crucial initial market connections that facilitate future investment (Rauch & Trindade, 2002). The demonstration effect inherent to this phenomenon further reinforces the appropriateness of this proxy choice. When pioneering immigrant investors initiate investments, they generate positive signals to other potential investors regarding market viability. This signaling mechanism plays a pivotal role in fostering agglomeration economies, wherein subsequent investments tend to follow

the trajectory established by the initial forays (Procher, 2011). Moreover, immigrant entrepreneurs occupy a unique position in their ability to bridge information gaps, leveraging their intimate knowledge of both origin and host countries. This distinctive advantage renders initial immigrant-led investments particularly potent in attracting further FDI (Dheer, 2018)). Empirical evidence from extant literature supports this methodological approach. For instance, Brzozowski et al. (2017) demonstrate that transnational ties and network size significantly influence entrepreneurial engagement, a finding that aligns closely with the concept of FI-FDI as a generator of subsequent investment flows. However, this approach is not without its limitations. A primary challenge lies in the empirical isolation of FI-FDI, given that FDI data are typically aggregated. Consequently, while lagged FDI serves as a useful proxy, it may not fully capture the nuanced dynamics of pioneering immigrant investments (Sodokin & Tozo, 2020). The temporal dynamics of FI-FDI and subsequent FDI inflows may vary across diverse contexts and periods, potentially affecting the robustness and generalizability of the results. A more granular and temporally specific dataset is ideal for conducting a more detailed analysis. Furthermore, this approximation may not adequately account for sectoral diversification in FI-FDI. Different economic sectors may exhibit varying strengths of agglomeration effects, which could influence the observed relationship between lagged FDI and subsequent inflows (Wheeler & Mody, 1992). Although the use of lagged FDI as a proxy for FI-FDI is justified by its role in demonstrating and facilitating subsequent investments, we acknowledge its limitations. Issues related to data aggregation, temporal dynamics, and sectoral differences are critical factors that future research must address to further refine and validate this proxy (Ottaviano et al., 2018; Zolin et al., 2016).

The immigration rate was estimated using the annual ratio, expressed as a percentage of the number of individuals entering a host country relative to the country's population. The relationship between immigration and FI-FDI relies on the key role of migrant networks. The literature shows that diasporas facilitate trade and investment flows by acting as informational intermediaries and enhancing trust (Javorcik et al., 2011; Rauch & Trindade, 2002). We extend this argument to FI-FDI: immigrants, as bicultural agents, are particularly well positioned to identify pioneering investment opportunities and realize them through their networks in both the host and origin countries. Immigration thus increases the likelihood of FI-FDI by expanding the pool of potential pioneer investors.

In this context, we introduced the interaction between migration data and lagged FDI inflows to capture the potential role of migrant networks in facilitating FDI. This approach builds on a growing body of literature that highlights the importance of transnational ties and diaspora in reducing information and transaction costs, thereby promoting FDI (Burchardi et al., 2019; Javorcik et al., 2011; Kugler et al., 2018). Immigrants, particularly those engaged in entrepreneurial activities or transnational investments, can serve as a bridge between their country of origin and host country. They possess unique knowledge of both environments, enabling them to identify investment opportunities, navigate institutional and cultural differences, and facilitate capital flow (Gillespie et al., 1999; Riddle et al., 2010). By interacting lagged FDI inflows with immigration rates, we seek to capture the specific effect of migrant networks on a country's attractiveness to subsequent FDI. If immigrants play a key role in establishing initial FDI (FI-FDI), we expect the interaction to be positive and significant, indicating that the presence of a larger immigrant community strengthens the relationship between past and current FDI. This approach is consistent with previous studies that used similar interaction terms to examine the role of migrant networks in FDI flows. For example, Javorcik et al. (2011) examined the presence of migrants in the United States with lagged FDI stocks and found that migrants stimulate FDI flows, particularly in sectors where information is more difficult to obtain. Similarly, Kugler et al. (2018) find that the interaction between migration stocks and lagged financial flows is an important determinant of cross-border financial flows.

The signal variable is represented by the existing FDI stock. FDI stocks (or positions) denote the total value of the direct investment at a specific point in time. This study focuses primarily on FDI stocks measured at the end of each year.

Return on FDI (ROI) is captured through the natural logarithm of the reciprocal of the real Gross National Income per capita (GNIPC).

$$ROI = \ln \left(\frac{1}{GNIPC} \right) \text{ in } \%$$

The GNI per capita is the gross national income divided by the midyear population. GNI is the sum of the value added by all resident producers plus any product tax (less subsidies) not included in the valuation of output, plus net receipts of primary income (compensation of employees and property income) from abroad.

