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Interaction between foreign direct investment and security in the East African Community (EAC)

By

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Abstract

Foreign direct investment (FDI) has grown dramatically over the past two decades, becoming a key instrument for integrating developing countries into the global economy. The countries of the East African Community (EAC) have put in place policies to attract FDI, improving their economic openness, growth rate and financial markets. However, security remains a crucial factor in attracting FDI. The EAC is one of the world's least secure regions, with problems such as insecurity in eastern Democratic Republic of the Congo (DRC), macroeconomic and political instability, and forced displacement. These security concerns can deter investors and limit the returns of FDI. Using a VAR panel model, the results show that security significantly influences FDI, and that shocks of security, GDP growth, and real interest rates increase short-term FDI before declining. To improve security and attract more FDI, this paper recommends that the EAC authorities increase military spending, implement appropriate security policies, and promote macroeconomic reforms conducive to economic growth. It is also suggested to attract investment in sectors other than mining to diversify the economy and strengthen economic and social resilience.

Keywords: *CAE; economic growth; FDI; security; PVAR.*

JEL Classification: *F43, F21, O55, K32, C33.*

1. Introduction

Foreign direct investment, or FDI (short for FDI), also referred to as international direct investment (FDI) by the OECD, is the international movement of capital made to create, to develop or maintain a subsidiary abroad or to exercise control or significant influence over the management of a foreign company.

Overseeing the important stages of the process of global economic change, BOURI Sarah (2014-2015), notes that the most discussed topics in the general context are the internationalization of trade and intensification of relations and all that this entails in terms of economic issues, Like FDI, the latter forms an integral part of global economic change.

Foreign direct investment benefits both home and host countries, is an integral part of an open and efficient international economic system and is one of the main catalysts for development. Indeed, foreign direct investment can have technological spin-offs, security, facilitate integration into international trade, Promote the creation of a more competitive regulatory environment, complementing local businesses and thus serving their development.

In a world context of increasing integration, foreign direct investment has been booming over the past two decades. They have become the main instrument through which developing countries integrate into the global economy. More and more countries are looking at their international economic relations from the perspective of foreign direct investment, and not just from the perspective of international trade. From the 1980s onwards, a rapid growth in foreign direct investment was observed. According to (UNCTAD 2010), the report on investment in the world " developing countries and countries in transition attracted 50% of global inflows of foreign direct investment, and accounted for 25% of global outflows of foreign direct investment. These countries are experiencing a recovery in foreign direct investment and will remain prime destinations for foreign direct investment ".

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As a result, these flows constitute one of the solutions to the problem of poverty and to find a source of financing that does not contribute to a burden. As a result, developing countries in the EAC (East African Community) region have tried to improve their macroeconomic situations to attract investors. These policies aim to improve their economic openness, the rate of growth, to develop their financial markets and to control the exchange rate.

During the period under review, according to OECD, countries in the East African community recorded strong GDP growth (5.11% on average). This growth is due to increased foreign direct investment in transport, banking and energy infrastructure, favourable regulatory environment conditions and policy interventions. Agricultural production was boosted and, thanks to the dynamism of tourism activities, the services sector also performed well. Kenya's strong economic performance helped it achieve lower middle-income status in 2014, according to the World Bank's classification. Rwanda's strong and continued economic growth has been accompanied by a steady improvement in many of the country's social indicators. However, the Burundian economy was severely affected by the political crisis that erupted in the country in 2015, although it showed signs of recovery in 2016 and 2017. However, with the accession of the Democratic Republic of the Congo, the East African community becomes a market of 280 million consumers creating an increase of 28% in exports.

The reform efforts currently being undertaken by EAC countries are aimed at establishing a monetary union. In 2013, these countries adopted the Protocol on the East African Monetary Union (AMU) in addition to the macroeconomic convergence framework that has been in place since 2007. Price stability is the primary objective of monetary policies in all EAC countries. However, the main macroeconomic policies are not yet harmonized and remain country-specific. Inflation, which varied widely during the period under review, is mainly driven by international food and oil prices. As a result, agricultural performance, particularly domestic food supply, is also a determinant of inflation. On the fiscal front, despite the reforms undertaken, domestic resource mobilization has not been sufficient to offset the increase in public spending mainly on infrastructure projects under way, resulting in continuing budget deficits.

Apart from the economic cooperation and development organization, think that security is essential to attract foreign direct investment. The East African community is one of the least secure regional organizations in the world, just ahead of the MENA region (Middle East and North Africa), and these security risks can radiate and affect the perception of risk throughout the community. In recent history, the countries of the East African community have faced problems such as insecurity in the eastern part of the Democratic Republic of the Congo caused by neighbouring countries (Rwanda and Uganda), macroeconomic and political instability, The strong popular discontent, forced displacement and the economic and social consequences of environmental degradation.

Security has a significant impact on foreign direct investment inflows and its retention, and encourages its concentration in highly protected enclaves. Even in the absence of open conflict, security is a cost to investors. Conversely, investments can help address security-related factors by providing the necessary sources of funding and contributing to sustainable inclusive economic and social development. However, in the countries of the East African community foreign direct investment are highly concentrated in sectors with low levels of productivity and employment, limiting their ability to foster economic and social resilience. In addition, some investment projects may exacerbate security risks, particularly when monitoring capabilities are limited. Therefore, the questions of our work are: What is the interaction between security and foreign direct investment? How does the security variable influence foreign direct investment in the East African community? These questions are the guiding principle of our work.

The objective of our work is to analyse the interaction between security and foreign direct investment in the East African Community using the VAR model. The question here is to find a causality between the security variable and the foreign direct investment variable.

For the following, apart from the introduction and conclusion, our work consists of three chapters. The first chapter presents a review of the literature. The second chapter is devoted to a brief presentation of the field of study and analysis. However, the third chapter will deal with empirical analysis.

2. Review of the literature

Throughout this literature review, we will try to bring some theories that explain foreign direct investment and security, but also present some results of the previous study that fits with our work.

2.1. Review of theoretical literature

2.1.1. Security, Investment and Development

The African Development Bank Group has released a new report on the relationship between security, and investment entitled " The link between security, investment and development: a diagnostic assessment ", the report was made public on the sidelines of the African Union Conference on Peace, Security and Development in Morocco. In this report the ADB (2022)[1], provides quantifiable evidence of the links between these areas and lays the foundations for a deeper dialogue on financing peace and security in Africa. It stresses the need to increase and coordinate investments for peace on the continent and to unlock public and private investment in social and productive sectors. It also stresses the need to make security and development the cornerstones of progress for the continent.

