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Article

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A new index to assess economic diplomacy in emerging countries

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ABSTRACT

This paper aims to examine the role of economic diplomacy in attracting foreign capital to emerging countries, by developing a composite index measuring diplomatic activity. We focus on what extent does economic diplomacy influence the inflow of foreign capital to emerging countries. Then, we used data from fifty-five (55) developing economies in 2018. The composite index for diplomatic activity is constructed using principal component analysis. Further, we investigated the effect of this index on foreign capital inflows using linear regression based on the ordinary least squares method. The results indicate that the increase in the number of embassies alone does not significantly influence the evolution of diplomatic action. However, diplomacy plays a non-negligible role in attracting foreign capital. Our results demonstrate a positive and significant link between diplomacy and foreign funding, highlighting the importance of this tool for attracting investment and supporting growth in these countries. The findings of this work are going to serve both scientific and practitioners' communities as it sheds light on the larger debate around the growing role of economic diplomacy in emerging countries in the context of globalization. Moreover, it provides a useful tool for measuring the effectiveness of foreign policies and their impact on economic expansion.

1. Introduction

Financial capital remains a key factor for economic growth in both contemporary and historical contexts. The globalized world, which increasingly connects countries, further emphasizes the importance of capital. This is particularly evident in the internationalization of economic and social relations, where the flow of finance, information, technology, goods, and services between nations is rapidly expanding. Capital now plays a vital part in every nation's economic development as a result of the liberalization of national economies. Some economies experience growth difficulties due to their low capital stock and lack of resources (Domar, 1946; (Atchadé, 2013; Atchadé, 2016)). In this regard, foreign financing emerges as one of the main catalysts for a country's development. As more countries embrace globalization, governments need to adopt policies that shape the interaction between domestic and international economies. Economic diplomacy plays a crucial role in achieving economic welfare outcomes at the national level (Odell, 2000). Diplomacy, traditionally defined as the conduct of relations between states and other entities, has evolved to encompass the management of relations between states and other actors (Bayne & Woolcock, 2012). In this sense, countries strive for attractiveness as an explicit objective of their economic policy, especially in developing nations.

The term "emerging countries" refers to nations that are in the process of developing and transitioning from a low income, less developed, often pre-industrial economy towards becoming a modern, industrial, advanced economies with a higher standard of living (Reynolds, 2018).

Moreover, the definition and measurement of emerging economies through a multidimensional approach to provide a more comprehensive understanding of these economies suggesting considering factors such as economic growth, structural transformation, and institutional development. This will provide a better understanding of the challenges and opportunities faced by these economies and to capture the complexity and diversity of emerging economies (Garcia, 2016).

In Kvint (2009) and Julien (2012), an emerging market country was described as transitioning from dictatorship to a free-market economy, with growing economic freedom, global integration, a rising middle class, improving living standards, social stability, and increased cooperation with multilateral institutions.

In the words of the *International Monetary Fund* (*IMF*), "emerging

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markets are typically countries with low to middle per capita income that have undertaken economic development and reform programs and have begun to 'emerge' as significant players in the global economy" (Rousseau, 2015). Its classification looked at the size of the country's economy, the market access, the frequency and amount of international bonds issued, and the income level (Rupa Duttagupta, 2021). More related definitions can be found in Bank (2022) and Rupa Duttagupta (2021).

The ability of these countries to attract sustainable foreign capital flows is highly dependent on the promotion of their territories (Kouam & Daba, 2019).

Economic diplomacy has become a major aspect of states' external actions, particularly in emerging countries seeking to enhance their attractiveness for foreign capital and support their development. Hence, the diplomatic network becomes an essential channel for increasing the capital stock by mobilizing international economic actors. Successful development experiences of some countries highlight the importance of economic diplomacy, which is divided into three phases: action, regional diplomacy, and economic promotion. These phases involve a combination of policymaking: sound domestic economic policies, effective economic diplomacy, trade policy leadership, capacity building, and regional diplomacy (Rana, 2007). Additionally, economic diplomacy operates at various international levels, including bilateral, regional, and multilateral interactions, leading to trade and financial agreements (Woolcock, 2011). Foreign Direct Investment (FDI) and Official Development Assistance (ODA) are dynamic resources flowing into developing countries. They bring tangible and intangible assets, embodying the salient attributes of globalization.

FDI is defined as commitments made with the aim of acquiring a lasting interest in an enterprise operating in the territory of an economy other than that of the investor (Nayak & Choudhury, 2014). FDI is expected to strengthen a country's exports, create employment, enhance transfer technology, contribute to territorial planning, and foster industrial development. To attract FDI, specific measures such as privatization programs and fiscal and financial incentives are implemented. Attractiveness plays a critical role in the analysis of FDI's concentration area. Territorial competitiveness requires a division of labor between multinational corporations and governments. Multinational companies seek greater profitability and decide on activity locations based on internal factors such as production costs, and market potential. Local authorities, on the other hand, aim to enhance the value of their territories to attract foreign investors (Karray & Toumi, 2007). The latter purpose's is to have effective decision-making power in the management of enterprise (Balance of Payments Textbook, 1996). The location criteria for FDI often overlap with the attractiveness factors of host countries. These factors include market size, real income levels, labor costs and skills, political and economic stability, trade openness, domestic investment, trade policy liberalization, exchange rate movements, taxation policies, quality of institutions and infrastructure, and the level of corruption (Globerman & Shapiro, 1999; Globerman & Shapiro, 2003; Brou, 2021; Wei, 2000; Srinivasan, 2012; Hailu, 2010; Dje et al., 2007). Territorial attractiveness is built upon a complex set of interrelated factors divided into two categories: "fundamental" factors, which are essential prerequisites for attractiveness (economic and political stability, market size, fiscal incentives, infrastructure and institutional quality, and the availability of qualified labor), and "necessary" factors that reinforce attractiveness (presence of successful local companies, an innovation-friendly environment, privatization and market liberalization policies, geographic and cultural considerations, establishment of promotional organizations, and membership in a regional integration zone) (Michalet, 1999).