The approximation of ROI using the reciprocal of real GNIPC is based on the premise that lower income levels are associated with higher potential returns on investment because of factors such as lower labor costs and untapped market potential (Asiedu, 2002; Busse & Hefeker, 2007). Logarithmic transformation is used to account for diminishing marginal returns and ensure a more symmetric distribution (Bénassy-Quéré et al., 2007). While alternative ROI proxies have been used in the literature, such as the inverse of GDP per capita (Jaspersen et al., 2000) or the growth rate of GDP (Choe, 2003), we opt for the GNIPC because it better captures the income level of the host country's population, which is more directly relevant for market-seeking FDI.

Global perception was measured by total remittances per capita. Remittances included personal transfers and employee compensation. These are usually understood as financial or in-kind transfers made by migrants to friends and relatives in the communities of origin. Following the assumptions of Coon and Neumann (2017) and Zardoub and Sboui (2023), we calculate the global perception of a country as follows:

$$GPER = \ln \left(\frac{R_T}{P} \right)$$

Here, R_T is the sum of the remittance inflows (remittances received) and outflows (remittances paid) into and from the selected countries weighted by the inverse of P (total population) to capture the real scale of the remittances when the domestic market size of each selected country is accounted for. All other variables (controls), including trade openness, oil and natural resources, labor force, infrastructure, growth rate, political stability, price volatility, and their expected signs of FDI inflow, are listed in the Appendix.

In line with previous research (Chakrabarti, 2001; Schneider & Frey, 1985; Tsai, 1994). We argue that the absolute labor force is particularly relevant for market- and efficiency-seeking FDI in developing countries, where labor-intensive industries often play a significant role (Asiedu, 2006; Noorbakhsh et al., 2001).

2.2.2.2. Data and descriptive statistics. The data used in this empirical analysis covers a panel of 21 developing African countries from 1990 to 2021 (Appendix 2), compiled primarily from the World Development Indicators (WDI), World Governance Indicators (WGI), and the authors' calculations based on the original data from these sources (Appendix 1). The dataset contains 672 country-year observations and includes several key variables, as defined in Section 3.3. These variables, along with their expected signs based on the literature cited in section 2, are: the dependent variable of net FDI inflows as a percentage of GDP; lagged FDI inflows to approximate FI-FDI (positive); immigration rates (positive); FDI stock or signal to investors (positive); expected return on investment (ROI) (positive); global perception of countries based on remittances per capita (positive); trade openness, measured as the sum of a country's export and import shares in GDP (positive); oil rents as a percentage of GDP (positive); total natural resource rents as a percentage of GDP (positive); annual GDP growth (positive); labor force aged 15 and above per 100 people of the total population (positive); political stability and absence of violence/terrorism (positive); access to electricity as a percentage of the total population (positive); and price volatility, approximated by the distance from the previous inflation rate on an annual basis (negative). Appendix 1 summarizes detailed descriptions, expected signs, relevant literature, and data sources for all variables.

The descriptive statistics presented in Table 1 demonstrate notable heterogeneity among African nations regarding their attractiveness of FDI. FDI inflow, our dependent variable, shows an average of 4.3% of GDP with a standard deviation of 9.8 percentage points. This wide variance indicates that certain countries are more adept at attracting FDI than others.

Our analysis also sheds light on disparities in factors such as natural resource endowments, electricity access, and immigration rates within the sampled countries, further contributing to diverse FDI appeals.

In contrast, the anticipated return on FDI appears relatively consistent, aligning with the theoretical expectations of convergence, as posited by Miao et al. (2020). This consistency in the expected returns can be perceived as a positive indicator of FDI attraction.

African countries exhibit a notable level of trade openness, averaging 78% of the GDP (Denwi et al., 2022). This significant degree of openness is a strong and advantageous factor for attracting FDI. However, general investor perceptions and moderate access to electricity in these countries may impede their appeal. Addressing these issues through strategic policy measures could enhance the FDI market competitiveness of African economies.

4. Methodology

4.1. The baseline dynamic panel analysis

Based on equations (2) and (3), the regression model to estimate can be written as

$$Y_{it} = \delta Y_{it-1} + X_{it}\beta + \varepsilon_{it}; \varepsilon_{it} = \eta_i + \lambda_t + u_{it} \quad (4)$$

Here $\delta = 1 - a$, $\beta = ab$ and $\varepsilon_{it} = au_{it}$. Country-specific attributes are contained in η_i and λ_t represents a vector of time-specific attributes. If there is an FI-FDI effect or positive feedback effect, then δ should be positive. To estimate δ we first applied ordinary least squares (OLS), random effects (RE), and fixed effects (FE) panel regression methods.