[1]*AfricanDevelopment Bank report (2022) on the relationshipbetweensecurity, investment and developmententitled " The linkbetweensecurity, investment and development: a diagnostic assessment*

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HassatouDiopN'Sele (2022), Vice President for Finance and Chief Financial Officer, said: "The economic and security shocks that have affected Africa in recent years have been devastating, both in scope and impact. If there has never been a time to reaffirm the relevance and critical role of security and its interrelationship with development, it is now". Military spending across the continent, in response to growing insecurity, is diverting valuable development budgets and undermining our efforts to achieve the UN's Sustainable Development Goals, Agenda 2063 and the Bank's five key priorities. She expressed concern about the growing incidence of conflict and insecurity, and urged the development community to explore innovative and coordinated solutions to address threats to development gains and livelihoods in the developing continent.

In this AfDB report, HassatouN'Sele (2022) notes that the incidence of conflict and violence is increasing in Africa. Over the past two decades, more than 469,000 people have lost their lives due to conflict and human insecurity. In 2021, more than 18,000 conflicts affected the continent and the number of refugees and internally displaced persons reached 32 million (AfDB 2022). Governments are responding to insecurity by increasing budget allocations for security spending. Military spending in Africa was estimated at US$39 billion in 2021 based on data from 48 countries, 7% more than in 2018 and 16% more than in 2011. Over the past decade, the largest percentage increases in military spending have been in the Sahel countries: Mali, Burkina Faso and Niger. Countries with high development needs spend a significant proportion of their GDP on military spending, which undermines their chances of achieving the UN's Sustainable Development Goals and the objectives of Agenda 2063.

Many countries are facing multiple crises imposed by conflict. These countries face recurrent public financing deficits, rising levels of debt and limited private capital to meet their domestic financing needs. The dilemma of allocating scarce resources to mitigate these crises puts immense pressure on fiscal balances, threatens debt sustainability and negatively affects people and their livelihoods.

The report presents the risks of cross-border contagion, both in terms of conflicts and their consequences. Fourteen African countries currently in conflict share 80 land borders with other African countries. Because of these contagion risks, conflicts in a few African countries are undermining the continent's competitiveness as a destination for trade and investment. While development partners present opportunities for peace building on the continent, The lack of a coherent strategy and limitations in both resource availability and predictability have hampered progress and sustainability.

The findings of this study by HassatouN'Sele (2022) already inform AfDB's commitments to the African Union, the Bank Group member countries and development partners, to define optimal financial and governance structures for instruments such as security-indexed investment bonds. The purpose of these obligations is to mobilize evolving and flexible resources to help the African Union, regional economic communities and African countries address the root causes of insecurity.

2.1.2. Security and Foreign Direct Investment

The report presents the risks of cross-border contagion, both in terms of conflicts and their consequences. Fourteen African countries currently in conflict share 80 land borders with other African countries. Because of these contagion risks, conflicts in some African countries are undermining the continent's competitiveness as a destination for trade and tourism.[2]

Yet, according to Barry (2018), uncertainty does not affect all investors in the same way, with their impact varying across the investment cycle and sector. For example, there is evidence that political instability or even conflict does not particularly deter foreign direct investment motivated by resources (especially in extractive and resource-intensive industries).

Foreign direct investment in natural resources is relatively unaffected by political instability, and remains supported in the community by a few large-scale projects. Jensen's (2020) analysis based on the Fragile States Index of the Peace Fund revealed that among countries with the highest levels of insecurity, resource-dependent countries had FDI-to-resources ratiosThe highest GDP, and even above the average of low- and middle-income countries. In these situations, in addition to the determinants of investment, which are natural resource endowments and commodity prices on world markets, foreign direct investment motivated by resources is more likely to be influenced by the extent to which production facilities, and export infrastructures can be protected against active or future conflicts, whether through offshore processing facilities or onshore security measures[3].

2.2 Review of empirical literature

Wang Z, and Swain (1997)[4], Analyse the factors that best explain foreign capital inflows to Hungary and China during the period (1978-1992). The size of host markets is found to play a positive role, while the cost of capital variables and political instability are negatively correlated with investment flows. It argues that low labour costs and currency depreciation are important factors in explaining how much foreign capital inflows into a particular country. There is little evidence to support conventional assumptions about tariff barriers and imports of variables. Thus, OECD growth rates show a significant positive correlation with foreign direct investment in Hungary.

According to Li and Tanna (2019), foreign direct investment is not a universal remedy, and these positive impacts on sustainable development are based on several factors, such as the quality of policies implemented, national security, and the availability of adequate human resources. Where state mechanisms for monitoring and enforcement are weak,

[2] *World Bank Group report (2019) on the security situation.*
[3] *MultilateralInvestmentGuarantee Agency (2011).*
[4] *Bouri Sarah: Thesis on the determinants of foreign direct investment " empiricalevidencefrom panel data in the MENA region (1980-2011).*

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foreign direct investment can be detrimental to security, for example due to inter-ethnic violence, poor working conditions, of environmental degradation or corruption-friendly ground.

For Christensen (2018), foreign direct investment has sometimes led to increased insecurity, particularly in sectors such as extraction. In sub-Saharan Africa, mining investments double the risk of demonstrations and riots around the site, Increased risk by higher commodity prices and in environments where the state is not involved in negotiations between mining companies and local communities in the host country.

3. Matériels et méthodes

3.1. Brief presentation of the EAC

The East African Community is an international organization of eight countries in East Africa to date, including Burundi, Kenya, Uganda, the Democratic Republic of the Congo, Rwanda, South Sudan, Somalia and Tanzania. It is chaired by SALVA KIIR the President of South Sudan, elected on 24 November 2023 in Arusha in the United Republic of Tanzania for a one-year term.

The East African Community is one of the pillars of the African Economic Community. According to the young Africa, the East African community is a potential forerunner of the establishment of an East African federation, a federal state with eight members in one country. In 2010, the East African community launched its own common market for labour goods and capital goods from the region with the aim of creating a common currency in 2012, and a political federation in 2015. The East African community has its headquarters in Arusha, Tanzania.

Pour la Banquemondiale[5], the East African community covers an area of 1.8 million base exponents, maj K m, base ends, squared with a population of 132 million (2009 estimate), and has significant natural resources.

On 29 March 2022, the member countries of the community approve the admission of the Democratic Republic of the Congo. The country ratifies community laws and regulations and becomes a full member in July 2022. The Democratic Republic of the Congo is admitted to the East African Community by unanimous decision of the heads of state at the 19th ordinary summit of the heads of state of the Community. It signs the treaty of accession to the East African Community on 08 April 2022. From that date, she had five months to complete the internal formalities allowing her to ratify her entry into the community, which she did on 11 July 2022.

