

Dachito Chigeto, Amsalu; Jayamohan, M. K.; Ayeru, Etana

Article

Does financial development and institutional quality matter in South-South trade? Evidence from Sub-Saharan Africa

Research in Globalization

Provided in Cooperation with:

Elsevier

Suggested Citation: Dachito Chigeto, Amsalu; Jayamohan, M. K.; Ayeru, Etana (2024) : Does financial development and institutional quality matter in South-South trade? Evidence from Sub-Saharan Africa, Research in Globalization, ISSN 2590-051X, Elsevier, Amsterdam, Vol. 8, pp. 1-15, <https://doi.org/10.1016/j.resglo.2024.100209>

This Version is available at:

<https://hdl.handle.net/10419/331135>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/4.0/>



Does financial development and institutional quality matter in South-South Trade? Evidence from Sub-Saharan Africa

Amsalu Dachito Chigeto^{a,*}, Jayamohan M.K.^a, Etana Ayeru^b

^a Department of Economics, Jimma University, Ethiopia

^b Department of Economics, Assosa University, Ethiopia

ARTICLE INFO

JEL Classifications:

F14

F15

G00

G20

Keywords:

Global south

Financial development

International trade

Gravity model

Poisson-pseudo maximum likelihood

SSA

ABSTRACT

This study re-evaluates the determinants of international trade in the global south, focusing on intra- and extra-SSA trade while considering financial development and institutional quality as additional predictors. It also examines whether these factors differ for south-south and north-south trade ties. We used a 22-years (ranging from 2000 to 2021) panel of 98 countries (41 from the SSA and the remaining from the ROW). A panel gravity model with Poisson pseudo-maximum likelihood (PPML) estimation is used for the analysis. The results show that financial development in origin and destination countries boosts intra-trade in SSA countries, and the developed financial sector of the destination countries contributes to both intra-bloc and international trade. Financial development of exporting countries also spurs intra-bloc trade in SSA countries and the global south. In addition, apart from common expectations, the institutional quality of exporting countries plays a deterrent role, while the institutional quality of destination countries plays a positive and significant role in trade in the global south. We identified the interaction term for financial development and institutional quality of the exporting countries with a significant and positive coefficient for the global south and the global north, and null for intra-SSA trade. For destination countries, it becomes significantly positive with SSA and the global south but negative with the global north. The findings suggest that as part of the policy measures to boost intra-bloc trade in SSA and the global south, ensuring financial development needs better emphasis.

1. Introduction

International trade is believed to help developing countries catch up with developed ones by reducing their productivity gaps (Edmond et al., 2015). The benefits could come from increased access to relatively more productive resources from outside or the increased efficiency of domestic firms due to increasing competition from their foreign counterparts. International trade contributes significant portion to countries' GDP (Surugiu & Surugiu, 2015). Although most less developed countries have a long trading history, their share in world trade is insignificant. For instance, Africa, with over 16 % of the world population, contributes merely 3 % to global trade (World Bank (WB), 2022). Even though the south-south trade (SST) paradigm is regaining momentum following the predicament brought by historical events such as COVID-19 pandemic and the 2007 financial crisis (Bontempi & Coccia, 2021; Chaves et al., 2022; Freeman & Lewis, 2021), less than 15 % of the continent's overall trade is within its borders. This is much less when compared to the intra-

regional share of other continents in global commerce; for instance, Europe, Asia, and North America comprise 69 %, 59 %, and 30 %, respectively in 2021 (see Fig. 1b). The intra-continental trade share in Africa has been on a downward trend since 2015, which is worth noting. Being 18 % in 2015, it deteriorated to 14 % in 2021. Despite being slightly higher than intra-continental trade in Africa, intra-SSA trade remains small and stagnant, accounting for about 16 % in 2000 and only increasing to 17.3 % in 2021 (see Fig. 1(a)). In contrast, 48 % and 25 % of SSA's exports go to Asia and Europe, respectively. Asia's share is steadily increasing while Europe and North America are experiencing a decline throughout the sample periods.

The low intracontinental export share in Africa remains similar between primary products and manufactured goods. For example, in 2021, only 13.62 % of Africa's total primary raw material exports were destined for Africa, and about 70 % of total manufactured goods exports were shipped outside the continent (UNCTAD, 2022). These figures are highly incomparable in primary commodity exports within Asia (74 %)

* Corresponding author.

E-mail addresses: dachinano@gmail.com (A.D. Chigeto), mekjmohan@gmail.com (M.K. Jayamohan), etuecojuamu@gmail.com (E. Ayeru).

¹ ORCID: 0000-0003-1954-2371

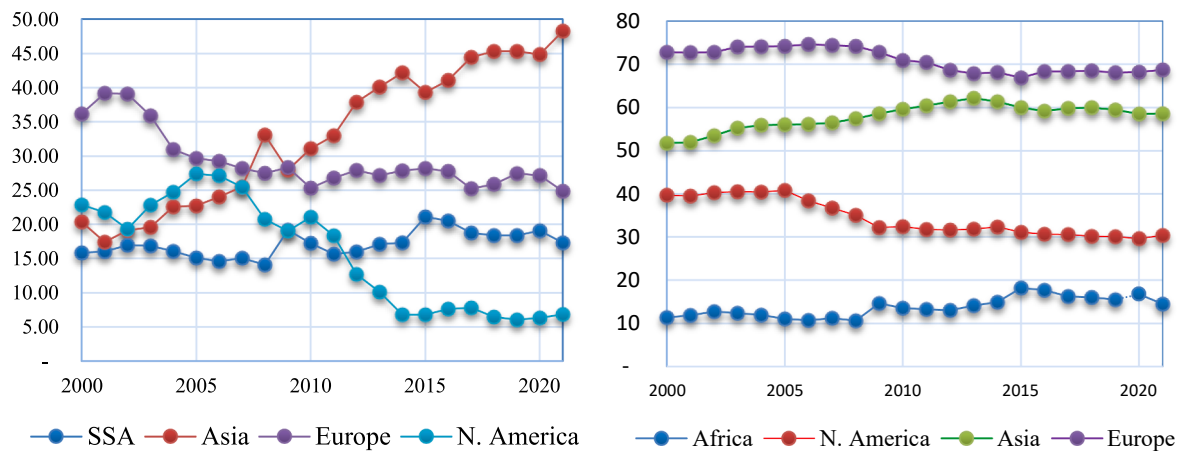


Fig. 1. (a). Percentage distribution of SSA's export by destination. (b). Share of intra-continental trade as a percentage of total trade. *Source:* UNCTAD (Merchandise Intra-trade and extra-trade of country groups).

and Europe (70 %), as well as manufacturing goods in Asia (56 %) and Europe (69 %) (UNCTAD, 2022).

It is widely documented in the literature that financial development, comparative advantages, and gains from specialization are interlinked (Caporale et al., 2022; Hur et al., 2006). While the notion of the link between trade and finance was first theoretically established in the Heckscher-Ohlin-Samuelson (H-O-S) trade model, numerous scholars have demonstrated how variations in financial development generate comparative advantages and profits from specialization (Caporale et al., 2022). Studies have found a link between financial development and the ease of firms accessing foreign financing, which ultimately promotes specialization and productivity (Amissah et al., 2021; Caporale et al., 2022). However, in SSA, the financial sector is underdeveloped in almost every dimension and the financial markets are either missing or underdeveloped. Africa's financial development lags behind both developed nations and other LDCs in Asia and South America. For example, as per the IMF's financial development database,² South Africa and Namibia, which make up 4 % of SSA, were the only SSA countries listed among the top 60 nations in 2020 in terms of financial development. Conversely, in the same year, more than 83 % of SSA countries are ranked within the lowest 60 nations globally.

Nevertheless, empirically, Africa lacks a solid grasp of the factual link between the two factors—international trade and financial development—resulting in an incomplete appreciation of the missed potential. However, we recognize the numerous initiatives undertaken to investigate the connection between trade and finance such as Gokmenoglu (2015), Mykoniatis & Ready (2013), Vithessonthi & Kumarasinghe (2016), and Liu (2022) to name a few, further research may be required due to the following facts: First, some of those studies were country-specific (Caporale et al., 2022; Mehrotra & Carbonnier, 2021; Sun & Muganyi, 2019) and failed to reveal the robustness of the dynamics of the two variables at the regional level. Second, those who studied the multicountry cases have used industry-level data (Hur et al., 2006; Mykoniatis & Ready, 2013), so replicating the same concept from the point of view of aggregate-level could reveal additional insights. Third, the proxies for financial development used by most of the authors are narrowly defined, such as domestic credit by the banking sector and credit allocated to private enterprises, which just imply a single component of financial development (Gokmenoglu et al., 2015; Shahbaz et al., 2013), whereas following Svirydenka (2016), this study

considers more robust measures (proxies) provided by the International Monetary Fund (IMF) that take into account both financial markets (FMs) and financial institutions (FIs) along with their respective levels of access, depth, and efficiency. Fourth, there have been mounting evidence that institutional quality play important role in the trade and finance link (Abreo et al., 2021; Maruta, 2019). Good institutional minimizes transaction costs by reducing information asymmetry and increasing economic incentives (Álvarez et al., 2018). In addition to its direct effect, institutional quality interacts with other variables such as financial development to facilitate trade (Khan et al., 2022). Strengthening the claim, However, role of institutional quality on SSA's trade and its specific role to SST is scant in the literature. Thus, we test the interplay between institutional quality and the financial development of the trading countries in stimulating bilateral trade by explicitly introducing an interaction dummy between institutional quality and financial development. Hence, this study aims to contribute to the literature by evaluating the effect of financial development and institutional quality on the bilateral trade of countries in Sub-Saharan Africa (SSA) by addressing the following research questions: (i) Does the role of financial development significantly differ between the SST and North-South Trade (NST)? (ii) Does institutional quality mediate the link between financial development and trade in SSA?

The remainder of the paper is structured as follows: Section two delves into the pertinent literature review, followed by a discussion on materials and methods in section three, encompassing model specification and estimation strategies. Section four presents and discusses the results, while the final section offers concluding remarks and highlights policy areas.

2. Related literature

2.1. The SST paradigm: Theoretical background and ongoing debate

Promoting SST was introduced as part of the broader attempt at global south cooperation that aimed to facilitate economic and political rehabilitation of the already fragile global south following their graduation from colonial rule. The idea was considered a key international policy objective that aimed to rebalance the position of developing countries in the international sphere (Dildar, 2019) by promoting exports and strategically opening their border to southern markets. Since its inception, the two sides of arguments concerning the SST trade have been going on. On the one hand, the static (Neoclassical) trade theories postulate that the trade relation among countries shall primarily be determined by the relative resource abundance and input intensity of commodities to be produced and exported (Dildar, 2019). On the other

² FD index was generated by the IMF and found in their web site (IMF/FDI | DBnomics) with the values ranging between 0 and 1, where zero imply complete absence of FD and 1 imply a complete advancement.

hand, dynamic trade theories such as dependency theory, structuralist theory, and new trade theory reevaluate the possible windows that could exist for the SST trade relationships (Lisimba & Parashar, 2021; Pérez, 2021).

In line with the dependency theory, the enduring justification for SST cooperation has been the asymmetrical distribution of the benefits of NST, where the lion's share of the gain goes to the north (Hsieh, 2017). The incomparable bargaining power between the two and the nature of the product (primary agricultural commodities, whose demand remains inelastic with income and price), in which the South has specialized, have each contributed to the explanation of the difference in the shares between the North and south. The advent of a new form of protectionism in the North that discriminates against commodities shipped from the South is another reason to support SST (Arribas et al., 2020; Baier et al., 2018). Sen (2012) argues that it is logical for the South to search for alternative export destinations within the South as long as their commodities are subjected to protective barriers in the Northern markets. In contrast, the SST network could provide the environment needed to make use of the South's potential for more commodity absorption. Again, the country similarity theory is another viewpoint that supports the possibility of meaningful trade relationships within the global south (Lam, 2015). This theory suggests that relatively similar countries in terms of income and preference can establish a strong trade relationship, as there will not be any demand lag for goods produced in one of those countries.