4.2. The robust dynamic panel analysis

In this section, we use Lewbel's (2012) model to demonstrate how heteroscedasticity can be used to construct instruments in the absence of external instruments. Lewbel (2012) assumes a sample of observations of endogenous variables Y_1 and Y_2 , and a vector of exogenous covariates X as follows:

$$Y_{1it} = X'_{it}\beta + Y_{2it}\gamma + u_{1it} \quad (5)$$

$$Y_{2it} = X'_{it}\alpha + u_{2it} \quad (6)$$

where the errors u_1 and u_2 may be correlated. The aim was to estimate γ and vector β in the model. Generally, standard IVs estimation depends on having an element of X that appears in equation (5) but not in equation (6), and uses that excludes the regressor as an instrument for Y_2 . However, in the case where no element of X is excluded from the Y_1 equation, or because we are not sure that any element of β is zero, Lewbel (2012) provides identification and a corresponding simple linear two-stage least-squares estimator for β and γ , where no element of X can be used as an excluded instrument for Y_2 . Lewbel (2012) recommended constructing valid instruments for Y_2 by exploiting the information contained in the heteroscedasticity of u_2 .

To do so, we recall the following standard regression model assumptions. First, we assume β and γ fixed constants; that is, if Y_2 is a treatment measure, then the treatment effects are assumed to be

Table 1. Descriptive statistics of regression variables.

Variable	Observation	Mean	Std. Dev	Minimum	Maximum
<i>Outcome variable</i>					
FDI	672	4.283	9.758	−11.199	161.824
<i>Explanatory variables</i>					
FDI (-1)	645	4.117	9.603	−11.199	161.824
Log (FDI Stock)	638	3.581	0.832	0.580	5.254
IMM_RATE	672	3.941	4.873	0.184	21.813
ROI	672	0.129	0.012	0.105	0.170
Perception	672	3.439	1.733	0.000	6.999
Openness	628	78.311	30.469	20.723	175.798
Oil	644	6.896	12.592	0.000	63.820
Labor Force	672	36.074	5.497	24.855	48.171
Resources	645	11.647	13.961	0.001	74.403
Electricity	651	56.767	29.984	0.010	100.000
Political Stability	462	1.647	0.298	0.630	2.000
Growth	672	4.228	8.098	−14.895	149.973
Price Volatility	651	−0.305	8.942	−128.711	68.064

homogeneous. Next, we assume that $E(Xu_1) \equiv E(Xu_2) = 0$ and $E(XX')$ are nonsingular. It follows that the key additional assumptions required to apply Lewbel's (2012) estimator are that $\text{Cov}(Z, u_1u_2) = 0$ and $\text{Cov}(Z, u_2^2) \neq 0$, where either $Z = X$ or Z is a subset of the elements of X . Lewbel's (2012) estimator can be summarized in the following two steps. First, coefficient $\hat{\alpha}$ is estimated by ordinary least-squares linear regression of Y_2 on X to obtain the estimated residuals $\hat{u}_2 = Y_2 - X\hat{\alpha}$. Second, we use Z as some of the elements of X (not including the constant term), and then estimate β and γ using an ordinary linear two-stage least-squares regression of Y_1 on X and Y_2 , using X and $(Z - \bar{Z})\hat{u}_2$ as instruments, where \bar{Z} is the sample mean of Z . Finally, as proposed by Baum and Schaffer (2012) and Baum and Lewbel (2019), we implement the estimator, where the regression model can be formulated as

$$Y_{it} = \beta_k X_k (X_k \in X) + \gamma_p [Z = g(X_p), X_p \in X] + u_{it} \quad (7)$$

where X_k is the set of included IVs, namely log (FDI stock), price volatility, access to electricity, resource rent, labor force, openness to trade, and oil rent, and X_p is the set of excluded IVs, namely ROI, GDP growth rate, political stability, and global perception. Subset Z includes FDI_1 and immigration rate, which are endogenous variables.

The Breusch-Pagan test for heteroscedasticity (Table 2) identified heteroscedasticity across all initial stage regressions, necessitating the employment of a two-stage estimator. This methodology affirmed the validity of the instruments utilized, as evidenced by the Hansen-J and C-statistics results. The J-statistic indicates that over-identifying restrictions are not invalidated, whereas the C-statistic corroborates the exogeneity of the instruments. Moreover, the Kleibergen-Paap rk Wald F statistic predominantly exceeded Stock and Yogo's critical thresholds, attesting to the robustness and authenticity of the instruments, and ensuring compliance with the orthogonality condition (Table 3).

The instrument's validity was consistently upheld in the diagnostic evaluations of the four distinct models. Specifically, in Model (1), the instruments were verified as relevant and robust, the model was found not to be under-identified, and the over-identifying restrictions were deemed valid with the suspect instruments being exogenous. Models (2) and (3) yield analogous outcomes, reinforcing the instruments' relevance, strength, and exogeneity. Model (4) presented comparable findings, collectively affirming the instrument's validity across all examined models.

The heteroscedasticity-based identification method is particularly well-suited to the dynamic panel data used in this study, which tracks Foreign Direct Investment (FDI) flows to African countries over time. This approach offers significant advantages in addressing potential biases in dynamic models, especially concerning the endogeneity of lagged FDI values, a common issue in such studies. By

Table 2. Test for the first-stage heteroscedasticity.