ODA establishes new relationships between donors and recipients, leading to geopolitical and economic interests (Carbonnier, 2010). The literature shows that foreign policy objectives, political alliances, economic policies, country size, trade links, domestic savings, income levels, poverty levels, and democracy are influential in determining the level of ODA received by recipient countries (Papanek, 1973; Griffin & Enos, 1970; Burnside & Dollar, 2000). Additionally, other criteria such as gross national income per capita, debt level, and political stability influence the allocation of ODA (Chauvet et al., 1997).

Despite the increasing contribution of emerging countries to the global economy, few quantitative studies have specifically evaluated the role of diplomacy in these countries. The paper aims to address this gap by empirically studying the influence of diplomacy on external financing received by emerging countries. Our research emphasizes the extent to which economic diplomacy promotes the influx of foreign capital (FDI and ODA) into emerging countries. This inquiry will be of interest as it illuminates the expanding role of diplomacy in the international economic integration of emerging countries, within the context of heightened world trade.

To assess the effectiveness of economic diplomacy in developing countries' attractiveness for FDI and ODA, this paper proposes the construction of an index to measure diplomatic activity. This index will be derived from quantitative variables using principal component analysis (PCA). The effect of this index on the combination of FDI and ODA will be analyzed through linear regression (Atchadé et al., 2022) using the ordinary least squares method. The following sections of the paper will display the chosen materials and methods (2), present the results (3), and provide a discussion (4). The conclusion (5) will summarize the findings.

2. Materials and methods

2.1. Data

In this study, 2018 year data from various organizations are utilized to assess the dynamism of countries' diplomatic action and its effect on foreign capital mobilization. These organizations are the World Bank (World Development Indicators, World Governance Indicators), Transparency International (Corruption Perceptions Index), UNCTAD (International Investment Agreements Navigator), World Trade Organization, WTO (Preferential Trade Arrangements) as well as each country's international cooperation ministries. It focuses on 55 developing countries across all continents. The full dataset was accessed on February 16, 2022. The study focuses on 55 developing countries across all continents.

The research establishes an index named *IDA* (*Index of Diplomatic Activity*) that evaluates the dynamism of countries' diplomatic actions in terms of territorial attractiveness. The indicators used for constructing this index are as follows:

- International investment agreements **(*inv.agr*)**

  UNCTAD maintains a dataset of *international investment agreements* (*IIAs*), which fall into two categories: bilateral investment treaties and treaties with investment provisions. We measure *IIAs* in terms of the ***number of international investment agreements***. *IIAs* represent an agreement between a capital-importing state and an investing state abroad to promote investment. International investment agreements (*IIAs*) are an element of investment promotion strategies, whereby the parties seek to attract investors through capital-exporting or capital-importing country or through international cooperation (bilateral or multilateral) by guaranteeing investment protection. Investment promotion encompasses all activities and measures ranging from measures to improve the general institutional framework for foreign investment to the provision of financial or fiscal incentives to investors to increase foreign investment in the host country. Factors that influence investment flows include the institutional framework for foreign investment, economic conditions, and business facilitation.
- Preferential trade agreements **(*trade.agr*)**

  Preferential trade agreements (*PTAs*) refer to unilateral trade privileges, such as generalized system of preferences (GSPs) and non-

reciprocal preferential programs (NRPP) that some WTO members apply to products from developing and least developed countries. They are expressed in terms of the ***number of preferential trade agreements*** concluded between two states in the area of trade, taking into account the fiscal, tariff and trade benefits as well as the investment guarantees granted. Information on *PTA*s applied by **WTO** members has been compiled in the *Preferential Trade Agreements* dataset.

– Embassies abroad **(*emb.abd*)**

An embassy is a diplomatic representation of one state in another. The negotiation and conclusion of an agreement or treaty are the responsibility of the **Ministry in Charge of Foreign Affairs** in liaison with its embassies. They are carried out through its diplomatic network represented by the *number of open embassies abroad*.

This index' effect on the joint mobilization of *FDI* and *ODA* is then evaluated on the basis of foreign capital in-flows. It involves the following variables: foreign capital **(*FDI* + *ODA*)**, macroeconomic stability, external public debt, trade openness, domestic investment, the level of corruption and the country's political risk. These variables appear in the literature and are described as follows:

– Foreign capital **(*Lint.app*)**

This is measured by the **combination of net *FDI* and *ODA* inflows** into an economy. They generally consist of international movements of financial assets from investor countries abroad and public actors in developed countries to a host country. They are measured in *millions of dollars*.

– Macroeconomic stability **(*Linflt*)**

It is measured by *inflation* which is the general and sustained increase in prices. *Inflation* measured by *consumer price index* (*CPI*) is the change in the cost of a basket of goods and services typically purchased by specific groups of households. A controlled level of inflation indicates the macroeconomic stability of a country. Its evolution is measured in *annual %*. It creates a more secure economic environment to better attract international financial actors.

– Public external debt **(*Ldebt.pub*)**

It is measured by the *stock of public external debt*. The *stock of debt* is intended to provide a good measure of the future debt service burden. It is measured in *millions of dollars*. It corresponds to the total financial commitments made in the form of loans by the State, public authorities and the organizations that depend directly on them. In the case of a high-debt stock, the prospect of a significant increase in its service will lead international actors to anticipate an increase in taxes, which would only result in the flight of foreign capital.

– Trade openness **(*Lop.deg*)**

It is measured by the **trade openness ratio**. The *trade openness ratio* is the share of international trade in a country's economy. It is expressed as *% of GDP*. Trade openness could help attract foreign capital by providing opportunities to access larger markets.