East African Community [6] was originally founded on December 1, 1967, then dissolved in 1977 before being re-established on July 7, 2006, the East African community admitted Burundi and Rwanda to its membership, which became official members on June 18, 2007.

In 2008, following negotiations with the Southern African Development Community and the Common Market for Eastern and Southern Africa, the East African Community agreed to expand the free trade market to include all three member countries.

For its extension in 2010, the Tanzanian authorities express the wish to invite Malawi, the Democratic Republic of the Congo and Zambia to join the community. However, Malawi's Foreign Minister Etta Banda said there were no formal negotiations regarding Malawi's accession.

The presidents of Kenya and Rwanda invited the self-governing government of South Sudan to apply for membership after independence in 2011, which was done in July. Analysts have suggested that the country should make initial efforts to integrate community transport such as rail and oil pipeline with those in Kenya and Uganda. The unique dependence on Sudan would therefore no longer be mandatory with this enlargement to the south. In 2016, South Sudan joined the East African community.

Table 1: Presidents of the East AfricanCommunity countries

President	country	Period
Yoweri Museveni	Uganda	2012-2013
Uhuru Kenyatta	Kenya	2013-2015
John Magufuli	Tanzania	2015-2017
Yoweri Museveni	Uganda	2017-2019
Paul Kagame	Rwanda	2019-2021
Uhuru Kenyatta	Kenya	2021-2022
Evariste Ndayishimiye	Burundi	2022-2023
SalvaKiir	South Sudan	Depuis novembre 2023

Source: Young Africa

Table 2: Secretaries-General of the East African Community

secretary	country	Period
Francis Muthaura	Kenya	1996-2001
AmanyaMushega	Uganda	2001-2006
JumaMwapachu	Tanzania	2006-2011
Richard Sezibera	Rwanda	2011-2016
LibératMfumukeko	Burundi	2016-2021
Peter Mathuki	Kenya	Depuis 2021

Source: Young Africa

In its latest report on the outlook for[7] the global economy, the International Monetary Fund notes that investment flows to

[5] *Rapport de la mondiale (2009) ;*
[6] *Young Africa*

[7] International MonetaryFund Global Economic Outlook Report (2021).

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the East African community increased moderately in 2021. The report notes that Uganda, the Democratic Republic of Congo, South Sudan and Tanzania saw their investment flows increase in 2021, while those of Kenya and Rwanda decreased.

According to UNCTAD (2021), the largest foreign asset holders in the East African community remained European, led by investors from the UK ($65 billion) and France ($60 billion).

Foreign direct investment flows in the Democratic Republic of the Congo increased from USD 1.6 billion in 2020 to USD 1.9 billion in 2021, despite the global economic crisis triggered by the covid-19 pandemic19, and the insecurity in the east of the country caused by rebel groups supported by neighbouring countries such as Rwanda. This increase in foreign direct investment was supported by the mining sector with the rise in cobalt prices.

On the other hand, the UNCTAD report notes that foreign direct investment flows to Tanzania reached 922 million USD in 2021 and showed an increase compared to the previous year (685 million USD). The mining sector, the oil and gas industry, as well as the primary agricultural products sector attract most of FDI.

Table 3: Foreign direct investment in the CAE region

Foreign direct investment in Burundi			
foreign direct investment	2019	2020	2021
Inward FDI flows (million USD)	1	8	8
FDI stocks (million USD)	228	234	242
Number of investment Greenfield	1	0	0
Foreign direct investment in Kenya			
foreign direct investment	2019	2020	2021
Inward FDI flows (million USD)	1.098	717	448
FDI stocks (million USD)	9.293	10.010	10.458
Number of investment Greenfield	95	43	39
Foreign direct investment in Uganda			
foreign direct investment	2019	2020	2021
Inward FDI flows (million USD)	1.274	874	1.142
FDI stocks (million USD)	14.589	15.463	16.605
Number of investment Greenfield			
Foreign direct investment in the DemocraticRepublic of the Congo			
foreign direct investment	2019	2020	2021
Inward FDI flows (million USD)	1.488	1.647	1.870
FDI stocks (million USD)	25.632	27.279	29.149
Number of investment Greenfield	6	12	4
Foreign direct investment in Rwanda			
foreign direct investment	2019	2020	2021
Inward FDI flows (million USD)	354	274	212
FDI stocks (million USD)	2.547	2.707	2.912
Number of investment Greenfield	20	5	10
Foreign direct investment in South Sudan			
foreign direct investment	2019	2020	2021
Inward FDI flows (million USD)	-232	18	68
FDI stocks (million USD)	-	-	-
Number of investment Greenfield	0	0	0
Foreign direct investment in Tanzania			
foreign direct investment	2019	2020	2021
Inward FDI flows (million USD)	1.217	685	922
FDI stocks (million USD)	15.546	16.231	17.153
Number of investment Greenfield	24	12	15

Source: UNCTAD (2021)

According to the Organisation for Economic Development Cooperation (OECD)[8], The security situation in the East African community remains a matter of serious concern. The lack of security creates vulnerability in member states to violence, crime and conflict. This insecurity causes societal and economic disruption, damages infrastructure and supply chains, and creates consequences that are particularly detrimental to investors.

Insecurity undermines cohesion and social capital, causes mass displacement and results in human and personal tragedy for millions of people in the East African community.

According to corral et al. (2020) Within the East African community, exposure to conflict has increased from 6% in 2007 to 19.4% in 2017, and one in five people is now in the direct vicinity of a conflict. However, for the European Union

[8] *Report of the EconomicDevelopmentCooperationOrganization*

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(2017), the 2016 uprisings in the Democratic Republic of the Congo, when the electoral vote was postponed, turned into conflicts and violence, which caused a considerable number of victims.

Conflicts have broken trade links, and have held back private investment in the East African community. Some studies have estimated that 24% of the DRC's economic slowdown between 2016 and 2017 was due to the security crisis in the East (EU 2017). Rwanda, Burundi and Uganda have faced massive influx of people from the Democratic Republic of the Congo caused by forced displacement[9].

Transnational terrorism, however, continues to constitute, to varying degrees, a real threat to the States of the East African community, which forces the governments of member countries to concentrate public expenditure on the security apparatus, and creates a security risk for investors.
For Congolese civil society, territorial conflicts are also a source of tension and instability. Finally, the smuggling and trafficking of arms and minerals, facilitated by rebels and multinationals, historically contribute to fuelling transnational crime networks and armed clashes.