As part of the broader Structuralist theory, the promotion of southern self-reliance is another justification for the SST (Kay, 2018). These viewpoints, which have recently been expressed by the escalating partnership forming on the South-South platform, highlight a number of issues from empirical perspectives. One is whether the economic drivers of SST and their impacts systematically differ from those of NST. Historical events that the world had experienced at different moments, such as the financial crisis of 2007 and the outbreak of COVID-19, made clear that the conventional trade structure – developing countries being the exporters of “resource intensive” primary commodities and importers of “skill intensive” manufacturing commodities – remained fragile and unsustainable from the view point of the global south (Bontempi & Coccia, 2021; Chaves et al., 2022; Freeman & Lewis, 2021). Those events warn that there is a need for diversification of the tradable commodities as well as the export destinations so as to withstand bad economic prospects. Gammage & Akinkugbe (2020) adds to this argument that deepening and expanding SST could not only protect the south from such crises, but could also, in the long run, form part of a more stable and sustainable development plan for low-income nations.

From empirical perspective, most researchers in the field of international trade use the gravity model, which takes the economic size and distance of trading partners into account, to explain bilateral trade. Consistently, the income size of both the source and destination countries positively explains the trade attraction between them, whereas the relative distance plays a negative role (Capoani, 2023; Chaney, 2018). But current literature extends the predictors of international trade by incorporating not only geographic distance but also cultural distances between country pairs such as colonial ties, shared borders, and language (Ejones et al., 2021; Htwe et al., 2020; Khalid et al., 2022). Again, financial development (Leibovici, 2021; Xinzhong, 2022) and institutional qualities (Álvarez et al., 2018; Oshota & Wahab, 2022) of the exporting and destination countries are considered important predictors in the recent literature.

2.2. Role of financial development and institutional quality on trade

Trade literature establishes the existence of a strong linkage between international trade and financial development (Leibovici, 2021; Liu, 2022; Xinzhong, 2022). The Heckscher-Ohlin-Samuelson (H-O-S) trade model was the first to establish the concept of financial development in the theoretical literature of international trade, demonstrating that

variations in financial development generate comparative advantages and profits from specialization (Caporale et al., 2022). Several researchers have expanded on the H-O-S model, emphasizing that countries with a relatively developed financial system benefit from easy access to foreign financing and have a comparative advantage, leading them to specialize in businesses and sectors that rely on external funding (Amissah et al., 2021; Caporale et al., 2022).

In most literature, the link between financial development and international trade is seen from its relationship with the constituents of financial development. For instance, Sun & Muganyi (2019) found that financial depth, including private sector credit and bank deposits, positively affects China's exports to its 145 trading partners for 16 years (2000–2016) using the feasible generalized least square (FGLS) approach. Beck (2002) empirically tested the theoretical model he developed to explain the nexus between trade, finance, and foreign competitiveness in large-scale manufacturing sectors and confirms that developed finance has a spurring role in the export volume of industrial products. He used the private credit-to-GDP ratio, which refers to the breadth of FIs, to gauge financial development.

Becker et al. (2013) approached the same subject from the viewpoint of financing the invisible and firm-specific costs related to production, packaging, and distribution. They claimed that it is difficult to find external financing for these costs, necessitating the use of developed financial sectors. To empirically test these claims, using industry-specific data from 100 countries covering the period from 1963 to 2000, they emphasize that financial development (as expressed by the ratio of private credit to GDP) not only affects international trade volume (export) but also affects the dynamics of trade; that is, export demand is sensitive to exchange rate dynamics provided that the financial sector gets developed. On the other hand, Chaves et al. (2022) accept that the developed financial sector boosts foreign trade and add an extra claim that its effect could vary between agricultural and manufacturing exports, where its role gets stronger in manufacturing exports. Berman and Hericourt (2010) strengthened this claim in more detail. Their study, involving 5,000 businesses in nine developing countries, found that a company's access to capital and productivity significantly influence its decision to enter a foreign market, but financial standings have minimal impact on export decisions and its volumes.

Furthermore, like financial development, the role of institutional quality in bilateral trade has been documented in the literature. Hou et al. (2021) documented the positive and significant role of institutional quality in international trade while arguing that its role is more prominent in manufacturing trade than agricultural trade. Beverelli et al. (2018) reported the presence of strong and positive effects of institutional quality on trade in general and LDCs trade ties with developed countries. Moreover, from comparative studies of NAFTA's trade with high- and low-income country groups, Heo et al. (2021) documented that the effect is asymmetric, producing a relatively higher impact on NAFTA's trade relation with high-income countries. In addition to the direct effect, Khan et al. (2022) pointed out the presence of indirect effect through facilitating financial development and the effect is more robust for emerging economies than for developing ones.

Some studies emphasize the asymmetric effects of financial development on the bilateral trade connections between the NST and SST. Demir and Dahi (2011) examined the impact the financial sector would have on the patterns of trade diversification between NST and SST using a 27-year panel of 28 emerging countries. Using dynamic panel estimation, they confirm a significant association between efficient financing and SST. However, it has less impact on NST. In line with these findings, Kim et al.'s (2010) study, by comparing the role of financial development between the Organization for Economic Cooperation and Development (OECD) and non-OECD countries, implied that the trade-finance linkage only works for non-OECD countries while its effect is negligible for OECD members. There is evidence that financial development is more powerful in explaining international trade in LDCs, where the sector is less developed. Ito & Kawai's (2010) statement

appeals directly to our claim that a proxy-based measure of financial development would not capture the multidimensionality of the variable, necessitating the use of more robust and multifaceted measurements that capture not only the depth but also the access and efficiency of FIs and FMs. More recently, looking at the link between financial market architecture and trade, Amissah et al. (2021) reported the bidirectionality of the two variables that countries with efficient capital markets gain a comparative advantage in sectors reliant on market finance, and those specializing in these sectors develop their capital markets more.

Additionally, many empirical studies raise the relationship between international commerce and financial development from various perspectives. Susanto et al. (2011), using gravity formwork on the data obtained from both developed and developing countries on the agriculture and industrial sectors, find out how foreign trade volume is affected by financial development asymmetrically both between developed and developing countries as well as between the two sectors. i.e., the financial sector plays a significant role in developing countries' exports and industrial products. Supporting Susanto et al.'s (2011) argument, Demir & Dahi (2011) emphasize that financial development not only raises trade volume within the global south but also disproportionately facilitates the export of skill- and technology-intensive industrial products. The disproportionate effect of financial development on skill intensive manufactured commodity trade is further documented by Caporale et al. (2022) for developed economies. Similarly, Manova (2013), based on a heterogeneous firm model with financial frictions, distinguished between the level of financial development across countries as well as the level of financial vulnerability across sectors and came to the generalization that countries with a sound financial sector tend to engage in the export of commodities with financial fragility.

Thus, the above empirical evidence could have implications for countries in the south, particularly SSA. These countries have had limited global market share in their exports, resulting in economic challenges like foreign currency shortages, leading to persistent unfavorable balance of payments and growing external debt burdens. Therefore, the above empirical evidence suggests that paying enough attention to ensuring a developed financial sector could contribute to improving trade balances by increasing export volumes. Nevertheless, there are still areas where additional research could take the finance-trade nexus to the next level. The previous literature is criticized for using proxies that cannot fully represent the concept of financial development; Proxies such as domestic credit to the private sector and broad money only represent the depth of the financial market, while leaving efficiency and access parts unrepresented. More importantly, different proxies can yield diverse effects in the relation between these two variables, making it difficult to generalize the findings to financial development. Thus, this study solves these empirical anomalies by adopting more robust proxies of financial sector development computed and made available by the IMF. Furthermore, the study estimated the relative roles of the two subgroups (FIs and FMs) in international trade, using the disaggregated financial development data available. Moreover, we analyze the impact of institutional quality on trade, considering its interaction with financial development.

3. Materials and methods

3.1. Data sources and types

This analysis solely relies on secondary data from various comparable sources. For GDP data, we used WDI, and data on bilateral merchandise trade is taken from the United Nations commodity trade (UN Comtrade) database. Financial development data is from the Global Financial Development Database of the International Monetary Fund (IMF). CEPII gravity dataset, provided data regarding distances between countries, shared boundaries, colonial links, common languages, and religion. Though our initial stand, SST and NST comparisons, remains intact, countries from the two blocs were chosen based on data

availability.

In selecting countries from SSA, the remaining global south and north, we give more emphasis on answering the research question of whether financial development and institutional quality have a say on countries' trade engagement. To capture the effect, we prefer not to truncate our data based on trade volume, given that trade exists, since doing so will introduce a downward bias to the variables of our interest. For the exporting (SSA) countries, we begin with all 48 countries as per the WB grouping.³ Then, we progressively reduce it into 41 countries by excluding those with zero entries of the bilateral trade matrix or missing data for any predictor variables during the sample periods. However, in selecting the trading partners of SSA, we prefer to depend on the data reported in the UN Comtrade database. Accordingly, we begin by retrieving all the available trade partners recorded in the UN Comtrade database for each year. By sorting countries based on trade volume, we selected as many countries as possible until we included enough countries from SSA as a destination in our sample, provided they have non-zero trade values each year. By doing so, we allow more zero trade records between many of the countries while relying on the PPML estimation technique, which is less sensitive to zero records of the dependent variable. Accordingly, we chose 98 major importing countries and further categorized them into sub-categories of regional blocs (global south, north, and SSA). The study period ranges between 2000 and 2021. We considered both data availability and sufficiency while fixing the time span.

3.2. The model

3.2.1. Gravity model

The gravity model has been widely utilized in international trade literature because of its empirical efficacy in predicting trade flows among trading partners using their economic size and distance from one another (Anderson & Yotov, 2016). Its inception was attributed to Tinbergen (1962), who initially proposed the "transplantation" of the gravity equation from physical science to forecast the attraction of bilateral trade (Capoani, 2023). Gravity-based trade models use "Newton's universal law" to predict trade between nations, regions, or businesses (Borsky & Leiter, 2022; Capoani, 2023). The concept of gravitational force in physics states that "every particle of matter in the universe is drawn to every other particle by a gravitational attraction that is directly proportional to the product of their masses and inversely proportional to the square of their separation from one another" (Capoani, 2023, p. 4) The fundamental equation for gravity in physics is as follows:

$$A_{ij} = g \frac{m_i \cdot m_j}{d_{ij}^2} \quad (1)$$

Where A_{ij} is the attraction force between two objects i & j , m_i & m_j are their respective masses, d_{ij} indicates how far apart the centers of the two objects are, and g is a gravitational constant.

The "law of universal gravitation," stipulating that gravity is equal to two bodies' combined masses divided by their relative distance, is stated in equation (1). However, 'mass' in international trade modeling has been proxied by the GDP of the trading countries, and their relative distances has been proxied by the geographic distance (in Kilometer) between the two trading pairs. While the theoretical foundation for GDP was given by Anderson (1979), the role of distance was theoretically backed by Head & Mayer (2014). Sales of goods and services boost a country's GDP and the amount of goods and services its inhabitants can import. However, distance being part of regional and spatial considerations, discourage international trade (Capoani, 2023; Chaney, 2018; Dewitte, 2022). Thus, equation (1) is conceptualized for the bilateral

³ <https://data.worldbank.org/country/ZG>.

trade attraction as follows:

$$EX_{ijt} = F(GDP_{it}GDP_{jt}/GD_{ij}) \quad (2)$$

Where EX_{ijt} is the value of export by country i to country j ; GDP_{it} & GDP_{jt} are gross domestic products of country i and j , proxy for the economic sizes of the two pairs at time t ; GD_{ij} is relative distance between the two trading partners.