– Domestic investment **(*Linvst*)**

It is perceived through *gross fixed capital formation*. The latter represents the internal capacity for investment. It is measured in *millions of dollars*. An increase in a country's productive capacity would have a positive effect on foreign capital inflows.

– The level of corruption **(*corrup*)**

This is measured by the *corruption perception index*, which ranges from 0 *to*10. It would entail additional costs for international actors as a counter-attractive factor.

– Political risk of the country **(*instb*)**

This is perceived as the *probability of political instability and/or social unrest* in the country, ranging from 0 to 1. A high risk of instability is said to have a repulsive effect on foreign capital inflows.

The data sources by variable used in this study are:

- *World Development Indicators* dataset on the **World Bank** website, which provides data on the variables *Lint.app*, *Linflt*, *Ldebt.pub*, *Lop.deg*, *Linvst*;
- *Corruption Perceptions Index* dataset of **Transparency International**, which provides data on the variable *corrup*;
- *World Governance Indicators* dataset of the **World Bank** website, which provides data on the variable *instb*.

The variables, except for the level of corruption and the country's political risk, are logarithmized (indicated by the letter "*L*" at the beginning) to obtain their elasticities directly.

2.2. Methods

This study used both exploratory and explanatory methods. The exploratory method was used to calculate the composite index and the explanatory method was used to assess the effect of the new index on the variable of interest. We used R software for the whole analysis.

The exploratory analysis helped to establish the composite indicator of diplomatic activity. It is written as follows:

$$IDA = \alpha_1 * inv.agr + \alpha_2 * trade.agr + \alpha_3 * emb.abd \quad (1)$$

X_1 and X_2 two quantitative variables. We denote $Cov(X_1, X_2)$ the covariance between X_1 and X_2 and σ_1 and σ_2 the standard deviations of X_1 and X_2, respectively.

The first step is to identify the variables that represent the same concept. This involves removing redundancy between variables. The correlation analysis between variables makes it possible to identify those that are strongly correlated and to retain only one of them to present the information provided. Correlation analysis studies the link between variables by calculating the correlation coefficient. Here, we use the Bravais-Pearson linear correlation coefficient as follows:

$$r_{(X_1,X_2)} = \frac{Cov(X_1, X_2)}{\sigma_1 \quad \sigma_2} \quad (2)$$

X_1 and X_2 two quantitative variables. We denote $Cov(X_1, X_2)$ the covariance between X_1 and X_2 and σ_1 and σ_2 the standard deviations of X_1 and X_2, respectively.

The selected variables undergo a standardization before the realization of PCA. The resulting standardized variables are calculated as follows:

$$z_i = \frac{x_i - \mu}{\sigma}, \quad (3)$$

where x_i the values of the variable X; μ the average of X; σ the standard deviation of X; z_i the standardized values.

Given that these variables come from various domains, it is preferable to do a standardized PCA (Baccini, 2010). The Kaiser criterion stipulates that axes with eigenvalues greater than 1 should be retained. The IDA therefore corresponds to the first principal component which, by construction, summarizes most of the information contained in the data. Apart from the fact that this method has the advantage of using weights that capture as much variability as possible between the different successive data, it also allows us to have the contributions of each of the variables to the value of the index, and therefore to diplomatic action. Given the uniqueness of the composite index, the first principal component is therefore preferable to all other components. The use of this axis in the construction of the IDA is only at the level of determining the weights α_i ($\alpha_i \in \mathbb{R}$) of the variables based on the coefficients of linkage of each variable with the axis of interest. A scaling of the index from 1 to 10 has made it possible to define the levels of diplomatic activity in three categories:

$$IDA\begin{cases} < 4, & \text{insufficient diplomatic activity} \\ 4-6, & \text{sufficient diplomatic activity} \\ > 6, & \text{high diplomatic activity} \end{cases}$$

The scaling is based on the following process:

$$y_i = 1 + \frac{(x_i - \min(X))(10-1)}{\max(X) - \min(X)}, \tag{4}$$

where $\min(X)$: the minimum value of X; $\max(X)$: the maximum value of X; x_i the actual values of X; y_i the normalized values of Y.

In order to investigate the effect of diplomacy on the mobilization of foreign financing, we deployed a linear regression model with the following equation:

$$Y_{(n,1)} = X_{(n,p)}\beta_{(p,1)} + \varepsilon_{(n,1)}, \tag{5}$$

where Y is a random vector of dimension n; X is a matrix of known size $n \times p$, called the experimental design matrix; β is the vector of dimension p of the model unknown parameters; ε is the vector of dimension n of the errors.

The α threshold for risk of error is set at 5%. To validate the model, we run the following statistical tests.

2.2.1. Fisher test for the global significance of the model

The Fisher test of overall significance indicates whether the linear regression model fits the data better than a model with no independent variables. Its statistic is given by:

$$F = \frac{R^2}{1-R^2}\frac{n-m-1}{m}, \tag{6}$$

where R^2 the coefficient of determination of the regression model; n the number of observations; m the number of explanatory variables.

2.2.2. Shapiro–Wilk test for normality of errors

It is based on the study of ratio of the square of a certain linear combination of the incomplete ranges (*i.e.* the differences of the ordered observations: $x_{n-1} - x_2, \ldots, x_{n-j+1} - x_j, j < \frac{n}{2}$) to the sum of the squares of the differences from the mean of the n observations. The Shapiro–Wilk test statistic is given by:

$$W = \frac{\left(\Sigma_{j=1}^{k} a_j d_j\right)^2}{\Sigma_{i=1}^{n}(x_i - \bar{x})^2} \tag{7}$$

$d_j = x_{n-j+1} - x_j$ and

$$\begin{cases} k = \dfrac{n}{2}, & \text{if } n \text{ is even} \\ k = \dfrac{n-1}{2}, & \text{if } n \text{ is odd} \end{cases}$$

a_j are the coefficients of the linear combination.