3.2. presentation of data

3.2.1. Description of variables

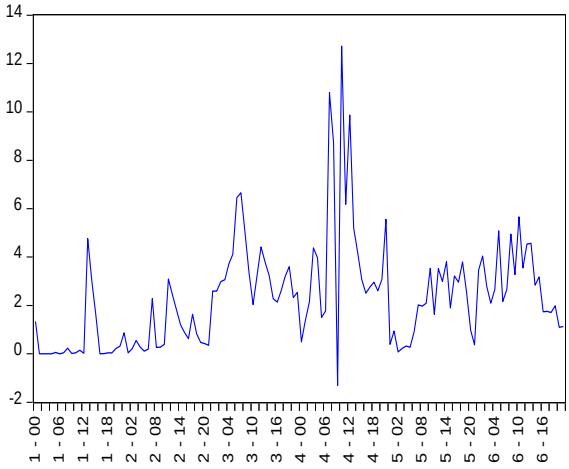
In this section, we will look at the different variables used for our study during the period 2000 to 2021 without taking into account the Republic of Somalia which has integrated the Community of Similarities.

3.2.1.1. Foreign direct investment, net inflows (FDI)

FDI is measured by inward foreign direct investment as a percentage of gross domestic product. Foreign direct investment is defined as the investment of a country abroad is the export of capital to another country in order to acquire or create a business or take a stake in it (the threshold is 10% of the votes).

In the World Development Indicators of the World Bank, FDI flows are calculated as the sum of capital and in-kind inflows, reinvested profits and other long- and short-term capital flows (based on the balance of payments) by foreign investors.

Figure 1: FDI Evolution



Source: Author from World Bank data

From the above figure we observe that FDI in the East African community between 2000 and 2021, follows a bullish movement with strong fluctuation for the different countries of the region under analysis.

3.2.1.2. military spending

Military spending is seen as a key means of addressing a number of threats, such as terrorism, civil war and aggression. Thus, this variable is considered as a proxy for security in our study.

The SIPRI Military Expenditure Database provides data on military spending by country from 1949 to the present, in national currencies at current prices, in current dollars or constant 2018 prices, as a percentage of GDP, as a percentage of government expenditures, and per capita.

The SIPRI military expenditure data includes all current and capital expenditures related to armed forces, including peacekeeping forces; defence ministries and other government agencies engaged in defence projects; Paramilitary forces, when they are considered to be trained and equipped for military operations; and space activities of a military nature.

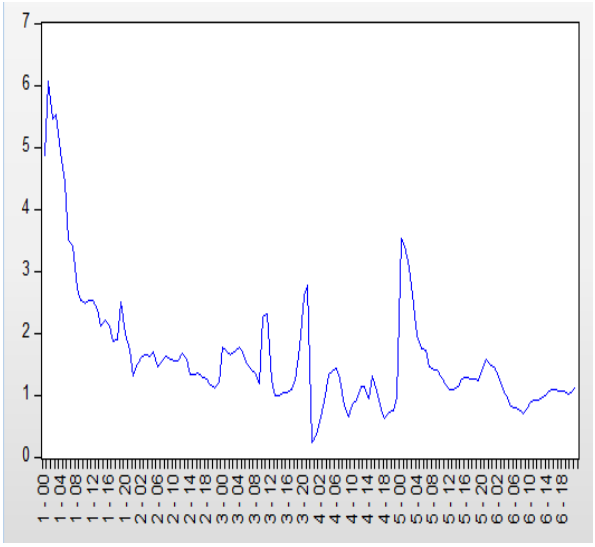
This includes military and civilian personnel, including retirees and staff related social services; operations and maintenance; procurement; military research and development and military assistance (in the military expenditure of the donor country). Civil defence and current expenditures related to past military activities such as veterans benefits, demobilization and weapons destruction are not included.

Figure 2: Military Expenditure (DM) Evolution

[9] *Report of the European Union on the DemocraticRepublic of the Congo (2017)*

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Source: Author from SIPRI data

From the above figure we observe that military spending in the East African community between 2000 and 2021 is following a downward trend with a peak in 2003 in Burundi, 2001 in DRC, and 2004 in Rwanda.

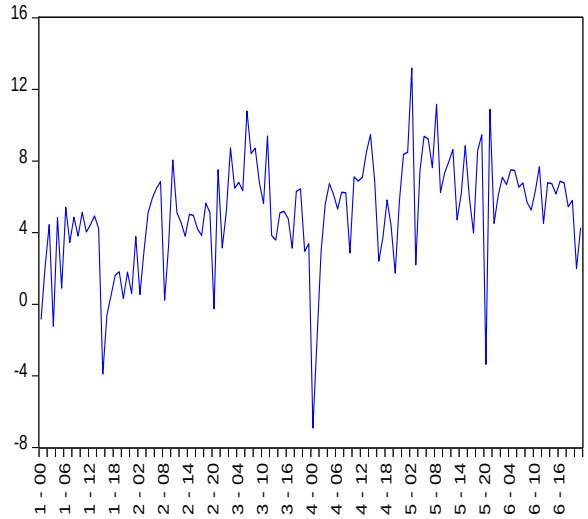
3.2.1.3. GDP growth (TXPIB)

The GDP growth variable in our work will be a control variable, as according to the UNCTAD survey (1997) 91% of investment fund managers surveyed, Place the potential growth of the host economy at the forefront as a determining factor in their investment strategy. Hence, economic growth is a key factor in attractiveness.

The foreign direct investor is more interested in the potential of an economy than its present state. Thus, a growing market offers better opportunities for additional explosions for international investors. An economy with high economic growth rates enables investors to generate better returns on their capital.

High growth rates suggest that exports will grow, thus ensuring foreign investors have enough foreign exchange to pay for their investments.

Figure 10: Evolution of GDP growth (TXPIB)



Source: Author from World Bank data

From the above figure we observe that GDP growth in the East African community between 2000 and 2021, follows a bullish movement with strong fluctuation.