We modify our mathematical equation in equation (2) to econometric version (equation (3)) by attaching structural parameters to each variable on the righthand side and adding the error term (ξ_{it}) to account for the deviation of observed export from that of the values equation (2) would predict.

$$EX_{ijt} = \alpha_0 GDP_{it}^{\beta_1} GDP_{jt}^{\beta_2} GD_{ijt}^{\gamma} e^{\xi_{it}} \quad (3)$$

Where, α_0 and β_i are unknown parameters (elasticities) to be estimated. ξ is a white noise error term with mean zero and constant variance.

Taking the logarithm form of Equation (3), we have

$$\ln(EX_{ijt}) = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \gamma \ln(GD_{ijt}) + \xi_{it} \quad (4)$$

$$\beta_0 = \ln \alpha_0$$

In addition to geographic distance, many other variables, such as colonial ties and common languages, have been recognized to alter trade costs (Capoani, 2023; Weidner & Zylkin, 2021). Thus, we treat the relative distance between trade partners (GD_{ijt}) as a more generic term reflecting two main types of costs: transportation cost (geographic distance, shared border) and information cost (common language, colonial ties.) (Gil-Pareja et al., 2014; Sun & Muganyi, 2019). Furthermore, we add three more variables (unique to this study) to the gravity equation as part of the information costs. These include the level of financial development (FD), institutional quality (IQ⁴), and the interaction term linking the two variables (financial development and institutional quality). We include them because they potentially facilitate the efficiency of resource flow among the trading partners (Demir & Dahi, 2011; Xinzhong, 2022) and hence minimize the information cost of trading. The interaction term (intrc) is aimed at isolating the joint impact of financial development and institutional quality. Thus, GD in equation (4) is split into:

$$\ln(EX_{ijt}) = \delta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \gamma_1 \ln(D_{ij}) + \gamma_2 COL_{ij} + \gamma_3 COB_{ij} + \gamma_4 COCLY_{ij} + \gamma_5 COCZ_{ij} + \gamma_6 FD_{it} + \gamma_7 SSA_j + \gamma_8 GN_j + \gamma_9 SML_{ijt} + \gamma_{10} IQ_{it} + \gamma_{11} intrc_{it} + \xi_{it} \quad (6)$$

$$\ln(GD_{ijt}) = \gamma_0 + \gamma_1 \ln(D_{ij}) + \gamma_2 COL_{ij} + \gamma_3 COB_{ij} + \gamma_4 COCLY_{ij} + \gamma_5 COCZ_{ij} + \gamma_6 FD_{it} + \gamma_7 SSA_j + \gamma_8 GN_j + \gamma_9 SML_{ijt} + \gamma_{10} IQ_{it} + \gamma_{11} intrc_{it} \quad (5)$$

Where, D_{ij} is the geographic distance between the two countries, COL is whether trading counties share a common language, COB is a common border, $COCLY$ is the common colonizer and $COCZ$ is colonizer; SSA_j and GN_j are a dummy referring country j (the destination country) is from SSA and the global north respectively, and SML is country similarity

⁴ IQ is made up of six sub-components: accountability, control of corruption, government effectiveness, political stability, regulatory quality, and rule of law. The "World Governance Indicator" database of the World Bank served as the source for these statistics. We used the principal component analysis (PCA) method to create a single index.

Table 1

Variables' definition, and the source.

Variable	Definition	Sources
EX_{ijt}	Total monetary value of country i 's Export to country j at time t	UN Comtrade
GDP_{it}	Exporter's GDP in year t	World Development Indicators (WDI)
GDP_{jt}	Importer's GDP in year t	World Development Indicators (WDI)
D_{ij}	Distance in kilometers between the capital cities of country i (origin) and j (destination)	CIA's World Factbook
SML_{ijt}	Country similarity index $\left(= \ln \left[1 - \left(\frac{GDP_{it}}{GDP_{it} + GDP_{jt}} \right)^2 - \left(\frac{GDP_{jt}}{GDP_{it} + GDP_{jt}} \right)^2 \right] \right)$	
FD_{it}	Level of financial development of country i , (exporter) at time t	The Global Financial Development Database (IMF)
COL_{ij}	Language dummy (Takes the value 1 if the two countries share a common language and 0 otherwise)	CEPII gravity database
$COCLY_{ij}$	Colony dummy (Takes the value 1 if country i was colonized by j country, and 0 otherwise)	CEPII gravity database
$COCZ_{ij}$	Colonizer dummy (Takes the value 1 if country i & j share common colonizer)	CEPII gravity database
COB_{ij}	Shared border between country i and j (=1 if the border is shared and 0, otherwise)	CEPII gravity database
$LAND_i$	Land locked dummy (Takes the value 1, if country i is land locked & 0, otherwise)	CEPII gravity database
SSA_j	Sub-Saharan Africa dummy (=1, if the destination country is from SSA)	
GN_j	Global north dummy (=1, if country j is from global north)	
IQ_{it}	Institutional quality (degree of democracy, rule of law, corruption control, ... etc.). the index to be computed using the PCA method	Worldwide Governance Indicators (WB)
$intrc_{it}$	The interaction term ($FD \cdot IQ$)	

index, IQ is institutional quality, and intrc is the interaction term between FD and IQ. Thus, equation (4) is modified to incorporate equation (5) that:

The description of each variable used in our equations and their respective sources are included in Table 1.

3.3. Estimation strategies, endogeneity, and identification issues

It is common in the literature that static techniques, such as fixed effect (FE) and random effect (RE) procedures can estimate our baseline model (equation (6)). The FE method assumes country-specific effects by estimating intercept dummies for each country. This procedure produces consistent estimates irrespective of whether these specific effects are correlated with some of the predictors (Tham et al., 2018). However, since some of the variables do not vary over time, such as the language dummy, colony, and colonizer dummy, it is impossible to estimate their effect using FE, as the fixed effect transformation process drops those variables. Furthermore, the RE method treats the intercept term as a random draw across trading countries and applies a generalized least squares (GLS) approach. Again, the RE approach may suffer from

limitations, as the method could produce inconsistent and biased estimates, provided that the specific effect is linked to one or more of the predictors (Kahouli, 2016; Tham et al., 2018).

The models' assumptions of static behavior contributed to some of the above problems. In response to the problems with the standard gravity model, mainly due to its failure to consider the dynamic nature of international trade, alternative models such as the dynamic panel gravity model have been adopted in the literature (Cezar, 2015; Kahouli, 2016; Tham et al., 2018). In addition, Kahouli & Maktouf (2014) argue for the dynamic panel framework, if countries have intensively engaged in trade relations in the past, they will likely stay in the trade relations, as some costs associated with initiating the trade are irreversible. It means that the lagged trade relationship could likely affect current trade performance. Thus, to permit such dynamics, The static panel gravity model is extended to its dynamic counterpart by incorporating the lagged value of bilateral trade in line with the Autoregressive Distributed Lag (ARDL) framework. Hence, the dynamic version of Equation (6) is given as:

Where q is the optimum lag length to be determined using information

$$\ln(EX_{ijt}) = \delta_0 + \sum_{m=0}^q \alpha_m \ln(EX_{ijt-m}) + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \gamma_1 \ln(D_{ij}) + \gamma_2 COL_{ij} + \gamma_3 COB_{ij} + \gamma_4 COCLY_{ij} + \gamma_5 COCZ_{ij} + \gamma_6 FD_{it} + \gamma_7 SSA_j + \gamma_8 GN_j + \gamma_9 SML_{ijt} + \gamma_{10} IQ_{it} + \gamma_{11} intrc_{it} + \xi_{it}$$

(7)

criteria. Equation (7) can be estimated using the system Generalized Method of Moment (sys-GMM) methods, as proposed by Arellano and Bovers' (1995) and adopted by various authors such as Kahouli & Maktouf (2014) and Tham et al. (2018) to list a few. system-GMM can best suit as an alternative estimation strategy to account for reverse causality, simultaneity bias, and parameter endogeneity that could emerge due to the existence of unobserved country-specific FE. Windmeijer (2005) further argued that two-step system GMM with the finite-sample correction method yields asymptotically reliable standard errors.

In addition, there is much discussion on how to handle two countries that do not trade with one another (i.e., zero trade values) in a particular year (Ejones et al., 2021; MCHANI, 2022; Saucier & Rana, 2017). This problem emerges because estimating a gravity model often includes taking logarithms and estimating its log-linear form. We do not include zero trade transactions in the estimation because the logarithm of zero is indeterminate. Zero transactions may be due to missing data, measurement mistakes, or "the true" absence of a trade relationship between any two countries (Ejones et al., 2021). In literature, zero trade has conventionally been handled using one of three methods: (i) removing all observations with zero values, sometimes known as data truncation; (ii) adding a very small constant to each observation and calculating its logarithms; and (iii) estimating the data at its level form without logarithmic transformation. If we assume zeros as random draws, such as random missing data, then the first method is acceptable since such zeros are uninformative and can be eliminated without increasing bias.

However, it is possible to explain the presence of zero records through some economic variables, indicating that it may not be a random draw. Therefore, removing it would likely cause the loss of important data and inconsistent findings. For instance, rounding mistakes linked to tiny trade flows could cause an endogeneity problem if they are responsible for the zero-trade seen in the data. As an alternative and more robust method of estimation in the presence of endogeneity and in the case where the dependent variable contains zero values, the

Poisson pseudo-maximum-likelihood (PPML) method was suggested by Santos Silva & Tenreyro (2006) and has since been frequently used in the literature (Anderson et al., 2018; Weidner & Zylkin, 2021). PPML estimates the export data at level. Silva & Tenreyro (2006) emphasized that inferences based on log-linearized trade data is misleading in the presence of heteroscedasticity while PPML produces a consistent estimate.

Consequently, we estimate our baseline model for this study using the PPML method. We accept PPML as a best candidate since we are dealing with trade flows with inflated zeros and tiny trade values. PPML allows us to use the export data in level form and minimizes losses of observation by avoiding data truncation. To account for possible country-specific, country-pair, and time-varying heterogeneity, we introduce four dummies indicating exporter, importer, pair, and time FE, respectively. Additionally, we check the extent to which our findings are consistent across alternative estimation strategies, such as two-step sys-GMM and RE methods, since they are still widely used.

4. Results

4.1. Descriptive statistics

The main summary statistics (mean values, standard deviation, minimum, and maximum values) of the variables utilized in the model are shown in Table 2. Continuous variables such as exporters' and importer's GDP (current price) and exporter countries' and importers' population are measured in millions of their respective units. The term "distance" refers to the actual physical distance, expressed in kilometers,

Table 2
Summary statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Export (Poled)	69,317	67.121	581.98	0	34758.305
Export (ssa)	28,567	35.885	237.945	0	10546.28
Export (gs)	44,327	50.857	528.264	0	33710.031
Export (gn)	20,742	84.4	447.641	0	10492.633
gdp i	78,958	32737.469	78476.502	487.039	574183.81
gdp j	78,958	630000.99	1989808.1	371.096	23,315,080
FD (pooled)	78,958	0.343	0.275	0	1
FD(ssa)	32,583	0.131	0.114	0	0.643
FD (gs)	50,535	0.218	0.173	0	0.737
(gn)	23,606	0.594	0.250	0	1
POP i	78,958	22.285	31.606	0.081	213.401
POP j	78,958	63.84	187.209	0.081	1412.36
D ij	78,958	5753.977	3294.847	150.502	17624.289
COL ij	78,958	0.261	0.439	0	1
COCLY ij	78,958	0.011	0.106	0	1
COCZ ij	78,958	0.177	0.381	0	1
BRDR ij	78,958	0.034	0.18	0	1
SML ij	78,958	-2.31	1.537	-9.126	-0.693
IQ (pooled)	78,958	0.006	0.979	-1.515	2.246
IQ (ssa)	32,583	-0.588	0.570	-1.515	1.486
IQ (gs)	50,535	-0.436	0.603	-1.515	1.486
IQ (gn)	23,606	0.907	0.969	-1.175	2.246

Source: Authors' calculation, 2023.