2.2.3. Breusch-Pagan test for homoscedasticity of errors

The homoscedasticity allows us to conclude that the OLS estimator has minimal variance. The *Breusch-Pagan* statistic is:

$$BP = nR^2 \rightsquigarrow \mathscr{X}^2(K-1), \tag{8}$$

where K is the number of parameters to be estimated in the test equation; n the number of observations; R^2 the coefficient of determination of the test equation.

2.2.4. Durbin-Watson test for autocorrelation of errors

The Durbin-Watson test is used to detect first-order autocorrelation between the residuals of a linear regression. By definition, the Durbin and Watson statistic is given by:

Table 1
Correlation coefficients between indicators.

	inv.agr	trade.agr	emb.abd
inv.agr	1	−0.60	0.67
trade.agr	−0.6	1	−0.5
emb.abd	0.67	−0.5	1

$$DW = \frac{\Sigma_{t=2}^{n}(\varepsilon_t - \varepsilon_{t-1})^2}{\Sigma_{t=1}^{n}\varepsilon_t^2} \tag{9}$$

ε_t is the estimated error at time t.

2.2.5. Independence of explanatory variables

The explanatory variables collinearities increase the variance of regression coefficients of the model compared to the situation where Xs are orthogonal. This effect can be seen in the *VIF* formula. *VIF* of a variable X_k is calculated as follows:

$$VIF_k = \frac{1}{1-R_k^2}, \tag{10}$$

where R_k^2 is the coefficient of determination for the regression of the k-th explanatory variable on the other variables. The denominator of *VIF* is equal to the tolerance and varies from 0 to 1.

3. Results and discussion

3.1. Results

3.1.1. Exploratory statistics

This study focuses on 55 countries and analyzes three variables. More than half of these countries have signed over 17 *international investment agreements* and 14 *trade agreements*. Additionally, they have at least 35 *embassies abroad*. On average, these countries received in 2018 a foreign capital inflow of 3427.98 *million US dollars*, but 50% of them received less than 1520.52 *million US dollars* in foreign capital. The average inflation rate across these countries is 4.786%, and 50% of the countries have an inflation rate above 3%. About 75% of the countries have a public debt stock below 20177.72 *million US dollars*, while the overall average stands at 20,320.24 *million US dollars*. The trade

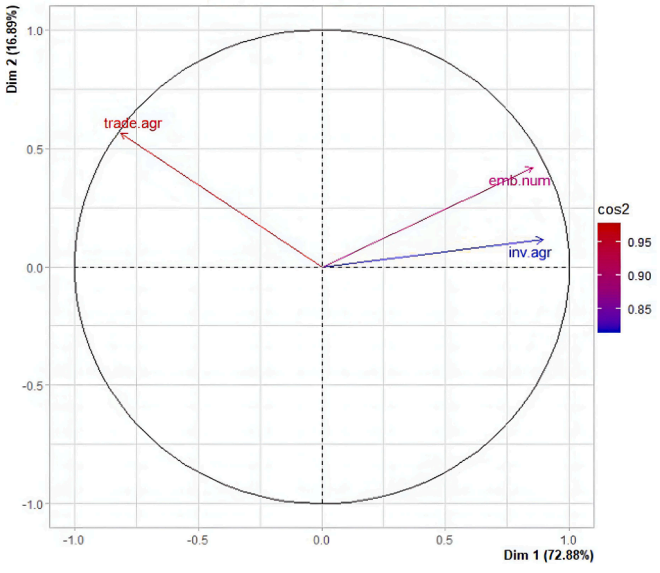

Fig. 1. Variables factor map.