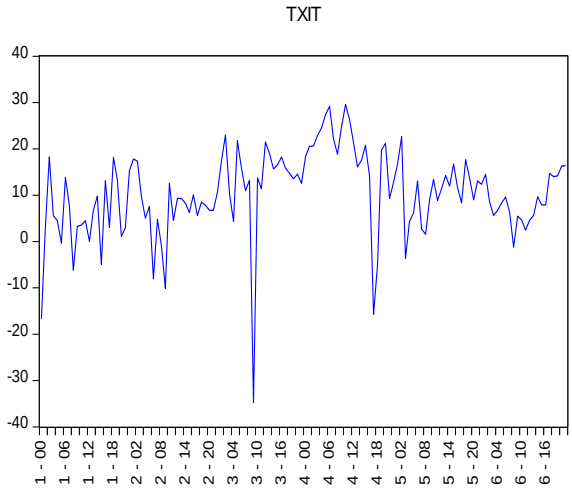
3.2.1.4. Interest rate (TXIT)

The interest rate may have an unexpected statistical impact on foreign direct investment. Indeed, a relatively low cost of borrowing in a host country would encourage multinational firms to finance their foreign activities locally. In other words, not to mention the fact that low interest rates are not really a determining factor, they could lead to an underestimation and decrease of inward foreign direct investment from the country concerned.

The study by Culem (1988) attempted to identify the determinants of location of direct investment in industrialized countries over the period 1969-1982. It does indeed confer a positive effect of the relative nominal interest rate of the host country in relation to the world on the location of foreign direct investment flows among six industrialized and intra-European countries. On the other hand, this relationship disappears as soon as the author analyses bilateral FDI flows between the United States and the European Economic Community. The findings of Thomas and Grosse (2001) argue that a relatively high borrowing cost from the source country should also lead to a decline in FDI.

Based on empirical work done on South Korea, Jeon and Rhee (2006) find that the 1997 financial crisis in South Korea has brought about a significant change in the relationship between inward FDI and interest rates. The results show that the initial role of an attractive and volatile interest rate for FDI has changed into a dubious and expectant role after the crisis.

Figure 3: Real Interest Rate Evolution (TXIT)



Source: Author from World Bank data

From the above figure we observe that real interest rates in the East African community between 2000 and 2021, follow a bullish movement with strong fluctuation.

3.3. panel model

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Most of the previous studies used linear regression on panel data. The objective of this study is to estimate, from panel data, whether the security variable influences foreign direct investment in the region of the East African community. The interest we have in methods of econometrics of panel data, lies in the fact that they allow to study the phenomenon of foreign direct investment in its diversity as in its dynamics.

Indeed, the panel data incorporate the two dimensions of the foreign direct investment phenomenon, namely: the individual dimension and the temporal dimension. This double dimension gives the methods of econometrics panel data a definite advantage over other methods on time or cross-sectional data.

Khedhiri S. (2005), assumes that there are several methods of estimating panel data. The choice is dependent on assumptions made about parameters and disturbances. Three estimation methods are possible: an ordinary least squares estimate; an estimate with fixed effects; or an estimate with random effects. Since the technique (MCO) may be biased if the inherent heterogeneity of countries is overlooked, tests have shown that generally fixed or random effects models provide a better fit.

The first step to establish for a panel data sample is to verify the homogeneous or heterogeneous specification of the data generating process. From an economic point of view, the specification tests are used to determine whether it is fair to assume that the theoretical model studied is perfectly identical for all countries or, on the contrary, if there are specific features specific to each country.

Then, we must test the stationarity of variables through unit root tests on panel data and then study the possibility of the co-integration relationship between the variables under analysis.

3.3.1. Specification of the econometric model

In this study, we use a VAR model based on panel data. This model is appropriate because it does not make a priori restriction on the exogenicity and endogeneity of variables. It also allows us to identify whether or not there is a bidirectional or unidirectional relationship. It also allows to capture interdependencies both static and dynamic.

Since the pioneering work of Sims (1980), VAR models have been widely used in empirical studies. One of the advantages of these models compared to structural models is their ability to analyse interactions between several variables without any a priori distinction. Beyond time series, several studies use VAR models based on panel data.

The economic literature shows that the introduction of VAR models based on panel data is not recent. There are many studies using VAR models based on panel data. For example, Carstensen et al (2009) analysed the effects of institutional factors on the transmission of monetary policy in a mortgage market in OECD countries. Beetsma et al (2011) used a panel-based VAR model to analyze the transmission of public expenditure shocks.

According to Canova et al (2013), VAR panels are constructed with the same logic as standard VARs. However, unlike standard VARs, the inclusion of the cross-sectional dimension increases the power of VAR models based on panel data in explaining economic phenomena. Indeed, these models are able to capture both static and dynamic interdependencies. They also allow the links between units to be treated without any a priori restriction. In addition, they are particularly suitable for the analysis of the transmission of shocks between units over time.

In practice, the estimation method varies depending on the nature of the data and each case is unique and requires a thorough analysis. Indeed, assuming the existence of a dynamic homogeneity in the process of data generation, conditioned on the initial values of endogenous variables on the one hand, and the presence of fixed effect on the other, the conventional method of parameter estimation becomes appropriate. However, when T is fixed, the estimators are biased and the use of Arellano and Bonds' (1991) GMM allows for correction of bias even when T is low (Canova and Ciccarelli 2013).

On the other hand, in the presence of dynamic heterogeneity, the panel estimator is ineffective because the exogenous variables are correlated with the error term. In this case, both the within and between estimators give poor results even if T and N are large. GMM is no longer appropriate because it is difficult to find an instrument that is simultaneously correlated with the exogenous variable and not with the error term (Canova and Ciccarelli, 2013). However, when T is large, the estimate can be made per unit. Pesaran and Smith (1995) point out that the average estimator is more efficient than the panel estimator.

Before the VAR panel estimation, a number of precautions are taken regarding the panel data and the VAR models. First, the stationarity of variables is examined by the SPI test. This test is preferred to the others because Hurlin and Mignon (2005) show that it is convergent when T is low (T less than 30).

In addition, like standard VARs, the VAR panel estimation requires the determination of the optimal delay before the model specification. Several criteria are used in the literature to do this. In some studies such as those of Boubtane et al (2010) and Carstensen et al (2009), the optimal delay is determined by using the LM test. Others, however, use the Akaike and Schwarz criteria to determine optimal delay as in standard VARs (Miller et al, 2011). Based on literature, AIC and Schawrz criteria are used to determine optimal delay. In view of all the above, the GMM method developed by Arellano and Bonds (1991) is used. More specifically, the estimation of different VAR models based on panel data is based on the program developed by Love et al (2006).