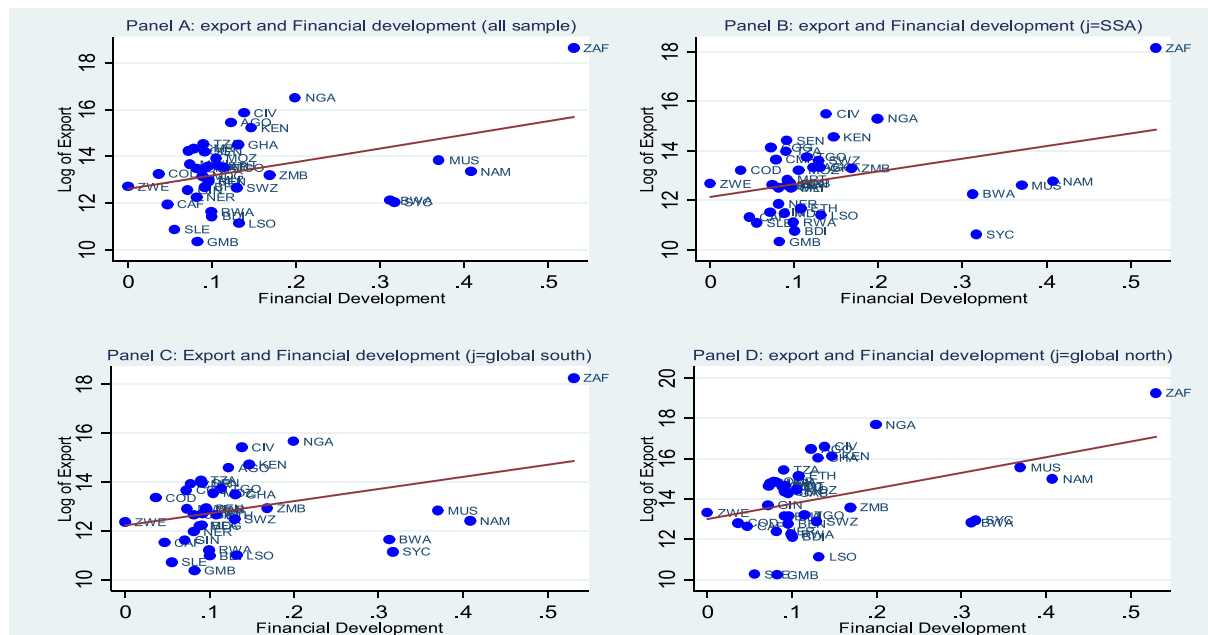


Fig. 2. Average export and exporters' financial development. Source: Authors' sketch, 2023.

between the capital cities of the exporters and the destinations. The average export value is \$67.121 million. The SSA countries have an average of \$50.757 million, while the global south (including SSA) and the global north have \$35.885 million and \$84.00 million, respectively. The average distance is about 5753.98 km, with a maximum and minimum of 17,624 and 150.5 km, respectively.

The value of the financial development index ranges between zero and one. Accordingly, the average financial development in SSA, the global south, and the global north is estimated at 0.131, 0.218, and

0.594, respectively, with maximum values of 0.643 (South Africa), 0.737 (Malaysia), and 1 (Switzerland). Likewise, institutional quality offers a wide variety between the north and south, where the south has generally negative averages and the north has positive averages. With SSA, the value drops even more. SSA countries are at the lowest stage compared to the global south and global north, recording an average index of -0.588 with a minimum and maximum ranges of -1.515 (Congo Democratic republic) and 1.486 (Botswana), while the Global South and North record the average of 0.603 and 0.969, respectively,

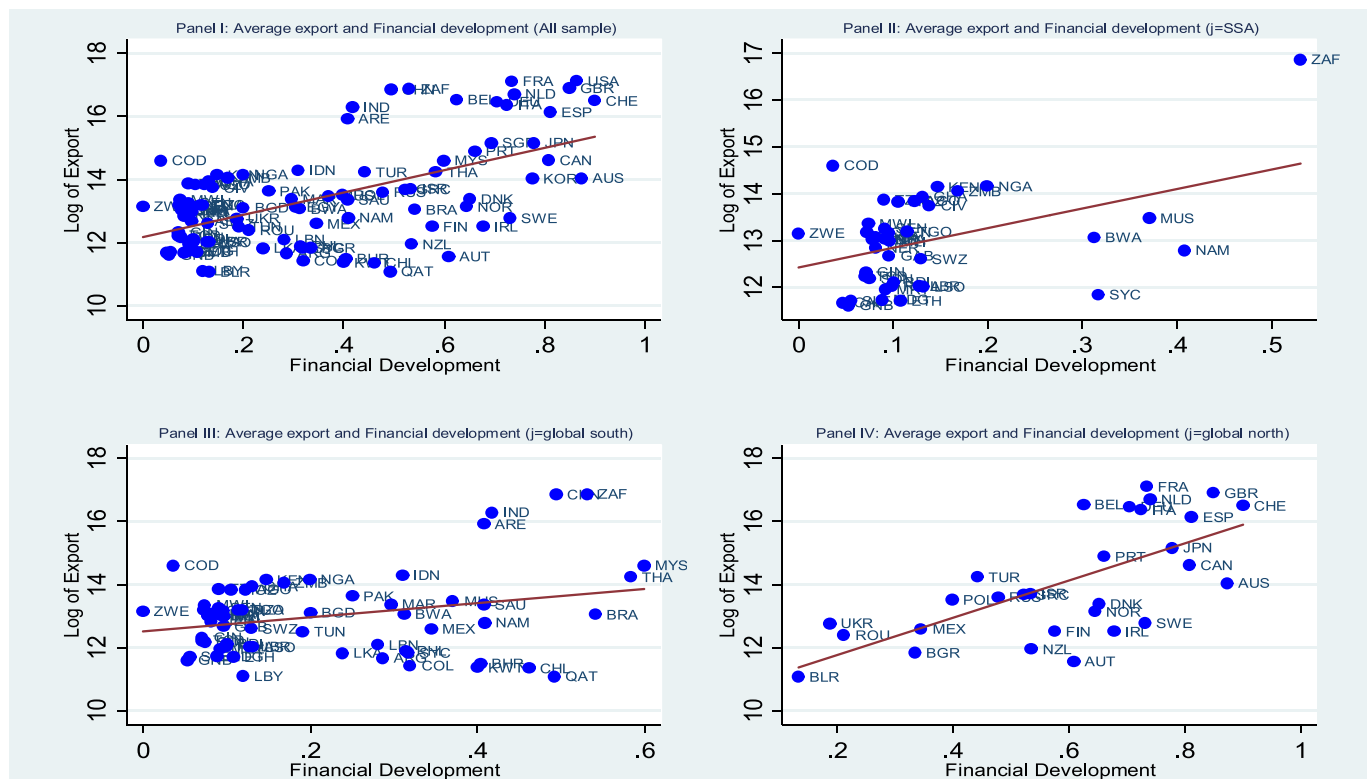


Fig. 3. Average export and importers' financial development. Source: Authors' sketch, 2023.

with the range of -1.515 (Congo democratic republic) and 1.486 (Chile) for the global south and -1.175 (Ukraine) and 2.246 (Denmark) for the global north. Table 2 also shows that SSA countries not only have the lowest average exports, financial development, and institutional quality but also the degree of variability (measured by their standard deviation) of these variables among member countries remains small. It means that the countries are more or less at a similar stage.

Fig. 2 shows scatterplot of the logarithm of average exports and financial development and their linear prediction for four subsamples. Depending on the financial sector development, the concentration of the sample groups is in the range of zero to 0.2. Panels A, B, C, and D show the relationship between the average export of SSA to the world market, SSA, the global South, and the global North, respectively. The upward-sloping prediction line could imply a positive relationship between financial development and exports in all four categories. South Africa ranks first among all exporting countries in terms of both financial development (0.643) and average exports ($\$6.3$ billion) and is well above the forecast line. Countries such as Nigeria, Côte d'Ivoire, Angola, and Kenya ranked second to fifth regarding average export volume. However, Namibia, Mauritius, the Seychelles, and Botswana took second to fifth place and are behind South Africa in terms of financial development.

Fig. 3 shows the relationship between SSA's average exports by destination and importers' financial development. We divide the sample into four subcategories: importing countries from the pooled sample, SSA, the global south, and the global north. This approach allows us to observe whether the relationship between average exports and financial development varies significantly across these groups of countries. Panel I of Fig. 3 illustrates the relationship between average exports and importers' financial development. In this case, financial development ranges between 0 and 1, as the sample includes countries from the global south and the north. USA, France, UK, South Africa, and China occupy the top five destinations of SSA exports. This figure indicates that Sub-Saharan African countries have a limited role as destination countries for goods from other Sub-Saharan African countries. Only South Africa and China entered the top five among the SSA nations and the other global south, respectively. Moreover, except for Belarus, the remaining four countries are from the global south. In addition, in terms of financial development, the top five countries were from the global north: Switzerland, Australia, USA, UK, and Spain, while the bottom five are still from the SSA: Zimbabwe, Democratic Republic of the Congo, Central African Republic, Guinea-Bissau, and Sierra Leone. As shown in Fig. 3, being a destination for exports from SSA is positively associated with importers' financial performance. In all four cases, the prediction line has a positive slope, being less steep for the global south (Panel III) than for the global north (Panel IV), suggesting that the relationship between the SSAs' average export and the level of financial development of the target country improves as we move from the global south to the global north.

4.2. Empirical findings and discussion

In this section, we present the gravity models linking bilateral trade with various predictors. Table 3 shows the regression results from the PPML methods for the six sub-samples. The first three columns present only SSA countries as destination countries. In column one (1), we include whole SSA countries. In column two (2), being the upper outlier, we excluded South Africa from exporting and destination countries. In column three (3), we omitted both upper outliers (South Africa) and bottom outliers (Seychelles and Botswana) from both exporting and destination countries. In the last three columns ((4), (5), and (6)), we considered the destination countries to be from the global south, global north, and pooled sample, respectively. While SSA countries as a destination contain 41 countries, the global south and north comprise 62 and 36 countries, respectively. The last column (6) includes a whole sample comprising 98 countries, from the global north and south. The

heteroskedasticity-consistent standard errors are displayed, which are taken into account by construction in PPML (Silva & Tenreyro, 2006). The PPML takes the dependent variable in level form and, thus, solves the problem of information loss from a logarithmic transformation of the data. In addition, as part of the robustness check, we reported the estimated results from various models (FE, RE, and Sys-GMM) on both overall and sub-samples in Table 4. We presented the results from the alternative models to see if the extent of the robustness of our findings (especially on the variables of our interest) is unaffected across alternative model specifications.

Accordingly, as shown in Table 3, the effects of the conventional gravity variables remained stable across the alternative models. For instance, the economic size of exporting and destination countries significantly spurs bilateral trade in all cases, including within SSA countries and the global south. It means that as countries get economically bigger, they tend to search markets abroad for commodities, facilitating intra- and inter-bloc trade links. Additionally, given that economic size mirrors domestic income, its rise would encourage product specialization and differentiation, which might lead to international trade (Yakubu et al., 2018). Conversely, exporters' population size plays a deterrent factor for exports from SSA. Except for SSS (column (1) of Table 3), which is statistically insignificant, the population of exporting countries contributes negatively to exports from SSA, irrespective of the location of the destination countries. Countries with large populations tend to engage in fewer trade links with other countries. This negative result supports the previous findings (Caporale et al., 2022). In the context of LDCs, a possible explanation could be that countries with large populations may face difficulty in producing commodities over their local consumption, which could discourage trade. However, our findings contradict the work of Kahouli (2016), who argued that exporter populations have a positive effect while reasoning that countries with large populations could achieve minimum efficiency scales and thus become more inclined to engage in mutual trade relationships.