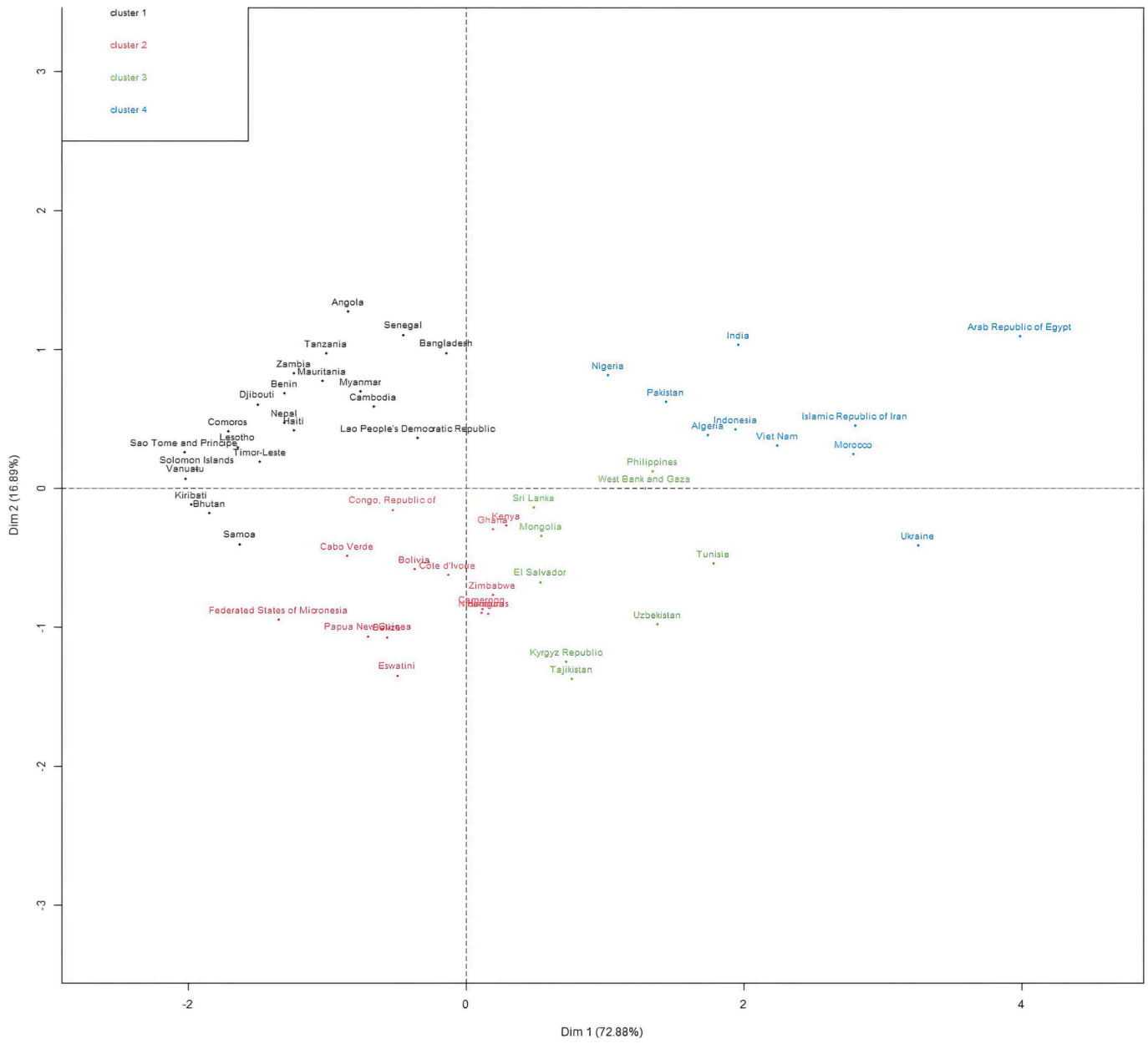

Fig. 2. Ascending Hierarchical Classification of the individuals.

openness rate is approximately 48.9%. Domestic investment is relatively low, with 50% of the countries having investments below 7814.9 *million US dollars*, while the average is 36623.8 m*illion US dollars*. In terms of social factors, 75% of the countries have a corruption level below 3.635, and the probability of social instability prevalence is below 0.2334.

It is notable that many lower middle-income countries have a significant foreign presence and engage in multiple partnerships. The amount of foreign capital received by these countries varies due to individual characteristics such as controlled level of indebtedness and inflationary pressure. The level of domestic investment remains low in most countries, and there are concerns regarding country risk and corruption.

3.1.2. Construction of the IDA index

Based on the analysis, the indicators used to construct the *IDA* index do not exhibit strong correlations (Table 1). Each indicator represents unique information, avoiding redundancy in the index.

The first two axes of the analysis explain 89.77% of the total dataset's variability. That means 89.77% of the individual's total cloud variability is explained by the plane. This percentage is high indicating that the first plane represents a significant portion of the data variability. Consequently, the variables are well represented in this factorial design. (Fig. 1).

Regarding individuals (Fig. 2), the **dimension 1** opposes four groups of states:

- the first is characterized by low values for **international investment agreements** and high values for **preferential trade agreements** and **diplomatic representations**.

  This group is made up of individuals from countries such as *Angola*, *Bangladesh*, *Kiribati*, *Sao Tome and Principe*, *Senegal*, *Tanzania*, *Vanuatu*, *Solomon Islands*, *Samoa*, *Bhutan*, *Timor-Leste*, *Nepal*, *Haiti*, *Comoros*, *Lesotho*, *Djibouti*, *Benin*, *Cambodia*, *Lao People's Democratic Republic*, *Myanmar*, *Zambia*, *Mauritania*.
- the second is characterized by low values for **international investment agreements** and **preferential trade agreements**.

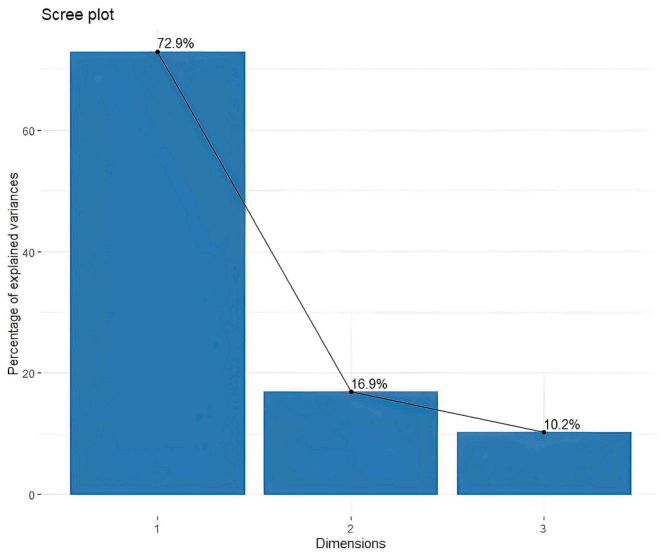

Fig. 3. Decomposition of the total inertia.

Table 2
Statistics on dimensions.

	Eigenvalues		
	Variance	% of explained variance	Cumulative % of variance
Dimension **1**	2.186	72.880	72.880
Dimension **2**	0.507	16.888	89.768
Dimension **3**	0.307	10.232	100.000

This group is made up of individuals such as *Belize*, *Eswatini*, *Federated States of Micronesia Papua New Guinea*, *Zimbabwe*, *Honduras*, *Nicaragua*, *Cameroon*, *Ivory Coast*, *Ghana*, *Kenya*, *Cabo Verde*, *Republic of Congo*, *Bolivia*.

- the third is characterized by high values for **international investment agreements** and low values for **preferential trade agreements**.

This group is made up of individuals such as *Uzbekistan*, *Kyrgyz Republic*, *Tajikistan*, *West Bank and Gaza*, *Philippines*, *Tunisia*, *Mongolia*, *Sri Lanka*, *El Salvador*.

- the fourth is characterized by high values for **diplomatic representations** and **international investment agreements** and high values for **preferential trade agreements**.