The full formulation of our model to be estimated is:

$$IDE_{it} = \beta_{10} + \beta_{11} IDE_{it-1} + \beta_{12} DM_{it-1} + \beta_{13} TXPIB_{it-1} + \beta_{14} TXIT_{it-1} + u_{1it} + v_{1it} + \varepsilon_{1it}$$

$$DM_{it} = \beta_{20} + \beta_{21} IDE_{it-1} + \beta_{22} DM_{it-1} + \beta_{23} TXPIB_{it-1} + \beta_{24} TXIT_{it-1} + u_{2it} + v_{2it} + \varepsilon_{2it}$$

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$$TXPIB_{it} = \beta_{30} + \beta_{31}IDE_{it-1} + \beta_{32}DM_{it-1} + \beta_{33}TXPIB_{it-1} + \beta_{34}TXIT_{it-1} + u_{3it} + v_{3it} + \varepsilon_{3it}$$

$$TXIT_{it} = \beta_{40} + \beta_{41}IDE_{it-1} + \beta_{42}DM_{it-1} + \beta_{43}TXPIB_{it-1} + \beta_{44}TXIT_{it-1} + u_{4it} + v_{4it} + \varepsilon_{4it}$$

With i ranging from 1 to 6 or t from 2000 to 2021:

1: Burundi ; 2: Kenya ; 3: Uganda ; 4: Democratic Republic of the Congo ; 5: Rwanda ; 6: South Sudan.

- IDE: Foreign direct investment, net inflows (% of GDP) ;
- DM: Military expenditure (% of GDP) ;
- TXPIB: Growth of GDP (annual percentage) ;
- TXIT: Real interest rate (%) ;

4. Results

4.1. descriptive statistics

We will perform a set of statistical tests on the variables that constitute our sample, or it is a group of countries in the East African community, is grouped in the following table.

Table 4: descriptive statistics of the sample

Variables	mean	median	Max	Min
IDE	2.342	2.117	12.71	-1.304
DM	1.637	1.341	6.071	0.220
TXPIB	5.111	5.429	13.19	-6910
TXIT	10.409	10.80	29.58	-34.74

Source: Calculated by the author using Eviews10 software.

Looking at this table 4, we note that the real interest rate is very volatile (9.231255), unlike military spending (1.008590) and foreign direct investment (2.233044), given standard deviations/ standard deviation.

4.2. Stationarity test result

To study the stationarity of each variable, we carried out unit root tests using the Eviews software.

Unit root tests have become an essential step for the analysis of the stationarity of time series. However, the application of these tests on panel data is recent. For our study we used the LEVIN, LIN and CHU (LLC) and IM, PESARAN and SHIN (IPS) and FISHER-tests ADF (ADF) to find the stationnality properties.

Table 5: Stationarity test result

Variables	LLC	IPS	ADF	Décision
IDE	-1.59907 (0.0549) *	-1.90062 (0.0287) **	22.1770 (0.0356) **	I(0)
DM	-4.41781 (0.0000) ***	-3.36561 (0.0004) ***	34.8205 (0.0005) ***	I(0)
TXPIB	-3.03240 (0.0012) ***	-4.00366 (0.0000) ***	38.4111 (0.0001) ***	I(0)
TXIT	-4.63499 (0.0000) ***	-3.15564 (0.0008) ***	31.4019 (0.0017) ***	I(0)

Notes: (***) significant at 1% threshold, (**) significant at 5% threshold, (*) significant at 10%.
Sources: results from the analysis of software Eviews 10.

From these results, the null hypothesis of a unitary root cannot be accepted. The results of the unit root tests obtained show that the variables foreign direct investment (IDE), military spending (DM), TXPIB growth rate (TXPIB), and real interest rate (TXIT) are stationary at level.

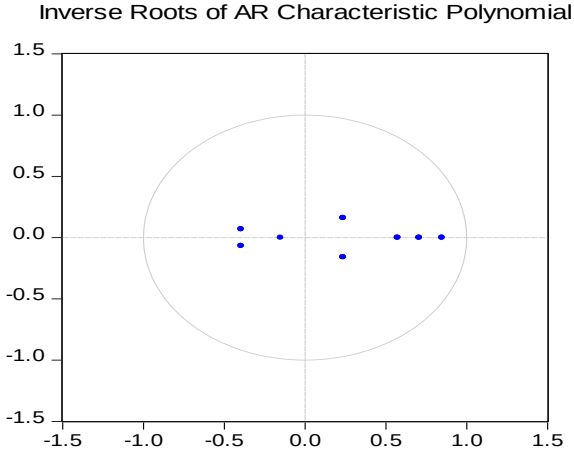
For a better specification of a VAR model, there are several important steps to follow. First, the extent of delay variables to be included in the model must be determined, then the stability of the model must be checked and causality tests must be performed to determine the influence of the various variables in the system, and finally, to diagnose the coefficients.

After determining the optimal lag, we consider the Akaike information criterion (AIC) as our reference criterion, so with a value of AIC = 16.19898, it appears that the optimal delay number in our database is 1.

4.3. Model stability test

Analyzing the stability of a VAR model consists in checking if all its roots are outside the unitary circle. A VAR model with one or more roots outside the unit circle is not a stable model, and therefore it would be impertinent to use the functions of "impulse response" and "variance decomposition" for such a model. To analyze the stability of the model, we will therefore observe the following figure which illustrates the inverse roots of the autoregressive polynomial characteristic of the model.

Figure 4: Model stability



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From this figure, it appears that no root is outside the unitary circle. Since these are inverse roots, then we can conclude that the VAR model (1) is stable and acceptable for the operations of variance decomposition and "impulse response" functions.

Table 6: Causality test

Source: Calculated by the author using Eviews10 software.

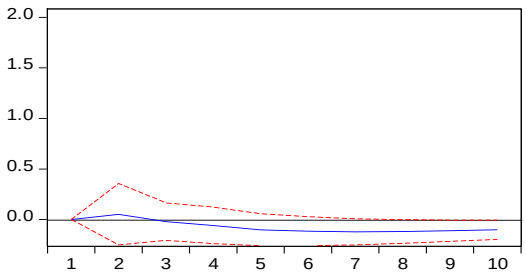
The Granger test shows that military (security) spending causes foreign direct investment (IDE) in the Granger sense at the 1% threshold. And the real interest rate (TXIT) also causes foreign direct investment (IDE) in the sense of Granger at the 1% threshold.

The real interest rate (TXIT) causes military (security) expenditure in the sense of Granger at the 5% threshold. And the rate of growth of GDP (TXPIB) causes military (security) expenditure in the sense of Granger at the threshold of 10%.