Models	Endogenous variables	Instruments variables	Test for the first-stage heteroskedasticity	Literature
Model (1) OVERALL (IV/GMM) (Table 5)	IMMRATE FDI_1	ROI Growth Politic GPER	Chi2 = 95.42 P-value = 0.0000	Saini and Singhania (2018); Khalid and Marasco (2019); Vadlamannati (2012) (Nair-Reichert & Weinhold, 2001); Abbas et al. (2015); Mishra and Jena (2019). (Asiedu, 2002; Edwards, 1990; Jaspersen et al., 2000; Mijiyawa, 2015)
Model (2) OVERALL (IV/GMM) (Table 5)	FDI_1 × IMMRATE_1 IMMRATE FDI_1	ROI Growth Politic GPER	Chi2 = 59.91 P-value = 0.0000	Ibidem ¹
Model (3) HMICs (IV/GMM) (Table 5)	FDI_1 × IMMRATE_1 IMMRATE FDI_1	ROI Growth Politic GPER	Chi2 = 59.91 P-value = 0.0000	Ibidem
Model (4) LMICs (IV/GMM) (Table 5)	FDI_1 × IMMRATE_1 IMMRATE FDI_1	ROI Growth Politic GPER	Chi2 = 59.91 P-value = 0.0000	Ibidem

Table 3. Instruments validity tests.

Models	Kleibergen-Paap rk LM statistic	Kleibergen-Paap rk Wald F statistic	Hansen J statistic	Sargan statistic
Model (1) OVERALL (IV/GMM) (Table 5)	Chi2 = 39.580 P-val = 0.0015	43.549	Chi2 = 21.019 P-val = 0.1778	Chi2 = 7.542 P-val = 0.1099
Model (2) OVERALL (IV/GMM) (Table 5)	Chi2 = 83.585 P-val = 0.0000	39.634	Chi2 = 26.684 P-val = 0.2235	Chi2 = 5.021 P-val = 0.2851
Model (3) HMICs (IV/GMM) (Table 5)	Chi2 = 47.823 P-val = 0.0018	21.151	Chi2 = 25.905 P-val = 0.2558	Chi2 = 2.743 P-val = 0.6017
Model (4) LMICs (IV/GMM) (Table 5)	Chi2 = 59.537 P-val = 0.0000	20.868	Chi2 = 29.321 P-val = 0.1359	Chi2 = 7.930 P-val = 0.0942

constructing valid instruments from the inherent variability of data, this method eliminates the need for external instruments, which are often difficult to justify or obtain (Baum & Schaffer, 2012; Klein & Vella, 2010; Lewbel, 2012; Prono, 2014).

Moreover, compared to the simple GMM, the IV/GMM approach employed here offers a substantial advantage in enhancing the robustness of the estimates. While a simple GMM can effectively address endogeneity, it may suffer from weak identification if the instruments are not appropriate. By contrast, IV/GMM, particularly when combined with heteroscedasticity-based identification, utilizes both the internal structure of the data and additional moment conditions to strengthen the identification process and produce more reliable estimates (Baum & Lewbel, 2019).

The choice is further supported by statistical validation. The Breusch-Pagan test confirms the presence of heteroscedasticity, justifying the use of this method, while the Hansen-J and C-statistics affirm the robustness and validity of the instruments employed (Baum & Lewbel, 2019). This method also exploits heteroscedasticity to improve the efficiency of estimators, which is crucial in panel data models where error variance can reduce the precision of estimators.

Empirical robustness checks, including comparisons with Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE) models, demonstrate that while these traditional methods provide useful insights, the heteroscedasticity-based IV/GMM approach yields more robust results (Baum & Lewbel, 2019; Klein & Vella, 2010; Prono, 2014; Rigobon, 2003).

5. Results, discussion and implications for public policy

5.1. Results

The results using the three estimators (OLS, RE, and FE) show a positive and highly significant δ , indicating possible FI-LFDI (Table 4). However, the OLS results were dropped because the dynamic panel data models estimated by OLS were biased and inconsistent by construction. Since the dependent variable Y_{it} is a function of the unobserved time-invariant country-specific effects η_{it} , it immediately follows that the lagged dependent variable Y_{it-1} is also a function of η_{it} , hence it is correlated with the error term u_{it} (Arellano, 2016). To address this problem, we used an FE model to control for the effects of the unmeasured variables. This choice was made following the Hausman (Hausman & Taylor, 1981) test, which rejects H_0 . The Hausman test tests whether individual characteristics are correlated with regressors. The null hypothesis (H_0) is that it is not (RE). The test results are presented in Table 4. Overall, the estimate of δ from the FE regression is positive and significant, along with the FDI stock, ROI, openness, natural resources, and electricity.