This group is made up of individuals such as *Arab Republic of Egypt*, *India*, *Islamic Republic of Iran*, *Morocco*, *Ukraine*, *Vietnam*, *Nigeria*, *Pakistan*, *Algeria*, *Indonesia*.

The first factor explains 72.9% of the total data variability (Fig. 3) and is the only one to have an eigenvalue greater than 1 (Table 2). This remark suggests that this axis carries significant information. It is therefore appropriate to restrict the analysis to the description of the first dimension (Ajar, 1982). Thus, the analysis focuses solely on the description of the first dimension.

Furthermore, the coordinates of the indicators on the first axis are between −0.812 and 0.895 (Table 3). The coordinates of the indicators on the first axis show that international investment agreements and diplomatic representations contribute positively, while preferential trade agreements have a negative contribution to diplomatic activity. The variables **inv.agr** and **emb.abd** have approximately equal and positive coordinates while the variable **trade.agr** has a negative coordinate.

The index of diplomatic activity is then translated as follows:

$$IDA = 0.895 * inv.agr - 0.812 * trade.agr + 0.852 * emb.abd \quad (11)$$

From Table 3, **contribution** (**ctr**) represents the share of total variability explained by each major component. It quantifies the relative importance of each major component in data representation. In addition, **square cosinus** (cos^2) represents the quality of the representation of the original variables in each main component. It measures the correlation between each variable and each main component, and indicates how each variable contributes to the construction of each main component. The closer the cos^2 is to 1, the better the variable is represented by the corresponding main component.

The *IDA* index takes its values over the interval]-3; 6[(Table 4). Using Eq. 11 the *IDA* index previously obtained is normalized over the interval [1; 10] (Table 5). Three groups of countries can be observed from the analysis countries *IDA* normalized values. They have been named as follows:

- Countries with *IDA* values below 4. These are the countries with **insufficient diplomatic activity** among the lower middle-income countries.
- Countries with *IDA* values between 4 and 6. These are the countries with **sufficient diplomatic activity** among the lower middle-income countries.

Table 4
IDA values.

Index of diplomatic activity (IDA)					
Algeria	2.57	*Angola*	−1.25	*Arab Republic of Egypt*	5.90
Bangladesh	−0.21	*Belize*	−0.84	*Benin*	−1.93
Bhutan	−2.73	*Bolivia*	−0.54	*Cabo Verde*	−1.26
Cambodia	−0.97	*Cameroon*	0.17	*Comoros*	−2.53
Djibouti	−2.22	*El Salvador*	0.80	*Eswatini*	−0.72
Federated States of Micronesia	−1.99	*Ghana*	0.29	*Haiti*	−1.83
Honduras	0.23	*India*	2.90	*Indonesia*	2.87
Islamic Republic of Iran	4.14	*Ivory Coast*	−0.19	*Kenya*	0.43
Kiribati	−2.92	*Kyrgyz Republic*	1.06	*Lao People's Democratic Republic*	−0.52
Lesotho	−2.42	*Mauritania*	−1.53	*Mongolia*	0.80
Morocco	4.12	*Myanmar*	−1.12	*Nepal*	−1.93
Nicaragua	0.16	*Nigeria*	1.51	*Pakistan*	2.13
Papua New Guinea	−1.04	*Philippines*	1.98	*Republic of Congo*	−0.78
Samoa	−2.40	*Sao Tome and Principe*	−2.99	*Senegal*	−0.67
Solomon Islands	−2.86	*Sri Lanka*	0.72	*Tajikistan*	1.12
Tanzania	−1.48	*Timor-Leste*	−2.19	*Tunisia*	2.63
Ukraine	4.81	*Uzbekistan*	2.03	*Vanuatu*	−2.99
Vietnam	3.32	*West Bank and Gaza*	1.91	*Zambia*	−1.83
Zimbabwe	0.29				

Table 3
Coordinates of variables on the correlation circle.

Variables	Dim. 1	ctr	cos^2	Dim. 2	ctr	cos^2	Dim. 3	ctr	cos^2
inv.agr	0.895	36.599	0.800	0.115	2.588	0.013	0.432	60.813	0.187
trade.agr	−0.812	30.191	0.660	0.565	62.910	0.319	0.146	6.898	0.021
emb.abd	0.852	33.209	0.726	0.418	34.502	0.175	−0.315	32.289	0.099

Table 5
Normalized IDA values.

Index of diplomatic activity (IDA)					
Algeria	6.63	*Angola*	2.76	*Arab Republic of Egypt*	10.00
Bangladesh	3.82	*Belize*	3.18	*Benin*	2.07
Bhutan	1.26	*Bolivia*	3.48	*Cabo Verde*	2.75
Cambodia	3.04	*Cameroon*	4.20	*Comoros*	1.46
Djibouti	1.78	*El Salvador*	4.83	*Eswatini*	3.29
Federated States of Micronesia	2.01	*Ghana*	4.32	*Haiti*	2.17
Honduras	4.26	*India*	6.96	*Indonesia*	6.93
Islamic Republic of Iran	8.22	*Ivory Coast*	3.84	*Kenya*	4.46
Kiribati	1.07	*Kyrgyz Republic*	5.10	*Lao People's Democratic Republic*	3.51
Lesotho	1.57	*Mauritania*	2.48	*Mongolia*	4.84
Morocco	8.20	*Myanmar*	2.89	*Nepal*	2.07
Nicaragua	4.19	*Nigeria*	5.56	*Pakistan*	6.19
Papua New Guinea	2.98	*Philippines*	6.04	*Republic of Congo*	3.24
Samoa	1.59	*Sao Tome and Principe*	1.00	*Senegal*	3.35
Solomon Islands	1.13	*Sri Lanka*	4.76	*Tajikistan*	5.16
Tanzania	2.53	*Timor-Leste*	1.80	*Tunisia*	6.69
Ukraine	8.89	*Uzbekistan*	6.09	*Vanuatu*	1.00
Vietnam	7.38	*West Bank and Gaza*	5.96	*Zambia*	2.18
Zimbabwe	4.32				

Table 6
Distribution of countries according to the value of the IDA index and the number of the country's embassies.