Cultural proximity between the exporting and destination countries—measured by shared 'lingua franca' and colonial ties—exhibited a mixed result across the SSA, global south, and whole sample. While shared language became weaker in the pooled sample and the SSA case, excluding the outlier countries, it continued to play a positive and significant role for SSA, the global south, and the north, supporting prior literature (see, for example, (Becker et al., 2013; Cezar, 2015; Susanto et al., 2011)). However, other than producing a positive outcome in the pooled sample instance, sharing a common colonizer does not significantly affect any SSA or global south results. Additionally, given that the destination nations are restricted to the global north, even though being a colony of a destination country yields a positive and significant result for the pooled sample, it results in a negative and significant estimate. More specifically, when the global north is the only destination, having a history of colonization has no beneficial effects. Similar results were consistently positive and significant in all the alternative situations, indicating that countries that are close together (geographically and economically) are more likely to establish trade relations than those that are far apart. This is by far consistent with past generalizations regarding the notion that trade barriers between countries lessen as the trading pairs get closer (Head & Mayer, 2014). On the other hand, past studies frequently found that the border impact was absent, particularly for advanced economies (Martinez-Zarzoso et al., 2009).

4.2.1. Financial development and bilateral trade

Table 4 shows that the level of financial development in exporting countries is not only positive and significant, but it also remains remarkably stable across the three sub-samples provided in columns (1), (2), and (3). It implies that financial development contributes to trade relations within the SSA and the global south, however, its role became statistically insignificant for the trade relationship with the global north, and the pooled sample. Thus, the estimates emphasize that better

Table 3
Regression result (Dependent variable is export).

Variables	SSA			(GS)	(GN)	(POOLED)
	(1)	(2)	(3)	(4)	(5)	(6)
GDP_i	0.855*** (0.0572)	0.870*** (0.0714)	0.932*** (0.0714)	1.447*** (0.0999)	0.894*** (0.0808)	1.401*** (0.0671)
GDP_j	0.359*** (0.0503)	0.325*** (0.0581)	0.304*** (0.0588)	0.442*** (0.0586)	1.126*** (0.126)	0.362*** (0.0413)
POP_i	−0.0952 (0.0719)	−0.174** (0.0884)	−0.267*** (0.0854)	−0.644*** (0.0924)	−0.571*** (0.0439)	−0.595*** (0.0578)
POP_j	0.229*** (0.0452)	0.193*** (0.0641)	0.204*** (0.0651)	0.545*** (0.0457)	−0.0303 (0.100)	0.510*** (0.0388)
D_ij	−0.964*** (0.0438)	−1.384*** (0.0913)	−1.424*** (0.0916)	−0.796*** (0.0542)	−1.500*** (0.0975)	−0.844*** (0.0419)
FD_i	2.437*** (0.349)	3.079*** (0.522)	2.476*** (0.525)	1.809** (0.548)	0.332 (0.297)	−0.554 (0.363)
FD_j	3.793*** (0.365)	1.717*** (0.510)	0.928* (0.509)	1.541*** (0.580)	2.971*** (0.439)	2.262*** (0.302)
SSA				0.147 (0.180)		0.437*** (0.152)
COL_ij	0.184*** (0.0672)	0.132 (0.0834)	0.0280 (0.0816)	0.195*** (0.0614)	0.244*** (0.0648)	−0.0451 (0.0571)
COCLY_ij	−0.00573 (0.127)			0.0707 (0.154)		0.562*** (0.0805)
COZ_ij					−0.890*** (0.246)	0.385*** (0.0702)
BRDR_ij	0.837*** (0.0911)	0.390** (0.171)	0.240 (0.180)	1.137*** (0.113)		0.989*** (0.0894)
SML_ij	0.227*** (0.0268)	0.372*** (0.0576)	0.408*** (0.0600)	−0.0136 (0.0290)	0.612*** (0.0694)	0.0834*** (0.0210)
IQ_i	−0.478** (0.195)	−0.414*** (0.147)	−0.175 (0.142)	−0.828*** (0.185)	−0.155 (0.105)	−0.464*** (0.130)
IQ_j	−0.0377 (0.106)	0.142 (0.151)	0.309* (0.158)	0.627*** (0.122)	0.915*** (0.204)	0.857*** (0.0797)
SSAFD_i				2.080*** (0.283)		1.233*** (0.218)
FDIQ_i	0.999 (0.778)	0.356 (0.870)	−0.904 (1.021)	1.249** (0.506)	2.288*** (0.457)	1.456*** (0.390)
FDIQ_j	0.899* (0.508)	0.489 (1.080)	−1.062 (1.163)	0.692* (0.378)	−0.931*** (0.277)	−0.780*** (0.147)
C	−8.018*** (0.920)	−2.114** (0.866)	−1.017 (0.787)	−21.95*** (1.704)	−11.75*** (1.387)	−18.39*** (1.122)
Importer FE	No	No	Yes	Yes	Yes	No
Exporter FE	Yes	Yes	Yes	No	No	Yes
Imp-Exp FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	No
N	28,567	27,025	24,123	44,327	20,742	69,317
Pseudo-R ²	0.490	0.157	0.164	0.344	0.500	0.362

Note: Robust SE are in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; SSA, GS, GN, and Pooled, respectively, represent that the destination countries are from sub-Saharan Africa, the Global South, the Global North, and the Pooled Sample, while in all cases the exporting countries are the same (SSA); poisson pseudo maximum likelihood (PPML) estimation results are reported in each case. While (1) reports estimation results from the whole SSA, (2) excludes South Africa, and (3) excludes South Africa, Seychelles and Botswana from the sample. For the coefficients of each dummy variable to assume a percentage interpretation, converting each using the equation $((e^{\beta} - 1))$ is required.

financial sector development would facilitate mutual trade within the bloc. Moreover, financial development in the destination countries stimulates trade relations within SSA, the global south, the north, and the pooled sample.

Generally, since the variable is statistically significant across the three subsamples, it suggests that SSA countries with more developed financial systems favor intra-regional trade. The estimated coefficients of financial development in the country of destination suggest that developed financial systems in the destination nations not only facilitate trade relations in the SSA but also play a considerable role in the global south and the rest of the world. It is true regardless of whether the importing countries are from SSA, the global south, or the north. This finding corroborates Cezar's (2015) finding, which claims that the likelihood that country i exports to country j gets higher when the destination country possesses a well-developed financial system. Thus, financial sector development could be considered one of the policy areas that LDCs could consider to facilitate trade links within the global south.

A higher financial development score suggests that financial institutions and markets are more successful at financing businesses at rates that are competitive while maintaining sustainable profitability.

Our results are consistent with the idea that a country's competitive edge in international trade increases with a robust financial sector. Many studies link financial development to trade, highlighting how it makes it easier for export enterprises to access global financing. Production targeting international markets depends more on external financing than manufacturing targeting domestic customers because exporting is linked to high upfront costs (Becker et al., 2013; Carlucci & Fally, 2012; Hur et al., 2006). Firms choose which trading partners to work with based on fixed and retroactive costs, such as determining whether new export markets are viable, customizing products for the market, complying with regulations, and establishing and maintaining distribution networks (Manova, 2013).

The possible justification for how developed financial system affects trade—the ease with which enterprises can obtain international

Table 4
Sensitivity analysis (Dependent variable- Ln export).

Var	SSA			GS			POOLED		
	FE	RE	Sys-GMM	FE	RE	Sys-GMM	FE	RE	Sys-GMM
L.export			0.327*** (0.00302)			0.274 (0.192)			0.880*** (0.246)
L2.export			0.137*** (0.00207)			−0.366* (0.206)			−0.176 (0.247)
GDP_i	0.462*** (0.0599)	0.675*** (0.0413)	0.496*** (0.0158)	0.374*** (0.0498)	0.676*** (0.0351)	−0.472 (0.533)	0.273*** (0.0383)	0.558*** (0.0277)	0.571*** (0.219)
GDP_j	0.598*** (0.0526)	0.450*** (0.0380)	−0.201*** (0.0155)	0.515*** (0.0445)	0.380*** (0.0326)	0.0264 (0.280)	0.636*** (0.0374)	0.505*** (0.0278)	0.0389 (0.466)
POP_i	−2.118*** (0.236)	0.121** (0.0545)	−0.236*** (0.0175)	−0.838*** (0.172)	−0.258*** (0.0451)	1.012 (0.783)	0.752*** (0.125)	0.341*** (0.0361)	0.858* (0.469)
POP_j	1.816*** (0.221)	0.0177 (0.0512)	0.0714*** (0.0196)	0.263** (0.133)	0.382*** (0.0389)	−0.736 (0.652)	0.245** (0.109)	0.311*** (0.0344)	−0.385 (0.496)
FD_i	0.782** (0.376)	1.512*** (0.308)	1.124*** (0.0749)	0.299 (0.520)	1.162*** (0.416)	16.47*** (5.629)	0.838*** (0.322)	1.785*** (0.268)	3.986** (1.631)
FD_j	0.105 (0.369)	0.730** (0.308)	−1.353*** (0.0821)	0.790*** (0.245)	0.849*** (0.216)	−4.174** (2.110)	0.481*** (0.141)	0.666*** (0.125)	−1.638** (0.724)
SML_ij	−0.0203 (0.135)	−0.0783 (0.0641)	0.0239 (0.0301)	−0.220** (0.0920)	−0.0983** (0.0442)	−1.423 (0.952)	0.0205 (0.0675)	−0.0387 (0.0348)	−1.604 (1.291)
IQ_i	0.0108 (0.0786)	0.0558 (0.0733)	−0.0335** (0.0158)	0.117* (0.0652)	0.0843 (0.0607)	1.108 (0.777)	0.190*** (0.0492)	0.186*** (0.0462)	1.194 (0.732)
IQ_j	0.203*** (0.0775)	0.203*** (0.0721)	0.216*** (0.0123)	0.111* (0.0671)	0.215*** (0.0620)	−0.260 (0.910)	0.125*** (0.0480)	0.307*** (0.0441)	0.749* (0.444)
FDIQ_i	−0.0749 (0.399)	0.173 (0.381)	−0.357*** (0.0712)	0.0740 (0.324)	0.170 (0.311)	−7.829*** (2.083)	0.0414 (0.244)	0.0841 (0.236)	−0.0545 (1.504)
FDIQ_j	−0.399 (0.431)	−0.221 (0.410)		0.307 (0.220)	0.312 (0.208)	3.023 (2.269)	−0.138* (0.0753)	−0.170** (0.0714)	
D_ij		−2.114*** (0.0918)	−0.819*** (0.0461)		−1.930*** (0.0888)	2.553 (2.589)		−1.635*** (0.0792)	−0.983 (1.631)
COL_ij		0.604*** (0.121)	−0.0346 (0.0535)		0.578*** (0.113)	1.164 (2.333)		0.598*** (0.0979)	−3.572 (3.236)
COCLY_ij		1.777 (1.515)	−1.165 (3.584)		1.801 (1.591)	−334.1 (291.6)		2.679*** (0.368)	−22.93 (18.05)
BRDR_ij		1.864*** (0.245)	1.136*** (0.154)		1.904*** (0.250)	2.245 (14.96)		2.174*** (0.243)	−0.277 (10.38)
COCZ_ij						4.110 (9.791)		0.539*** (0.115)	−0.765 (1.628)
SSAFD_i				0.120 (0.642)	0.304 (0.505)	−12.11 (8.488)	−0.549 (0.489)	−0.267 (0.393)	
SSAFD_j				−0.328 (0.456)	0.136 (0.375)	1.191 (5.390)	−0.00743 (0.399)	0.00323 (0.332)	−0.639 (0.897)
SSA_j					−0.556*** (0.167)	1.526 (3.059)		−0.237 (0.145)	2.227** (1.127)
GN_j								0.308*** (0.112)	
C	−16.66*** (2.072)	−0.152 (1.116)	11.89*** (0.484)	−26.71*** (1.774)	−7.545*** (1.016)	−12.78 (27.94)	−25.35*** (1.490)	−10.54*** (0.883)	13.74 (14.24)
N	19,279	19,279	12,252	30,703	30,703	17,316	50,937	50,937	33,614
R-squared	0.098	0.4503		0.1357	0.3912		0.189	0.3871	
AP(1)			0.000			0.028			0.006
AP(2)			0.372			0.478			0.237
Sargan			0.479			0.842			0.269