However, immigration rate, which is our next key variable, displays a negative coefficient across different panels. This finding refutes Hypothesis 2 in relation to the role of migrant networks in decreasing transaction and information costs (Kugler et al., 2018; Leblang, 2010), as well as Tomohara (2017, 2021) and Burchardi et al. (2019), who focus on the influence of diasporas and transnational links on foreign direct investment. To avoid biased inferences, we checked the validity of the preliminary results by using a more robust method.

The fixed-effects (FE) estimators utilized in dynamic panel models may exhibit bias and inconsistencies. This issue arises because of potential measurement challenges, including heteroscedasticity and endogeneity. Generally, linear regression models applying endogenous regressors are resolved by

Table 4. Baseline dynamic panel regression results.

VARIABLES	(2) RE	(3) FE	(4) FE-HMICS	(5) FE-LMICS
FDI_1	0.573*** (0.0422)	0.403*** (0.0452)	0.415*** (0.0799)	0.323*** (0.0567)
IMM_RATE	0.0488 (0.0511)	−0.480*** (0.123)	−0.276*** (0.0923)	−1.022** (0.421)
Log (FDI stock)	0.271 (0.210)	1.158*** (0.432)	0.345 (0.326)	5.244*** (1.342)
ROI	0.595* (0.338)	3.471*** (1.012)	−1.467 (1.625)	6.580*** (1.399)
Perception	−0.0780 (0.145)	0.113 (0.209)	−0.0373 (0.193)	0.149 (0.374)
Political stability	−0.172 (0.827)	0.708 (1.114)	−1.333 (1.688)	1.453 (1.513)
GDP growth rate	−0.0268 (0.0487)	0.0514 (0.0488)	−0.0481 (0.0531)	0.115* (0.0693)
Price volatility	0.0553 (0.0399)	0.0472 (0.0375)	0.0858 (0.0761)	0.0507 (0.0439)
Electricity	0.0135 (0.0109)	0.0602** (0.0253)	−0.0152 (0.0364)	0.0183 (0.0406)
Resources rent	0.0906** (0.0367)	0.110** (0.0489)	0.0129 (0.127)	0.123** (0.0576)
Labor force	−0.0108 (0.0400)	0.123 (0.139)	−0.131 (0.246)	0.328* (0.196)
Openness to trade	0.0286*** (0.00866)	0.0297* (0.0151)	0.0536** (0.0234)	0.0157 (0.0206)
Oil rent	−0.0627 (0.0388)	−0.313*** (0.0655)	−0.152 (0.134)	−0.383*** (0.0876)
Constant	−9.829* (5.648)	−56.14*** (16.34)	24.02 (26.82)	−118.3*** (23.61)
Hausman Chi ² (15)	75.72			
Prob > Chi ²	0.000			
Observations	441	441	144	297
R-squared		0.311	0.324	0.363
Number of id	21	21	7	14

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

employing external means, such as exogenous instruments, or by presuming a parametric distribution. However, some research methodologies, exemplified by studies by Rigobon (2003), Klein and Vella (2010), Lewbel (2012), and Prono (2014), manage to identify these without relying on external instruments, instead using heteroskedasticity as a key tool.

The coefficient for lagged FDI (FDI_1) is consistently positive and significant across all panels (Table 5). This positive effect supports hypothesis 1, indicating that the agglomeration effects of past FDI positively influence current FDI inflows. This finding is consistent with those of Barry et al. (2003) and Procher (2011), who noted that the presence of prior investments attracts further investments by reducing search costs and improving efficiency (Rathnayake et al., 2023; Sodokin & Tozo, 2020).

The negative coefficient of the immigration rate (IMM_RATE) across different panels contradicts Hypothesis 2 and diverges from previous studies that emphasize the role of migrant networks in reducing transaction and information costs (Kugler et al., 2018; Leblang, 2010). This result also contrasts with research that highlights the positive influence of diasporas and transnational links on FDI (Burchardi et al., 2019; Tomohara, 2017, 2021).

To ensure the robustness of these unexpected results, we employ sophisticated econometric techniques. The fixed effects (FE) estimators in dynamic panel models can be biased and inconsistent owing to heteroscedasticity and endogeneity. While traditional approaches often rely on external instruments or parametric assumptions, we followed methodologies that leverage heteroscedasticity for identification, as demonstrated by Rigobon (2003), Klein and Vella (2010), Lewbel (2012), and Prono (2014).

Our baseline regression analysis, presented in Table 5, consistently shows a positive and significant effect of one-year lagged FDI (FDI_1) across all the panels. This finding aligns with the concept of FI-FDI and underscores the importance of initial investment in attracting subsequent FDI. This supports the argument that strategic policy interventions attract and retain pioneer investors, as suggested by Blomström et al. (2003) and Lall (1998). These interventions may include temporary incentives, special

Table 5. Robust panel regression results.