4.4. dynamic analysis

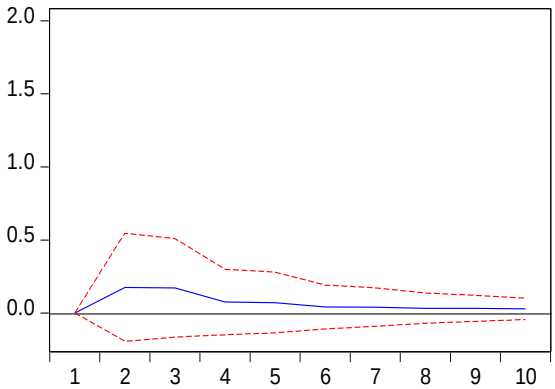
This section deals with the analysis of shock impulse deposits and the breakdown of variance.

Figure 5: FDI response to security shock



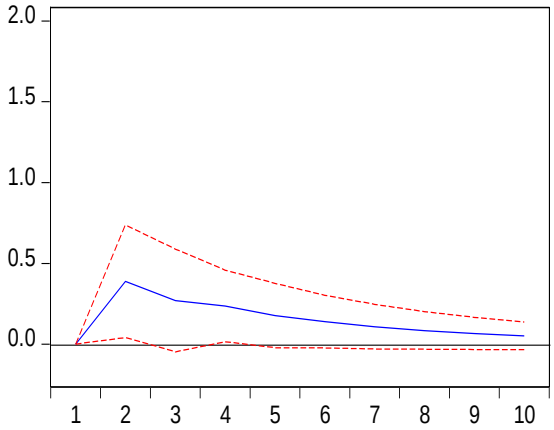
This figure shows that, following a security shock, in the short term we see an immediate tendency for foreign direct investment to rise. However, from the second year onwards, foreign direct investment declines to the level of equilibrium by the tenth year.

Figure 6: FDI response to a GDP growth shock



Following a shock to the GDP growth rate, we see foreign direct investment increasing immediately while fluctuating in the second period. However, from the fourth period onwards foreign direct investment declines until equilibrium.

Figure 7: FDI response to real interest rate shock



Following an interest rate shock, we are seeing a strong increase in foreign direct investment. However, from the second year onwards foreign direct investment declines until it is in balance.

Table 7: Variance decomposition

Variance Decomposition of IDE:					
Period	S.E.	IDE	DM	TXPIB	TXIT
1	1.841	100.0	0.000	0.000	0.000
2	1.950	95.14	0.071	0.809	3.977
3	2.066	93.27	0.073	1.409	5.239
4	2.105	92.06	0.148	1.485	6.302
5	2.132	91.23	0.373	1.560	6.828
6	2.147	90.61	0.660	1.575	7.153
7	2.158	90.09	0.975	1.595	7.333
8	2.165	89.68	1.267	1.608	7.436
9	2.170	89.36	1.523	1.621	7.492
10	2.174	89.10	1.735	1.632	7.522

With regard to the impact of shocks, the various variables (security, GDP growth rate and real interest rate), the real interest rate (TXIT) impact plus foreign direct investment (IDE) is 7.522295 in the period 10, Followed by the GDP growth rate (TXPIB) and security (DM), with last period values of 1.632688 and 1.735269 respectively.

Conclusion

This study is a contribution to the literature that deals with the interactions of security and inward foreign direct investment in a given country. The objective of our study is to analyse the interaction between security and foreign direct investment in the countries of the East African community.

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We presented, mainly, the literature review. First, the aim was to bring some theories that explain foreign direct investment and security, but also present some results of previous studies that fit in with our work. Then followed a brief presentation of the East African community. Finally, we presented the methodology of work, the presentation of variables and the results and interpretations of our work.

The analyses show that:

- Security, causes foreign direct investment (IDE) in the Granger's sense at the 1% threshold and the real interest rate (TXIT) causes foreign direct investment (IDE) in the Granger's sense at the 1% threshold;
- The real interest rate (TXIT) causes Granger-like security at 5% and the GDP growth rate (TXPIB) causes Granger-like security at 10%;
- A shock of security, the rate of growth of GDP, and the real interest rate increase foreign direct investment before declining to the level of equilibrium.

In view of all the foregoing, and to improve security and foreign direct investment, the public authorities of the East African community must aim to increase their states' military spending and implement internal social, political and economic reforms that improve their institutional adjustment. We recommend the following actions:

- Implement military programming that ensures the stability of states;
- Implement security policy plus adapt;
- Implement macroeconomic policies that promote economic growth;
- Attract foreign investment in sectors other than mining.

Bibliography

1. Abessolo Y. (2003), « Instabilitépolitique et performances économiques :uneévaluation du cas du Tchad ». Université de Yaoundé II, Cameroun. Cahiers de recherche non publiés.
2. Aisen A. et al (2011), « How Does Political Instability Affect Economic Growth ?». IMF, *Working Paper*.
3. Aizerman J. (1992), « Exchange Rate Flexibility? Volatility and the patterns of domestic and Foreign Direct Investment? », *NBER Working*, Paper .No. 3853.
4. Andreff W. (2003), « La restructuration stratégique des firmesmultinationales et l"Etatmondialisateur », dans J. Laroche (coord.), Mondialisation et gouvernancemondiale, Presses Universitaires de France, Paris, p. 45-56.
5. Arellano M. et al (1991), « Some tests of Specification for Panel data: Monte Carlo evidence and an Application to Employment Equations ». *Review of EconomicStudies*, 58, 277-297.
6. Asiedu E. (2002), « On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different? », *World Development*, vol.30. No.1, pp.107-119 ;
7. BanqueAfricaine de développement (2022).
8. BanqueMondiale (1998), « Beyond the Washington Consensus: Institutions Matter », World Bank Latin American and Caribbean Studies, Viewpoints, Washington D.C.P. 2.
9. Barry J. (2018), « Incidence de l'insécuritésur les IDE ».
10. Beetsma R. et al (2011), « The effects of government purchase shocks: Review and estimates for the EU ». *Economic Journal*, 121, F4-F32.
11. Belhaj I. (2019), « La politiqued'attractivité des investissements directs étrangers au Maroc: analyseet perspectives ».
12. Bevan A. etEstrin S. (2000), « The Determinants of Foreign Direct Investment in Transition Economies », *William Davidson Institute Working Papers* Series, No. 342.
13. Boutbtane E. et al (2010), « Immigration, growth and unemploy- ment: Panel VAR evidence from OECD countries». Manuscript.
14. Bouklia R. etZatla N. (2001), « L'IDE dans le BassinMéditerranéen: SesDéterminants et son Effetsur la CroissanceÉconomique », Les Cahiers du CREAD, No. 55, pp.118-143.
15. Bouri S. (2014-2015), « les déterminants de l'investissement direct étranger :évidenceempirique à partir des données de panel dans la région MENA ». Page 70.
16. Brainard S. (1997), « An Empirical Assessment of the Proximity-Concentration trade-off between Multinational Sales and Trade », *American Economic Review*, vol.87, pp.520- 543.
17. Buckley J. etCasson M. (1998), « Models of the Multinational Enterprise », *Journal of International Business Studies*, vol.29, No.01, pp.21-44.
18. Cabanis A. et Louis M. (2008), « Insécurité et développementéconomique » Page 35-46.
19. Canova F. et al (2013), « Panel Vector autoregressive Models a Survey » *Working Paper* series N° 1507.
20. Carstensen, K. et al (2009), « Monetary policy transmission and house prices: European cross-country evidence». *CESifo Working Paper* N° 2750.
21. Caves R. (1996), « Multinational Enterprise and Economic Analysis », édition Cambridge University Press, New York.
22. Christensen E. (2018), « Insécurité et investissements directs étrangersdans le secteurminier ».
23. CNUCED (2000), Communiqué de presse, www.unctad.org, ONU, 03/10/00.
24. CNUCED (2002), « Questions de politiquegénéraleconcernantl'investissement et le développement », TD/B.COM.2/44, 21 novembre.