Note: Robust SE are in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; SSA, GS, and Pooled, respectively, represent that the destination countries are from sub-Saharan Africa, the Global South, and the pooled sample, while in all cases the exporting countries are the same (SSA); FE = fixed effect; RE = random effect; and sys-GMM = two-step system generalized method of moment estimations. AP (1) and AP (2) represent the Arellano-Bond test for autoregressive of order one and two in the first difference, respectively; the Sargan is the Sargan test for over-identifying restriction. For the AP (*) and Sargan tests, P-values are reported. A whole sample (41 exporting countries from SSA and 97 destination countries for 22 years (200–2021)) is considered. For the coefficients of each dummy variable to assume a percentage form, converting each using the equation is required.

capital— gives special meaning to our study area, given that the financing ecosystem remained backward on the one hand, and domestic financing could not fulfill firms' demand specifically for foreign currency. As an additional corroboration to our findings, [Hur et al. \(2006\)](#), state that firms in developing countries face considerable challenges in obtaining foreign financing. It is because, countries with inefficient financial markets experience greater adverse selection and moral hazard problems in lending and borrowing. More importantly, [Caporale et al. \(2022\)](#) and [Beck \(2002\)](#) advanced the claim by stating that it is with manufactured goods that the effects of financial development become more apparent, as it benefits more from higher levels of financial sector development than the agricultural sector. Therefore, over time, a robust

financial system results in a comparative advantage for this industry, increasing the proportion of industrial exports to the total export mix. This claim argues that financial sector development not only improves international trade but also alters the sectoral mix of trade while favoring the manufacturing sector, which is particularly important for countries in the global south, such as SSA, where primary products dominate their export content.

Additionally, our findings are consistent with [Susanto et al. \(2011\)](#), who emphasize the active role that the advanced financial sector would play in bilateral trade. He outlined that its effect is more robust for trade in manufactured commodities, as the global south enjoys more from it than its global north counterpart. It could be because financial

development is closely linked to market efficiency and access to information, neither of which is an issue in advanced countries. Our results support this claim since when compared to its effects in the SSA and the global south, the exporting country's financial development coefficient becomes statistically insignificant for the global north. Similarly, our finding is consistent with Cezar (2015), who documented the importance of the financial sector in trade. His finding stresses that financial institutions actively impact trade selection, with the result that when financial limitations are lifted, more enterprises could participate in the export market. Moreover, by comparing the impact of finance on domestic production vis-à-vis exports, Manova (2013) documents that financial constraints affect exports more severely than domestic output.

4.4.2.2. Institutional quality and bilateral trade. Acknowledging that effective institutions are necessary for better trade relationships (Álvarez et al., 2018), we estimated the significance of institutional quality in SSA's exporting and importing nations and how it interacts with financial development. We go beyond what has been in the literature and employ the principal component analysis (PCA) approach to consider each component of institutional quality, as indicated in the World Bank database. The results in Table 3 confirm that institutional quality is a significant factor influencing international trade relationships in the SSA. This finding is particularly relevant, given how expensive it is to search for markets abroad. In addition, we considered two interaction terms. The first is the interaction between the financial development of the source countries and the institutional quality of the destination countries, and the second is the interaction between the financial development and the institutional quality of the importing countries. Accordingly, while the estimated coefficients of institutional quality of importing countries are statistically insignificant in influencing intra-bloc trade, the institutional quality of exporting countries contributes negatively and significantly to intra-bloc trade in SSA. This is evident in Columns (1) and (2) of Table 3. In contrast, when we correct the data for outliers (column 3), the role of institutional quality in importing countries weakens, while the destination's institutional quality positively and significantly influences intra-bloc trade in SSA. In a similar vein, the institutional quality of the importing countries continues to contribute a negative and significant role to SSA's exports to the global south as well as in the whole sample, whereas the same variable for the destination countries significantly encourages the trade link of SSA with the global south as well as in the pooled sample. It implies that SSA countries with better institutional quality tend to trade less with SSA and the Global South. Countries with better institutional quality tend to import from the SSA. When looking at SSA's trade with the global north, the quality of institutions in destination countries remains an important factor. However, the role of exporters' institutional quality remains weak in affecting mutual trade relations.

These results have important implications. Institutional quality is not given much weight in home countries, possibly because the countries with better institutions are small and have a minimal presence in international trade as exporters. However, the positive and significant role of institutional quality in destination countries implies that market search and matching costs could be a negative function of institutional quality in destination countries. Abreo et al. (2021) found that better institutional quality leads to improved economic incentives and reduced information asymmetries, which supports this finding. Moreover, Oshota & Wahab (2022), from the Economic Community of West African States (ECOWAS), demonstrate that good institutions boost the flow of resources within regional blocs. The relationship between finance and institutions has a positive impact on trade in SSA and the global south, but not in the global north and pooled sample.

4.3. Robustness analysis

We made various modifications to ensure the consistency of our

findings reported in Table 3. First, we modified our sample for SSA by excluding upper- and bottom-outlier countries based on their economic size. We justify it by pointing out that one or a few outliers could obscure the significance of a variable. In this regard, South Africa is hardly comparable with other countries in the SSA region in terms of its economic status and financial sector development. Similarly, to ensure the role of institutional quality in bilateral trade is not to be hidden because most institutionally better countries are small (both geographically and demographically) and their share in international trade is insignificant, we excluded those countries from our sample (see column 3 of Table 3) and re-estimated the model. As reported in Table 3, the modification didn't change our conclusions about the financial development trade nexus. Specifically, the role of financial development in the exporting countries is highly stable across the three sub-samples, both in terms of the magnitude of the estimated elasticities and their statistical significance. However, the role of financial development for the importing nations, though positive, reduces both in magnitude and significance as we move from the full sample to the modified one.

Second, we adopted various static and dynamic estimation strategies to ensure that our findings are consistent across these methods. Accordingly, from the static version, we estimated the data using both fixed and random effect methods (see Table 4), and from the dynamic context, we employed the two-step system-GMM method, which is suited in the case where endogeneity is an issue in the data. Since the addition of the lag of the dependent variable as an instrument would render our independent variables at least weakly exogenous, avoiding the possibility of reverse causality (Demir & Dahi, 2011), we considered lagged exports as an additional instrument. We selected the immediate two lags as the instrument whose validity we tested through Sargan's over-identifying restriction test (see Table 4). In two out of the three cases, the coefficient of the immediate lags of the dependent variable appears statistically significant and positive, showing that the past trade history explains the present one. More specifically, given that the two nations engaged in bilateral trade, it was likely that they would continue doing so.

Accordingly, the financial development of the exporting countries consistently plays a significant and positive role in SSA exports in each sub-sample, regardless of the estimation method (see Table 3). Regarding the role of the destination's financial development, the FE and RE techniques tend to report a positive and significant coefficient, whereas the Sys-GMM reports a negative coefficient. Moreover, being soundly consistent with our findings in the baseline model reported in Table 3, the role of the destinations' institutional quality remains positive and highly significant in all sub-samples, implying that countries with better institutional quality tend to import from SSA, keeping all else constant. Similarly, except for sys-GMM for the SSA case, all others report a positive coefficient for the institutional quality of the exporting countries, among which most estimates remain statistically weaker in affecting the international trade patterns in SSA.

Lastly, we estimate the role of the sub-components of financial development (see Table 5), that is, the depth, access, and efficiency of both FIs and FMs of the exporting and destination countries in the intra-trade link in SSA countries, using the PPML estimation method. By estimating it, we aim to see if the role of financial development is robust between the aggregated and its sub-constituents on the one hand and to see which of its sub-components play an exceptional role in the trade connections of the sub-Saharan African countries. Accordingly, the estimated results in Table 5 indicate that most of the constituents of financial development positively and significantly explain trade links within SSA. Except for the efficiency of FIs and access of FMs of both exporting and destination countries, which are statistically null at any acceptable level of significance, the remaining variables happen to be positive and statistically significant at the one percent level. On the other hand, our exercise didn't affect our conclusion concerning the impact of the remaining variables, both in terms of statistical significance and the direction of their role.

Table 5
Sensitivity analysis using components of financial development for SSA.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP_i	0.868*** (0.0577)	0.923*** (0.0616)	1.132*** (0.0368)	0.869*** (0.0542)	1.127*** (0.0439)	0.980*** (0.0514)
GDP_j	0.429*** (0.0395)	0.458*** (0.0500)	0.754*** (0.0375)	0.402*** (0.0370)	0.740*** (0.0441)	0.643*** (0.0375)
POP_i	−0.104 (0.0666)	−0.116 (0.0729)	−0.335*** (0.0495)	−0.141** (0.0642)	−0.322*** (0.0539)	−0.207*** (0.0630)
POP_j	0.182*** (0.0407)	0.253*** (0.0559)	−0.0314 (0.0354)	0.108*** (0.0369)	−0.0248 (0.0372)	0.0569 (0.0377)
D_ij	−0.996*** (0.0445)	−0.968*** (0.0433)	−0.895*** (0.0439)	−0.994*** (0.0452)	−0.887*** (0.0443)	−0.996*** (0.0467)
FID_i	1.589*** (0.189)					
FID_j	2.226*** (0.186)					
FIA_i		1.789*** (0.334)				
FIA_j		3.233*** (0.383)				
FIE_i			−0.310 (0.258)			
FIE_j			0.0929 (0.237)			
FMD_i				2.057*** (0.171)		
FMD_j				2.944*** (0.189)		
FMA_i					−0.205 (0.147)	
FMA_j					0.270 (0.249)	
FME_i						1.482*** (0.161)
FME_j						1.535*** (0.166)
COL_ij	0.189*** (0.0620)	0.275*** (0.0628)	0.263*** (0.0649)	0.308*** (0.0596)	0.259*** (0.0756)	0.225*** (0.0645)
COCLY_ij	−0.216* (0.130)	0.335*** (0.120)	0.693*** (0.139)	0.773*** (0.145)	0.688*** (0.140)	−0.237 (0.157)
BRDR_ij	0.725*** (0.0936)	0.808*** (0.0927)	0.873*** (0.0920)	0.750*** (0.0982)	0.893*** (0.0966)	0.738*** (0.0932)
SML_ij	0.236*** (0.0248)	0.163*** (0.0247)	0.103*** (0.0253)	0.270*** (0.0267)	0.100*** (0.0273)	0.133*** (0.0244)
IQ_i	−0.388*** (0.0923)	−0.0845 (0.0775)	0.0212 (0.0808)	−0.318*** (0.0769)	0.00558 (0.0714)	−0.123* (0.0727)
IQ_j	0.0874 (0.0697)	0.370*** (0.0601)	0.559*** (0.0589)	0.195*** (0.0597)	0.544*** (0.0553)	0.456*** (0.0578)
C	−8.333*** (0.743)	−11.27*** (0.732)	−14.81*** (0.809)	−5.731*** (0.699)	−14.86*** (0.877)	−11.73*** (0.790)
N	28,567	28,567	28,567	28,567	28,567	28,567
R-squared	0.507	0.476	0.425	0.516	0.427	0.455

Note: Robust SE is in parentheses; *** $p < .01$, ** $p < .05$, * $p < .1$; poisson pseudo maximum likelihood (PPML) estimation results are reported in each case. While the subscripts i and j refer to the destination and exporting countries, FID = FIs depth, FIA = FIs access, and FIE = FIs efficiency, FMD = FMs depth, FMA = FMs access, and FME = FMs efficiency. For the coefficients of each dummy variable to assume a percentage form, converting each using the equation $((e^{\beta} - 1))$ is required.