VARIABLES	(1) OVERALL (IV/GMM)	(2) OVERALL (IV/GMM)	(3) HMICs (IV/GMM)	(4) LMICs (IV/GMM)
FDI_1	0.637*** (0.0834)	0.612*** (0.0646)	0.494*** (0.104)	0.558*** (0.0789)
IMM_RATE	−0.00356 (0.0319)	−0.0983** (0.0471)	−0.00506 (0.0623)	−0.0840 (0.0641)
FDI_1 × IMM_RATE		0.0274** (0.0114)	0.0311** (0.0130)	0.0155 (0.0187)
Log (FDI stock)	0.00498 (0.107)	0.0249 (0.106)	−0.0948 (0.151)	0.0723 (0.268)
Price volatility	0.0223 (0.0250)	0.0155 (0.0238)	0.0312 (0.0462)	0.00607 (0.0255)
Electricity	−0.00158 (0.00511)	−0.00166 (0.00485)	0.00579 (0.0121)	0.00991 (0.00826)
Resources rent	0.0994*** (0.0344)	0.0987*** (0.0334)	0.102* (0.0574)	0.118*** (0.0423)
Labor force	0.0265 (0.0302)	0.0207 (0.0290)	−0.0722 (0.0484)	0.0323 (0.0354)
Openness to trade	0.0136*** (0.00477)	0.0142*** (0.00451)	0.0327*** (0.00869)	0.0158*** (0.00560)
Oil rent	−0.0437 (0.0391)	−0.0562 (0.0366)	−0.148** (0.0604)	−0.0808* (0.0452)
Constant	−1.416 (1.375)	−0.873 (1.307)	1.048 (1.694)	−2.227 (1.845)
Observations	441	441	144	297
R-squared	0.450	0.453	0.374	0.468

Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

economic zones, and streamlined regulatory processes, which are crucial for maintaining investor confidence and preventing investment withdrawal (Snyman & Saayman, 2009). Additionally, this result aligns with the findings of earlier studies that highlight the importance of strategic planning and existing FDI as critical factors in attracting further investments. For instance, Alfaro and Chen (2014) and Crescenzi et al. (2021) demonstrate that agglomeration of multinational firms tends to generate positive spillovers that attract additional FDI. This reinforces the necessity for host countries to offer targeted incentives to pioneer investors, a strategy supported by Xu et al. (2021) and Emudainohwo et al. (2018), who find that fiscal and financial benefits, special economic zones, and streamlined administrative processes play vital roles in encouraging early stage foreign investors.

Interestingly, our results show a negative coefficient for IMM_RATE, reinforcing the baseline findings. This suggests that a general increase in immigration rates might reduce a country's FDI attractiveness, a finding that echoes Tomohara's (2017) observation of a potential initial negative effect of immigration on inward FDI. However, our analysis of the interaction term FDI_1 × IMM_RATE (Hypothesis 3) reveals a positive and significant coefficient, indicating that countries with a higher proportion of immigrants engaged in FDI are more likely to attract new foreign investors. This finding aligns with the research by Tomohara (2017) and Cuadros et al. (2019), who advocate selective immigration policies. Maintaining the commitment of these initial investors is critical for enhancing FDI stocks within the host country. A lack of post-investment support from the host government can lead to investor dissatisfaction, potentially reversing initial positive outcomes. Specifically, neglect, failure to fulfill commitments, and a lack of ongoing engagement can erode investor confidence, leading to a reduction in financial commitments or even withdrawal from the host country. Our findings are consistent with those of Anyanwu (2012) and Asiedu (2006), who argue that post-investment support, including political stability and accessible infrastructure, is crucial for retaining investor confidence and preventing the reversal of initial positive outcomes.

The results of our study contribute to the growing literature on the complex relationship between immigration and FDI. They suggest that, while general immigration might not always promote FDI, targeted immigration policies focusing on skilled or entrepreneurial immigrants can enhance a country's attractiveness for foreign investment. This perspective is consistent with recent studies that emphasize the importance of human capital in attracting FDI attraction (Kinda, 2010; Noorbakhsh et al., 2001).

5.2. Discussion of the results

This study marks a pivotal addition to the expanding corpus of research focused on understanding the complexities of FDI in developing economies, particularly within the African context. Referring to studies by Bahati and Mbithi (2022), Giap et al. (2020), Maryam and Mittal (2020), and Shen and Puig (2018), we present robust empirical evidence of an agglomeration effect linked with FI-FDI in Africa, as noted by Zallé and Ouédraogo (2021) and Utesch-Xiong and Kambhampati (2022). Our findings corroborate the agglomeration hypothesis articulated in earlier studies, which posits that foreign investors typically gravitate towards nations with a pronounced history of FDI inflows (Chen, 2009; Kinoshita & Campos, 2003; Procher, 2011; Tan & Meyer, 2011).