Index of diplomatic activity (**IDA**)		
<4 Insufficient diplomatic activity	4–6 Sufficient diplomatic activity	>6 High diplomatic activity
Africa ↦ *Angola* (59[1]), *Benin* (25), *Cabo Verde* (17), *Comoros* (13), *Republic of Congo* (35), *Ivory Coast*(47), *Djibouti* (23), *Eswatini* (12), *Lesotho* (14), *Mauritania* (37), *Sao Tome and Principe* (8), *Senegal* (50), *Tanzania* (40), *Zambia* (34)	**Africa** ↦ *Cameroon* (35), *Ghana* (54), *Kenya* (54), *Nigeria* (97), *Zimbabwe* (41)	**Africa 7** ↦ Algeria (95), Arab Republic of Egypt (125), Morocco (97), Tunisia (59)
America ↦ *Belize* (12), *Bolivia* (33), *Haiti* (26)	**America** ↦ El Salvador (41), Honduras (32), Nicaragua (33)	Asia 7 ↦ India (138), Indonesia (94), Islamic Republic of Iran (101), Vietnam (69)
Asia ↦ *Bangladesh* (56), *Bhutan* (5), *Cambodia* (27), *Myanmar* (37), *Nepal* (31), *Lao People's Democratic Republic* (26), *Timor-Leste* (25)	**Asia 7** ↦ West Bank and Gaza (54), Mongolia (33), Kyrgyz Republic (28), Pakistan (86), Philippines (62), Sri Lanka (49), Tajikistan (29), Uzbekistan (35).	**Europe 7** ↦ Ukraine (83).
Oceania ↦ *Solomon Islands* (8), *Kiribati* (1), *Federated States of Micronesia* (4), *Papua New Guinea* (15), *Samoa* (6), *Vanuatu* (5).		

- Countries with *IDA* values above 6. These are the countries with **high diplomatic activity** among the lower-middle economies.

We would like to notice that some countries despite a large number of embassies exhibit low diplomatic activity (Table 6). This is the case for countries such as **Angola**, **Republic of Congo**, **Ivory Coast**, **Mauritania**, **Senegal**, **Tanzania** and **Myanmar** with at least 35 embassies. This suggests that the *number of embassies* does not definitely define a more active diplomacy. The political arrangements to reorganize the diplomatic map do not directly represent a limit to diplomatic activity.

On the other hand, it appears that countries with more *investment agreements* (high values) than *trade agreements* (low values) have at least sufficient diplomatic activity. Indeed, economic growth is still at the heart of policies developed in these countries. Capital, as a factor of productivity and therefore of growth, is established as a priority. In doing so, a diplomacy promoting capital inflows is more in line with the development objective. Economic diplomacy must therefore focus on improving its instruments and defending economic interests abroad.

3.1.3. Ordinary Least Squares (OLS) linear regression

The dependent variable in this regression *Lint.app* shows a strong correlation with the following variables: *Ldebt.pub, Linvst, instb*. It is to be noted that there are strong links between the exogenous variables: *Linvst, Ldebt.pub* and *Linvst, instb* (Table 7). The information provided by *Linvst* is already contained in *Ldebt.pub* and *instb*. The variables *Ldebt.pub* and *instb* are therefore the ones retained in the following analysis.

The linear regression model is as follows:

$$Lint.app = \beta_1 * Ldebt.pub + \beta_2 * instb + \beta_3 * IDA + \varepsilon \quad (12)$$

The regression results (Table 8) show that all variables have a positive influence on the endogenous variable except for the political risk of the country. Moreover, they have significant coefficients at the 5% threshold. This reveals a preponderant influence of these variables on foreign capital flows. Indeed, when the public external debt increases by 1%, foreign capital increases by 0.36%. As for the increase of one unit of political risk, foreign capital decreases by 24.64%. The study of the relationship between the attractiveness of an economy and diplomacy reveals a positive and significant link between foreign capital inflows and diplomatic activity. Moreover, the increase of one unit of the *IDA* index leads to an increase of 0.19% of foreign capital. Therefore, the diplomatic dynamism increases the inflow of foreign capital.

Furthermore, the strong positive links between external public debt and domestic investment imply a significant positive marginal effect of domestic investment on foreign capital.

3.1.4. Overall significance of the model

The residuals are randomly scattered around the null residual 0 line, which means that a linear model approximates the data points well without favoring certain inputs. In such a case, we can conclude that a linear model is appropriate for modeling this data (Fig. 4). The *p*-value of the model is $1.935*10^{-14}$ and less than 0.05. The model is therefore globally significant at the 5% level.

For the following tests, the rule of thumb is to reject the null hypothesis if $p\text{-value} < 0.05$.

3.1.5. Error normality test

H_0: the residuals are normally distributed

H_1: the residuals are not normally distributed

The various normality tests performed on the residuals lead to the conclusion that errors are Gaussian. Indeed, the *p*-value of the Shapiro–Wilk, Kolmogorov–Smirnov normality tests is higher than the 5% threshold (Table 9).

3.1.6. Error homoscedasticity test

H_0: the residuals' variance is constant (Homoscedasticity)

H_1: the residuals' variance is not constant (Heteroscedasticity)

The residuals are homoscedastic in conclusion to the results of the Breusch-Pagan and Fisher tests (Table 10). The *p*-values of the tests are all above the 5% threshold.

Table 7
Correlation coefficients between variables.