Our research significantly advances the body of knowledge in numerous ways. First, while the majority of earlier studies have concluded that financial development enhances the export of industries that heavily rely on foreign financing, we reiterate this claim by emphasizing that countries that depend on foreign financing, in addition to sectors, also benefit more from a developed financial sector in terms of their export performance. Second, governments choose their destinations because those places have more advanced economies. [Demir and Dahi \(2011\)](#) emphasize the asymmetric impact of financial development on SST and NST, and while we acknowledge their work, our study uses bilateral trade data in the gravity framework, taking a more reliable measurement of financial development while using a variety of estimation techniques to test the validity of our findings. By contrast, their analysis used sys-GMM estimate methodologies, focused on the unilateral export of manufactured products, and used the private sector credit

as a proportion of GDP as a gauge of financial sector development.

5. Conclusion and policy directions

The empirical findings confirm that the financial development of exporting countries meaningfully spurs the SST link in SSA, and this result is robust across alternative estimation strategies and alternative samples. The variable becomes less predictive as we move from the global south to the north, and in the pooled sample, indicating that securing financial development primarily supports trade relations within the global south compared to its effect on international trade in general. It might be because the potential impact of the financial sector depends on the degree of market efficiency and information access, both of which are comparatively less problematic in advanced nations. Similarly, financial sector development in the destination countries not

only becomes equally well connected to boosting SST but also supports bilateral trade between SSA countries and the rest of the global south and the global north. It suggests that countries favor exporting more to those with better financial development. It could emanate from the fact that the search and matching costs of exporting firms could be considerably lower, given that the destination countries' financial systems are relatively developed.

Therefore, given the simultaneous threat of economic interconnectedness and the fact that the SST paradigm is gaining momentum in the wake of the global economic and financial crises triggered by the 2008 financial crisis and the outbreak of the COVID-19 pandemic, this study will give additional insight by showing the role of financial development in fostering trade within the global south. It is suggested that policy-makers would prioritize strengthening the financial sector as part of the comprehensive policy measures for enhancing intra-trade ties in SSA. The finding is timely because the majority of the recently launched long-term development strategies of African countries, such as the African Continental Free Trade Area (AfCFTA⁵), which is explicitly mentioned in the agenda 2063 document, place a strong emphasis on boosting intra- and inter-African trade. Consequently, the study findings would suggest potential policy areas for achieving the goal.

6. Limitations of the study

This study deals with the role of financial development and

institutional quality on south-south and north-south trade taking aggregate merchandise exports. However, the analysis did not attempt to identify the relevance of the two variables on the disaggregated exports at the sectoral level. Furthermore, we did not estimate how these two variables operate at the firm level. Thus, future scholars who explore these topics would be able to extend our work.

CRedit authorship contribution statement

Amsalu Dachito Chigeto: Data curation, Formal analysis, Investigation, Methodology, Software, Visualization, Writing – original draft. **Jayamohan M.K:** Conceptualization, Data curation, Formal analysis, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Etana Ayeru:** Conceptualization, Data curation, Formal analysis, Supervision, Validation, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

Table A1

Lists of countries included in the study.

Country	Code	i or j	Region (GS = 1)	Country	Code	i or j	Region (GS = 1)	Country	Code	i or j	Region (GS = 1)	Country	Code	i or j	Region (GS = 1)
Algeria	DZA	j	1	Denmark	DNK	j	0	Liberia	LBR	i&j	1	Saudi Arabia	SAU	j	1
Angola	AGO	i&j	1	Egypt, Arab Rep.	EGY	j	1	Libya	LBY	j	1	Senegal	SEN	i&j	1
Argentina	ARG	j	1	Equatorial Guinea	GNQ	i&j	1	Madagascar	MDG	i&j	1	Seychelles	SYC	i&j	1
Australia	AUS	j	0	Eswatini	SWZ	i&j	1	Malawi	MWI	i&j	1	Sierra Leone	SLE	i&j	1
Austria	AUT	j	0	Ethiopia	ETH	i&j	1	Malaysia	MYS	j	1	Singapore	SGP	j	1
Bahrain	BHR	j	1	Finland	FIN	j	0	Mali	MLI	i&j	1	South Africa	ZAF	i&j	1
Bangladesh	BGD	j	1	France	FRA	j	0	Mauritania	MRT	i&j	1	Spain	ESP	j	0
Belarus	BLR	j	0	Gabon	GAB	i&j	1	Mauritius	MUS	i&j	1	Sri Lanka	LKA	j	1
Belgium	BEL	j	0	Gambia	GMB	i&j	1	Mexico	MEX	j	1	Sudan	SDN	j	1
Benin	BEN	i&j	1	Germany	DEU	j	0	Morocco	MAR	j	1	Sweden	SWE	j	0
Botswana	BWA	i&j	1	Ghana	GHA	i&j	1	Mozambique	MOZ	i&j	1	Switzerland	CHE	j	0
Brazil	BRA	j	1	Greece	GRC	j	0	Namibia	NAM	i&j	1	Tanzania	TZA	i&j	1
Bulgaria	BGR	j	0	Guinea	GIN	i&j	1	Netherlands	NLD	j	0	Thailand	THA	j	1
Burkina Faso	BFA	i&j	1	Guinea-Bissau	GNB	i&j	1	New Zealand	NZL	j	0	Togo	TGO	i&j	1
Burundi	BDI	i&j	1	India	IND	j	1	Niger	NER	i&j	1	Tunisia	TUN	j	1
Cameroon	CMR	i&j	1	Indonesia	IDN	j	1	Nigeria	NGA	i&j	1	Turkiye	TUR	j	1

(continued on next page)

⁵ AfCFTA is a strongly desirous trade arrangement that aims to boost economic integration in Africa and establish the largest free trade area in the world by establishing a single market for products and services for produced in the continent. The operational phase of the AfCFTA agreement was formally launched on July 7, 2019. And as of February 2023, 46 of the 54 signatories (85.2%) had already deposited their ratification instruments.

Table A1 (continued)

Country	Code	i or j	Region (GS = 1)	Country	Code	i or j	Region (GS = 1)	Country	Code	i or j	Region (GS = 1)	Country	Code	i or j	Region (GS = 1)
Canada	CAN	j	0	Ireland	IRL	j	0	Norway	NOR	j	0	Uganda	UGA	i& j	1
Central African Republic	CAF	i& j	1	Israel	ISR	j	0	Pakistan	PAK	j	1	Ukraine	UKR	j	0
Chad	TCD	i& j	1	Italy	ITA	j	0	Philippines	PHL	j	1	United Arab Emirates	ARE	j	1
Chile	CHL	j	1	Japan	JPN	j	0	Poland	POL	j	0	United Kingdom	GBR	j	0
China	CHN	j	1	Kenya	KEN	i& j	1	Portugal	PRT	j	0	USA	USA	j	0
Colombia	COL	j	1	Korea, Rep.	KOR	j	1	Qatar	QAT	j	1	Zambia	ZMB	i& j	1
Congo, Dem. Rep.	COD	i& j	1	Kuwait	KWT	j	1	Romania	ROU	j	0	Zimbabwe	ZWE	i& j	1
Congo, Rep.	COG	i& j	1	Lebanon	LBN	j	1	Russian Federation	RUS	j	0				
Cote d'Ivoire	CIV	i& j	1	Lesotho	LSO	i& j	1	Rwanda	RWA	i& j	1				

Note: i and j indicate exporter and importer countries respectively, region implies whether a country is from global north (GN) or global south. (GS) where GS = 1 and GN = 0.

References

- Abreo, C., Bustillo, R., & Rodriguez, C. (2021). The role of institutional quality in the international trade of a latin american country: Evidence from colombian export performance. *Journal of Economic Structures*, 10(1). <https://doi.org/10.1186/s40008-021-00253-5>
- Álvarez, I. C., Barbero, J., Rodríguez-Pose, A., & Zofio, J. L. (2018). Does institutional quality matter for trade? institutional conditions in a sectoral trade framework. *World Development*, 103, 72–87. <https://doi.org/10.1016/j.worlddev.2017.10.010>
- Amisshah, E., Bougheas, S., Defever, F., & Falvey, R. (2021). Financial system architecture and the patterns of international trade. *European Economic Review*, 136, Article 103751. <https://doi.org/10.1016/j.eurocorev.2021.103751>
- Anderson, J. E. (1979). A Theoretical Foundation for the gravity equation. *American Economic Association*, 69(1), 106–116.
- Anderson, J. E., Larch, M., & Yotov, Y. V. (2018). GEPPML: General equilibrium analysis with PPML. *World Economy*, 41(10), 2750–2782. <https://doi.org/10.1111/twec.12664>
- Anderson, J. E., & Yotov, Y. V. (2016). Terms of trade and global efficiency effects of free trade agreements, 1990–2002. *Journal of International Economics*, 99, 279–298. <https://doi.org/10.1016/j.jinteco.2015.10.006>
- Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68(1), 29–51. [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D)
- Arribas, I., Bensassi, S., & Tortosa-Ausina, E. (2020). Trade integration in the European Union: Openness, interconnectedness, and distance. *North American Journal of Economics and Finance*, 52(December 2018), Article 101167. <https://doi.org/10.1016/j.najef.2020.101167>
- Baier, S. L., Bergstrand, J. H., & Clance, M. W. (2018). Heterogeneous effects of economic integration agreements. *Journal of Development Economics*, 135, 587–608. <https://doi.org/10.1016/j.jdevco.2018.08.014>
- Beck, T. (2002). Financial development and international trade: Is there a link? *Journal of International Economics*, 57(1), 107–131. [https://doi.org/10.1016/S0022-1996\(01\)00131-3](https://doi.org/10.1016/S0022-1996(01)00131-3)
- Becker, B., Chen, J., & Greenberg, D. (2013). Financial development, fixed costs, and international trade. *Review of Corporate Finance Studies*, 2(1), 1–28. <https://doi.org/10.1093/rcfs/cfs005>
- Berman, N., & Héricourt, J. (2010). Financial factors and the margins of trade: Evidence from cross-country firm-level data. *Journal of Development Economics*, 93(2), 206–217. <https://doi.org/10.1016/j.jdevco.2009.11.006>
- Beverelli, C., Keck, A., Larch, M., & Yotov, Y. (2018). Institutions, Trade and Development: A Quantitative Analysis. *SSRN Electronic Journal*, 0–0. <https://doi.org/10.2139/ssrn.3167749>
- Bontempi, E., & Coccia, M. (2021). International trade as critical parameter of COVID-19 spread that outclasses demographic, economic, environmental, and pollution factors. *Environmental Research*, 201(March), Article 111514. <https://doi.org/10.1016/j.envres.2021.111514>
- Borsky, S., & Leiter, A. M. (2022). International trade in rough diamonds and the Kimberley process certification scheme. *World Development*, 152(2022), Article 105786. <https://doi.org/10.1016/j.worlddev.2021.105786>
- Capoani, L. (2023). Review of the gravity model: Origins and critical analysis of its theoretical development. In *SN Business & Economics* (Vol. 3, Issue 5) Springer International Publishing. <https://doi.org/10.1007/s43546-023-00461-0>
- Caporale, G. M., Sova, A. D., & Sova, R. (2022). The direct and indirect effects of financial development on international trade: Evidence from the CEEC-6. *Journal of International Financial Markets, Institutions and Money*, 78(March), Article 101550. <https://doi.org/10.1016/j.intfin.2022.101550>
- Carlucci, J., & Fally, T. (2012). Global sourcing under imperfect capital markets. *Review of Economics and Statistics*, 94(3), 740–763. https://doi.org/10.1162/REST_a.00219
- Cezar, R. (2015). The gravity of financial development. *Journal of International Trade and Economic Development*, 24(5), 696–723. <https://doi.org/10.1080/09638199.2014.955870>
- Chaney, T. (2018). The gravity equation in international trade: An explanation. *Journal of Political Economy*, 126(1), 150–177. <https://doi.org/10.1086/694292>
- Chaves, L. F., Friberg, M. D., Hurtado, L. A., Marín Rodríguez, R., O'Sullivan, D., & Bergmann, L. R. (2022). Trade, uneven development and people in motion: Used territories and the initial spread of COVID-19 in mesoamerica and the Caribbean. *Socio-Economic Planning Sciences*, 80(January), Article 101161. <https://doi.org/10.1016/j.seps.2021.101161>
- Demir, F., & Dahi, O. S. (2011). Asymmetric effects of financial development on south-south and south-north trade: Panel data evidence from emerging markets. *Journal of Development Economics*, 94(1), 139–149. <https://doi.org/10.1016/j.jdevco.2009.12.001>
- Dewitte, R. (2022). The gravity equation in international trade: A note. *Journal of Political Economy*, 130(5), 1412–1418. <https://doi.org/10.1086/718917>
- Dildar, Y. (2019). Book review: South-south trade and finance in the twenty-first century: Rise of the south or a second great divergence. *Review of Radical Political Economics*, 51(2), 336–339. <https://doi.org/10.1177/0486613418782775>
- Edmond, C., Midrigan, V., & Xu, D. Y. (2015). Competition, markups, and the gains from international trade. *American Economic Review*, 105(10), 3183–3221. <https://doi.org/10.1257/aer.20120549>
- Ejones, F., Agbola, F. W., & Mahmood, A. (2021). Do regional trade agreements promote international trade? new empirical evidence from the east african community. *Journal of International Trade and Economic Development*, 30(7), 1020–1053. <https://doi.org/10.1080/09638199.2021.1930110>
- Freeman, R., & Lewis, J. (2021). Gravity model estimates of the spatial determinants of trade, migration, and trade-and-migration policies. *Economics Letters*, 204, Article 109873. <https://doi.org/10.1016/j.econlet.2021.109873>
- Gammage, C., & Akinkugbe, O. D. (2020). Covid-19 and South-South Trade & Investment Cooperation: Three emerging narratives. *SSRN Electronic Journal*, May. <https://doi.org/10.2139/ssrn.3608954>
- Gil-Pareja, S., Llorca-Vivero, R., & Martínez-Serrano, J. A. (2014). Do nonreciprocal preferential trade agreements increase beneficiaries' exports? *Journal of Development Economics*, 107, 291–304. <https://doi.org/10.1016/j.jdevco.2014.01.002>
- Gokmenoglu, K. K., Amin, M. Y., & Taspinar, N. (2015). The relationship among international trade, financial development and economic growth: The case of Pakistan. *Procedia Economics and Finance*, 25(May), 489–496. [https://doi.org/10.1016/S2212-5671\(15\)00761-3](https://doi.org/10.1016/S2212-5671(15)00761-3)
- Head, K., & Mayer, T. (2014). Gravity Equations: Workhorse, Toolkit, and Cookbook. In *Handbook of International Economics* (Vol. 4, Issue 313522, pp. 131–195). Elsevier B. V. 10.1016/B978-0-444-54314-1.00003-3.
- Heo, Y., Thanh Huyen, N. T., & Doanh, N. K. (2021). Impact of the institutional quality on NAFTA's international trade: A system GMM approach. *Journal of Economic Studies*, 48(3), 537–556. <https://doi.org/10.1108/JES-09-2019-0435>
- Hou, Y., Wang, Y., & Xue, W. (2021). What explains trade costs? institutional quality and other determinants. *Review of Development Economics*, 25(1), 478–499. <https://doi.org/10.1111/rode.12722>
- Hsieh, P. L. (2017). Reassessing the trade–development nexus in international economic law: The paradigm shift in Asia-Pacific regionalism. *Northwestern Journal of International Law and Business*, 37(3).