*Corresponding Author: **NKASHAMA MUKENGE Jean-Claude**

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25. CNUCED (2010), « La Contribution de l'investissementÉtranger Direct au Développement: PolitiquesVisant à Accroître le Rôle de l'IDE aux Niveaux National et International », Rapport surl'investissementdans le monde, Nations Unies, New York et Genève.
26. CNUCED (2012), « Versune nouvelle génération de politique de l'investissement », Rapport surl'investissementdans le monde, Nation Unies, New York et Genève.
27. CNUCED (2013), « Les chaines de valeursmondiales: l'investissementet le commerce au service du développement », Rapport surl'investissementdans le monde, Nation Unies, New York et Genève.
28. CNUCED (2014), « L'investissement au service des objectifs de développementdurable : un plan d'action », Rapport surl'investissementdans le monde, Unités Nation Publication, New York et Genève.
29. Culem C. (1988), « Direct Investment Among Industrialized Countries », *European Economic Review*, n°32, pp. 885-904.
30. Diaw A. et Dètondji C. (2012), « Une tentative d'explication des flux d'investissements Directs Etrangersdans les pays de la CommunautéEconomique des Etats de l'Afrique de l'Ouest (CEDEAO) », *Revue Economique et Monétaire*, No. 11 - Juin 2012.
31. Diop H. (2022), « Sécurité, investissement, et développement ».
32. Djaowe J. (2009), « Investissements directs étrangers (IDE) et gouvernance : les pays de la CEMAC sont-ilsattractifs ? », *Revue africaine de l'intégration*, Vol. 3, No. 1, janvier 2009.
33. Dunning, J. (2001), « A Rose by any other name…? FDI theory in retrospect and prospect », University of Reading and Rutgers University.
34. Dupuch S. (2004), « Les Investissements Directs Étrangersdans les Nouveaux Pays Adhérents à l'UnionEuropéenne », *Revue RégionetDéveloppement.* No.20, pp.45-64.
35. Fond monétaire international etOrganisation de cooperation et développementéconomique CDE (2000), « Glossary of Foreign Direct Investment Terms and Definitions », Paris.
36. Grosse R. (2001), « Country-of-origin Determinants of Foreign Direct Investment in an Emerging Market: the Case of Mexico », *Journal of International Management*, Vol. 7, Issue 1, pp. 59-79.
37. Hymer S. (1976), « The International Operations of National Firms: A Study of Direct Foreign Investment », édition MIT Press, Cambridge (thèse de doctorat, départementd'économie, MIT, 1960).
38. Holtz-Eakin, D. et al (1988) «Estimating Vector Autoregressions with Panel Data». *Econometrica*, 56, 1371-95.
39. Hurlin C. et al (2005), « UneSynthèse des Tests de Racine Unitaire en surDonnées de Panel ». *EconomieetPrévision.* 169-171, pp.251-295.
40. Jensen A. (2020), « Analyse de la fragilité des Etats ».
41. Jeon B. Rhee, S. (2008), « The Determinants of Korea‟s Foreign Direct Investment from the United States, 1980-2001: An Empirical Investigation of Firm-Level Data », Contemporary Economic Policy, 26 (1), pp.118-131.
42. JeuneAfrique.Khedhiri S. (2005), « coursd'économétrie », Centre de Publication Universitaire, Tunis. pp. 85-95.
43. LI S. etTanna (2005), « Why a Poor Governance Environment Does Not Deter Foreign Direct Investment: The Case of China and its Implications for Investment Protection », *Business Horizons*, Vol. 48.
44. Love I. et al (2006), « Financial development and dynamic invetsmentbehaviour: Evidence from a Panel VAR ». The Quartely Review of Economic and Finance, 46, 190-210.
45. Mekhmouth S. (2011), « Les investissements directs étrangers en Algérie et le rôle de la politiquefiscale ».
46. Miller N. et al (2011), « House Price and Economic Growth». Journal of Real Estate Finance and Economics, 42(4), 522-541.
47. Monsouri D. et Berjaoui A. (2020), « Climat des affaires et attractivité des investissements directs étrangers au Maroc
48. Morisset, J. (2000), « Foreign Direct Investment in Africa: Policies Also Matter », *World Bank Policy Research Working Paper*, No.2481.
49. Mucchielli J. (1998), « Multinationales et mondialisation », Editions Seuil, Paris, Mai.
50. Nesma M. et Lamia I. (2011), « Analyse des dispositifpromotionnels de l'IDE en Algérie ».
51. Pesaran H. et Smith R. (1995), « Estimating Long Run Relationship from Dynamic Heteroegeneous Panels ». *Journal of Econometrics*, 68, 79-113.
52. Stiglitz, J. (2000), « Capital Market liberalization, Economic Growth, and Instability », *World Development*, Vol. 28, No. 6.
53. SipriMilitaly Expenditure data base.Stiglitz, J. E. (2002), « La grandedésillusion », Editions Fayard.
54. Touna et al (2000), « Instabilitésociopolitique et dépensesmilitaires ».
55. Vernon R. (1966), « International Investment and International Trade in the Product Cycle », *Quarterly Journal of Economics*, vol.80, pp.190-207.
56. Wang Z. et Swain N. (1997), « Determinants of Inflow of Foreign Direct Investment in Hungary and China: Time-Series Approach », *Journal of International Development*, Vol. 9, No. 5, pp. 695-726.

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