Contradicting prior research by Gheasi and Nijkamp (2017) and Bang and MacDermott (2019), our analysis reveals that an overall surge in immigration rate adversely affects a country's FDI allure. This result echoes Tomohara's (2017, 2021) finding that immigrants may initially dampen incoming FDI, albeit temporarily. Our research broadens these insights by demonstrating the beneficial impact of the interplay between FI-FDI and immigration rates (Elakkad & Hussein, 2022; Shin, 2022). Thus, immigration fosters additional FDI, primarily when immigrants predominantly engage in cross-border investment ventures (Burchardi et al., 2019).

Additionally, our study reaffirms the positive influence of various factors on a country's FDI appeal, such as the abundance of natural resources, trade openness, electricity accessibility, and political stability, consistent with the findings of Anyanwu (2012), Asiedu (2006), and Seyoum et al. (2015). These elements concur with literature that underscores the importance of financial development and regulatory frameworks (Adams & Opoku, 2015; Nguyen & Lee, 2021). However, diverging from previous assertions by Tsai (1994) and Jensen (2006), we ascertain that the return on investment exerts a favorable impact, aligning with insights from Le and Sakchutchawan (2018), Munemo (2018), and Donou-Adonsou and Lim (2018).

Our results suggest an agglomeration effect linked to the approximated FI-FDI; countries with more lagged FDI, potentially indicating more past FI-FDI, attract more current FDI. This finding echoes the literature on FDI agglomeration (Alfaro & Chen, 2014; Crescenzi et al., 2021) and extends it by highlighting the role of pioneer immigrant networks in this process.

5.3. Implications for economic policy

The results of this study have significant implications for policy development aimed at attracting FDI to Africa. First, it underscores the agglomeration effect associated with FI-FDI, highlighting the vital role of incentives for pioneer investors (Kumari & Sharma, 2017; Xu et al., 2021). To attract and retain early investors, African governments should implement temporary fiscal and financial benefits, establish special economic zones with robust infrastructure, and streamline their administrative processes (Emudainohwo et al., 2018). Second, this study reveals a positive correlation between FI-FDI and immigration rates (Miao et al., 2020; Seyoum et al., 2015), suggesting that immigration predominantly boosts FDI when a significant proportion of immigrants participate in cross-border investment projects. Thus, migration policies should not only ease entry for nationals from investing countries, but also support and encourage immigrants in their entrepreneurial and investment endeavors post-arrival (Adams, 2009; Olatunji & Shahid, 2015). Third, the findings demonstrate the positive impact of anticipated returns on FDI and the general perception of a country, albeit with a delayed effect (Ho & Gan, 2021). This supports the implementation of territorial marketing strategies to improve the image of African nations and to attract more FDI. Fourth, research indicates a positive interplay between the FI-FDI effect and factors such as political stability and natural resource richness (Jaiblai & Shenai, 2019; Munemo, 2018), suggesting that enhancing these dynamics can further attract FDI. This study offers crucial insights for African policymakers on strategies to optimize FDI attraction, emphasizing support for pioneers, fostering immigrant entrepreneurship, enhancing country image, and capitalizing on favorable interactions (Ho & Gan, 2021; Jaiblai & Shenai, 2019; Miao et al., 2020; Xu et al., 2021).

This study supports selective immigration policies; however, it is imperative that African countries not dismiss immigrants who may not immediately participate in Foreign Direct Investment (FDI). Tomohara (2017) suggests that all immigrants are likely to make positive contributions over time. Policymakers

should streamline immigration processes for expatriates from nations likely to invest heavily in Africa, while maintaining ethical standards and respecting social equity and human rights (Atanguegnima et al., 2024; Gelan et al., 2023). This strategy involves evaluating each country's historical investment patterns in Africa. For example, a report by UNCTAD indicated that before the COVID pandemic, substantial FDI in Africa originated in China, the US, France, the UAE, and the UK. Specifically, China contributed 16% of Africa's FDI from 2014 to 2018, compared to 8% each in the US and France. Many companies from these countries might be interested in investing in Africa but are often deterred by perceived challenges such as language barriers, complex tax laws, and intricate regulations. Enhancing social and cultural ties with immigrant communities can help to mitigate these challenges.

To boost the appeal of African nations to Foreign Direct Investment (FDI), it is essential to explore complementary approaches. Sodokin et al. (2022) provide valuable insights into this matter. Their research emphasized the significance of wages in African economic dynamics, indicating that policies focused on boosting purchasing power could indirectly enhance FDI attractiveness, particularly for investments targeting local markets. Additionally, their observation that foreign production, especially from the European Union, positively impacts African economies underlines the need to strengthen international economic connections. In the FDI context, this suggests improving African economies' integration into global value chains, reinforcing trade and investment agreements with key partners, and developing infrastructure that supports international commerce. These strategies can serve as additional motivators, potentially enhancing the perceived quality of the business environment for FDI. Combined with targeted policies to attract and support early immigrant investors, these measures could foster a more robust ecosystem for drawing and retaining FDI in Africa, thus promoting sustainable and inclusive economic growth. This multifaceted strategy to enhance business climate could significantly boost the effectiveness of FI-FDI in stimulating broader FDI inflows.