- Htwe, N. N., Lim, S., & Kakinaka, M. (2020). The coevolution of trade agreements and investment treaties: Some evidence from network analysis. *Social Networks*, 61 (March), 34–52. <https://doi.org/10.1016/j.socnet.2019.08.005>
- Hur, J., Raj, M., & Riyanto, Y. E. (2006). Finance and trade: A cross-country empirical analysis on the impact of financial development and asset tangibility on international trade. *World Development*, 34(10), 1728–1741. <https://doi.org/10.1016/j.worlddev.2006.02.003>
- Kahouli, B. (2016). Regional integration agreements, trade flows and economic crisis: A static and dynamic gravity model. *International Economic Journal*, 30(4), 450–475. <https://doi.org/10.1080/10168737.2016.1204338>
- Kahouli, B., & Maktouf, S. (2014). The link between regional integration agreements, trade flows and economic crisis: A static and dynamic gravity model. *International Journal of Development Issues*, 13(1), 35–58. <https://doi.org/10.1108/IJDI-11-2013-0082>
- Kay, C. (2018). The latin american contributions to critical development theory. *Caderno CRH*, 31(84). <https://doi.org/10.1590/s0103-49792018000300002>
- Khalid, U., Okafor, L. E., & Burzynska, K. (2022). Do regional trade agreements enhance international tourism flows? evidence from a cross-country analysis. *Journal of Travel Research*, 61(6), 1391–1408. <https://doi.org/10.1177/00472875211028321>
- Khan, H., Khan, S., & Zuojun, F. (2022). Institutional quality and financial development: Evidence from developing and emerging economies. *Global Business Review*, 23(4), 971–983. <https://doi.org/10.1177/0972150919892366>
- Kim, D.-H., Lin, S.-C., & Suen, Y.-B. (2010). Are financial development and trade openness complements or substitutes? *Southern Economic Journal*, 76(3), 827–845. <https://doi.org/10.4284/sej.2010.76.3.827>
- Lam, T.-D. (2015). A review of modern trade theories. *American Journal of Economics*, 1 (6), 604–614.
- Leibovici, F. (2021). Financial development and international trade. *Journal of Political Economy*, 129(12), 3405–3446. <https://doi.org/10.1086/716564>
- Lisimba, A. F., & Parashar, S. (2021). The 'state' of postcolonial development: China-Rwanda 'dependency' in perspective. *Third World Quarterly*, 42(5), 1105–1123. <https://doi.org/10.1080/01436597.2020.1815527>
- Liu, X. Y. (2022). *Analysis on the interaction between financial development and international trade* (pp. 743–748). Atlantis Press International BV.
- Manova, K. (2013). Credit constraints, heterogeneous firms, and international trade. *Review of Economic Studies*, 80(2), 711–744. <https://doi.org/10.1093/restud/rds036>
- Martínez-Zarzoso, I., Felicitas, N. L. D., & Horwood, N. (2009). Are regional trading agreements beneficial? static and dynamic panel gravity models. *North American Journal of Economics and Finance*, 20(1), 46–65. <https://doi.org/10.1016/j.najef.2008.10.001>
- Maruta, A. A. (2019). Trade aid, institutional quality, and trade. *Journal of Economics and Business*, 103, 25–37. <https://doi.org/10.1016/j.jeconbus.2018.12.001>
- Mchani, s. (2022). The impact of regional trade agreements on bilateral trade flows. *A Systemic Literature Review. Competition*, 21(1–2), 119–133. <https://doi.org/10.21845/comp/2022/1-2/3>
- Mehrotra, R., & Carbonnier, G. (2021). Abnormal pricing in international commodity trade: Empirical evidence from Switzerland. *Resources Policy*, 74(May), Article 102352. <https://doi.org/10.1016/j.resourpol.2021.102352>
- Mykoniatis, N., & Ready, R. (2013). Financial development and international agricultural trade: Is there a connection. *Journal of International Economics*, 57, 1–27.
- Oshota, S. O., & Wahab, B. A. (2022). Institutional Quality and Intra-Regional Trade Flows: Evidence from ECOWAS. In *Journal of African Trade* (Vol. 9, Issues 1–2). Springer Netherlands. 10.1007/s44232-022-00005-9.
- Pérez, F. (2021). East Asia has delinked – can Ethiopia delink too? *Review of African Political Economy*, 48(167). <https://doi.org/10.1080/03056244.2021.1879769>
- Saucier, P., & Rana, A. T. (2017). Do preferential trade agreements contribute to the development of trade? taking into account the institutional heterogeneity. *International Economics*, 149(2017), 41–56. <https://doi.org/10.1016/j.inteco.2016.10.001>
- Sen, S. (2012). International trade theory and policy: A review of the literature. *SSRN Electronic Journal*, 635. <https://doi.org/10.2139/ssrn.1713843>
- Shahbaz, M., Hye, Q. M. A., Tiwari, A. K., & Leitão, N. C. (2013). Economic growth, energy consumption, financial development, international trade and CO2 emissions in Indonesia. *Renewable and Sustainable Energy Reviews*, 25, 109–121. <https://doi.org/10.1016/j.rser.2013.04.009>
- Silva, J. M. C. S., & Tenreiro, S. (2006). The log of gravity. *The Review of Economics and Statistics*, 88(4), 641–658. <https://doi.org/10.1162/rest.88.4.641>
- Sunping, H., & Muganyi, T. (2019). Financial depth and international trade: Evidence from China. *Transnational Corporations Review*, 11(4), 346–359. <https://doi.org/10.1080/19186444.2019.1689749>
- Surugiu, M.-R., & Surugiu, C. (2015). International trade, globalization and economic interdependence between european countries: Implications for businesses and marketing framework. *Procedia Economics and Finance*, 32(15), 131–138. [https://doi.org/10.1016/S2212-5671\(15\)01374-X](https://doi.org/10.1016/S2212-5671(15)01374-X)
- Susanto, D., Rossion, C. P., & Costa, R. (2011). Financial Development and International Trade: Regional and Sectoral Analysis. *Association 2011 AAEA & NAREA Joint Annual Meeting*, 1–24.
- Sviryzdenka, K. (2016). Introducing a new broad-based index of financial development. *IMF Working Papers*, 16(05), 1. <https://doi.org/10.5089/9781513583709.001>
- Tham, S. Y., Khoo Goh, S., Wong, K. N., & Fadhli, A. (2018). Bilateral export trade, outward and inward FDI: A dynamic gravity model approach using sectoral data from Malaysia. *Emerging Markets Finance and Trade*, 54(12), 2718–2735. <https://doi.org/10.1080/1540496X.2017.1402176>
- UNCTAD. (2022). *Trade structure by partner – UNCTAD Handbook of Statistics 2022*. 2022. <https://hbs.unctad.org/trade-structure-by-partner/>.
- Vithessonthi, C., & Kumarasinghe, S. (2016). Financial development, international trade integration, and stock market integration: Evidence from Asia. *Journal of Multinational Financial Management*, 35, 79–92. <https://doi.org/10.1016/j.mulfin.2016.03.001>
- Weidner, M., & Zylkin, T. (2021). Bias and consistency in three-way gravity models. *Journal of International Economics*, 132(2021), Article 103513. <https://doi.org/10.1016/j.jinteco.2021.103513>
- Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics*, 126(1), 25–51. <https://doi.org/10.1016/j.jeconom.2004.02.005>
- World Bank (WB). (2022). *Greater and More Diverse Participation in Global Trade is Key to Achieving Africa's Economic Transformation*.
- Xinzhong, Q. (2022). An empirical analysis of the influence of financial development on export trade: Evidence from Jiangsu province. *China. Economic Research-Ekonomska Istrazivanja*, 35(1), 1526–1541. <https://doi.org/10.1080/1331677X.2021.1975554>
- Yakubu, A. S., Aboagye, A. Q. Q., Mensah, L., & Bokpin, G. A. (2018). Effect of financial development on international trade in Africa: Does measure of finance matter? *Journal of International Trade and Economic Development*, 27(8), 917–936. <https://doi.org/10.1080/09638199.2018.1474246>