	Lint.app	Linflt	Ldebt.pub	Lop.deg	Linvst	corrup	instb
Lint.app	1						
Linflt	0.18	1					
Ldebt.pub	0.76	0.07	1				
Lop.deg	-0.28	-0.27	-0.29	1			
Linvst	0.79	0.31	0.72	-0.42	1		
corrup	-0.42	-0.13	-0.51	0.14	-0.48	1	
instb	-0.71	-0.32	-0.59	0.29	-0.71	0.54	1

Table 8
Outputs of the regression model.

Coefficients	Estimate	*t* value	Pr (>|*t*|)
Constant	8.82164	3.815	0.000369(***)
Ldebt.pub	0.35653	4.323	$7.15*10^{-5}$(***)
instb	−24.64111	−2.959	0.004671(**)
IDA	0.19297	2.885	0.005721(**)
$R^2 = 0.7278$			*F*-statistic = 45.45
Adjusted $R^2 = 0.7118$			*p* - value = $1.935*10^{-14}$
(***) Significance at the threshold of 0.1%			(**) Significance at the threshold of 1%

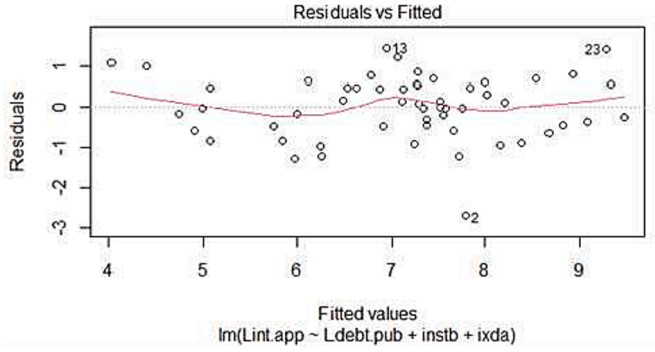

Fig. 4. Residuals curve.

Table 9
Results of normality test.

Normality test	Statistics	*p*-value
Shapiro–Wilk	0.9668	0.1324
Kolmogorov–Smirnov	0.0984	0.6262

Table 10
Results of homoscedasticity test.

Homoscedasticity test	Statistics	*p*-value
Breusch-Pagan	0.04019356	0.8411026
Fisher	0.02541659	0.8739394

Table 11
Results of autocorrelation test.

Autocorrelation test	Statistics	*p*-value
Durbin-Watson	1.8715	0.3309

Table 12
Results of multicolineariry test.

Variables	**VIF**
Ldebt.pub	1.785587
instb	1.781452
IDA	1.826197

3.1.7. *Error autocorrelation test*

H_0: No autocorrelation of the residuals

H_1: Autocorrelation of the residuals

The *p*-values of the various tests performed are all above the 5% threshold (Table 11). It allows us to conclude that the residuals are not correlated.

3.1.8. *Multicollinearity test for independent variables*

The values of variance inflation factors (*VIF*) are less than 3 for all exogenous variables (Table 12). This indicates that there is no multicollinearity between the exogenous variables in the model.

At the end of the various validation tests, the normality and homoscedasticity of the residuals should be retained, as well as the absence of multicollinearity between the explanatory variables.

4. Discussion

The collective effort of economic recovery justifies the priority given to economic diplomacy in the external actions of countries. The emergence of this aspect of diplomacy makes it the new focus of State actions. It takes the form of a Decalogue: increased mobilization of the diplomatic and consular network abroad; ministerial trips with an economic dimension; setting up an attractive socio-economic and institutional framework; attracting foreign investment; mobilizing tools of influence; better communication with international actors; better training of ministry officials in economic issues (Berlat, 2018). The index measuring diplomatic activity established in this study comes to evaluate the capacity of states to put the instruments of international cooperation at the service of economic growth. The construction of this index by the PCA method, as in (ANAGO & Houngbeme, 2015), offers the advantage of considering weights that effectively reflect the contribution of each indicator. Unlike the simple arithmetic average, which has the disadvantage of considering that all indicators participate with the same weight in the construction of the index, which is far from realistic. It now contributes to the strengthening of economic capital for benefit of growth.

Studies (Brou, 2021; Thaalbi, 2013) that considered the relationship between institutional factors and foreign financial flows came to the conclusion that stability contributes to attract and retain foreign capital. It is an essential element in building trust. Since a peaceful political environment contributes to the proper functioning and transparency of institutions and better management of public funds. A high debt ratio is a source of uncertainty and is therefore considered as an obstacle to capital inflows into an economy. It is therefore undeniable that an unsustainable external debt exerts a significant and disabling pressure. It sends the wrong signals to both local and foreign investors (Dhaoui,

2016) as to the stability of the macroeconomic environment. This variable can be a source of economic inefficiency and crowd out investment if it is not controlled. The positive and significant effect of the indebtedness level (Kouam & Daba, 2019) presumes that indebtedness level of these countries is sustainable and can be justified by financing of public investments that are indispensable for attracting new or potential foreign investors. Authors (Hicham Lam'hammdi, 2018) have found that foreign investors privilege countries in which domestic (local) investment is already high, as this is an indication of a favorable business climate. This constitutes the domestic framework that diplomacy brings to the international relations arena.

5. Conclusion

Diplomacy plays a significant role in enhancing the attractiveness of economies and increasing the capital stock, which is crucial for economic growth and development. This work investigated the relationship between diplomacy and the mobilization of foreign capital. We constructed an index of diplomatic activity using PCA and examined the effect of this index on foreign capital flows through linear regression. Our findings suggest a positive and statistical significant relationship between diplomacy and foreign capital inflows. However, it is important to note that the number of embassies is not the sole determinant of the effectiveness of economic diplomacy. Other economic and sociopolitical factors also influence foreign capital flows. Factors such as the level of indebtedness, domestic savings, and political stability play a crucial role in attracting foreign capital. In summary, this study offers significant perspectives on assessing state foreign policy and their impact on economic expansion. It draws attention to how crucial diplomacy is as a tool for luring in outside investment and promoting growth.

Data availability

All data sources can be found inside the article.

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.

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