Furthermore, the implementation of policies to attract and support FI-FDI in African countries faces several significant challenges that require careful consideration and strategic solutions. Political instability and frequent changes in governance present primary obstacles to long-term policy implementation. To address this issue, strengthening political institutions and ensuring continuity in economic policies are crucial for creating a conducive environment for FI-FDI (Guimarães et al., 2000; Rodríguez-Pose & Cols, 2017). Resource constraints in many African countries may limit their ability to provide substantial incentives or improve their infrastructure. To overcome these limitations, policymakers should prioritize high-potential initiatives and seek international partnerships and funding by leveraging foreign aid for targeted economic development projects (Jaiblai & Shenai, 2019; Miao et al., 2021). Furthermore, there is a risk of unintended consequences, such as the marginalization of less-skilled immigrants or the disadvantaging of local businesses. Policies should be designed to mitigate these risks, ensuring that the benefits of FDI are broadly shared. This objective can be achieved by implementing social programs to support local businesses and workers and by involving local communities in decision-making processes (Adams, 2009; Olatunji & Shahid, 2015).

To enhance the effectiveness of such policies, it is essential to establish a robust monitoring and evaluation framework. This framework should include metrics for measuring FDI inflows, the performance of special economic zones, and socioeconomic impacts on local communities. Additionally, engaging with all relevant stakeholders, including local businesses, international investors, and civil society organizations, is crucial for a well-informed and inclusive policy implementation. Finally, flexibility in the policy design is significant. Policies should be adaptable to changing economic conditions and adjustable based on feedback and the observed outcomes. By comprehensively addressing these challenges and incorporating these considerations, policymakers can develop more robust and feasible strategies for implementing FI-FDI policies in African countries, ultimately fostering sustainable economic growth and development.

6. Conclusion

This study underscores the clustering impact of FI-FDI across Africa. Our analysis confirms foreign investors' preference for locations with substantial existing FDI stocks. Additionally, a positive correlation was observed between the FDI effect and immigration rates. These findings prompt a call to action for African governments to advocate strategies to attract and maintain investors. Emphasizing the significance of early

investors is critical in amplifying the effects of FI-FDI. The implementation of territorial marketing strategies can alter the adverse perceptions of certain countries. Encouraging immigration from countries with a robust investment potential boosts FDI. Paramount to retaining investors is the dynamic support of initial entrants who face greater risks. Governments should strive to align interests, be they through provisional tax incentives, or by offering high-quality infrastructure in special economic zones. The successful maintenance of pioneer investors creates a favorable impression of potential subsequent investors. By contrast, failing to keep initial investors can heighten skepticism among prospective entrants.

Our study identified five key directions for future research. First, delving into the temporal dynamics of network externalities in FDI regarding financial intermediation is a significant area of study. Second, the role of innovation in the emergence of FI-FDI warrants thorough investigation. Third, it is imperative to examine sectoral diversification within FI-FDI is imperative. Fourth, assessing the impact of FI-FDI on income disparity is vital. Fourth, conducting comparative analyses of North-South and South-South FI-FDI is an essential research field. Finally, the use of aggregated data constitutes a limitation in rigorously testing the FI-FDI hypothesis. A case study that traces immigrant investment networks is more suitable for formally identifying FI-FDI. However, our analysis seeks, as a first approach, to identify the general trends in a panel of countries. This is an exploratory step towards a more refined empirical validation of the concept. Future research using firm-level data and a case study design would allow for a more robust isolation of the FI-FDI effect.

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Koffi Sodokin: Data curation, Conceptualization, Formalization, econometric analysis, Methodology, Writing, review, and editing. **Kokou Wotodjo Tozo:** Data curation, Formalization, econometric analysis, Methodology, Writing. **Denera Atanguegnima:** Data curation, Formalization, econometric analysis, Methodology, Writing.

1. Data accessibility
2. Link to data: <https://data.mendeley.com/datasets/7hz22drzwz/1>
3. The data that support the findings of this study are openly available in Mendeley Data at <http://dx.doi.org/10.17632/7hz22drzwz.2>, reference number Sodokin, Koffi; Tozo, Kokou; ATANGUEGNIMA, 'Immigrant-led foreign direct investment and the dynamics of cross-border capital allocation' Mendeley Data, V2. The dataset includes raw data on immigrant-led foreign direct investments used for the statistical analyses, as well as the Stata code files necessary to replicate the findings presented in this paper. Access to the data is not restricted. For any questions about the data, please contact the corresponding author.
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Note

1. Ibidem refers to the sources cited in the previous row of the table.

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No potential conflict of interest was reported by the author(s).

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