"The Impact of Macroeconomic Variables on FDI Inflows into Asian and European Countries."

An Internship Report for

MGF-651: Internship and Summer Training

Credits: 16

Submitted in partial fulfillment of Master's Degree

(MBA) in Financial Services

By

K Shruthi

Seat No: 22P0300009

ABC ID- 570-659-336-282

PRN: 201909295

Under the Supervision of

Dr. Sanjeeta G. Parab

Goa Business School

MBA in Financial Services

GOA UNIVERSITY

Date: 29th April 2024

Examined by: 29/04/2024.

Seal of the School

DECLARATION BY STUDENT

I hereby declare that the data presented in this Dissertation report entitled, "The Impact of Macroeconomic Variables on FDI Inflows into Asian and European Countries", is based on the results of investigations carried out by me in the MBA in Financial Services at the Goa Business School, Goa University under the supervision of Dr. Sanjeeta Parab and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities / College will not be responsible for the correctness of observations / experimental or other findings given the dissertation.

I hereby authorize the University/college authorities to upload this dissertation on the dissertation repository or anywhere else as the UGC regulations demand and make it available to anyone as needed.

K. Shruthi

Seat no: 22P0300009

Date: 29th April 2024

Place: Goa University

COMPLETION CERTIFICATE

This is to certify that the dissertation report "The Impact of Macroeconomic Variables on FDI Inflows into Asian and European Countries" is a bonafide work carried out by Ms. K Shruthi under my supervision in partial fulfilment of the requirements for the award of the degree of Masters in Business Administration in the Discipline Financial Services at the Goa Business School, Goa University.

29/04/2024

Dr. Sanjeeta G. Parab

Assistant Professor

Date: 29th April 2024

Goa Business School ★ Goa University ★

Signature of Dean of the School/HoD

School/Department Stamp

Date: 29th April 2024

Place: Goa University

CERTIFICATE GIVEN BY THE ORGANIZATION

Nippon Life India Asset Management Ltd

INTERNSHIP CERTIFICATE

This is to certify that Ms. K. Shruthi, student of the Goa Business School, undergoing MBA(FS) has successfully completed internship between 15th February to 12th April 2024 at Nippon Life India Asset Management Ltd. She has participated in the sales support & operations work during internship and learned the skills required.

Mr. Gabriel Mendonca
Sr. Branch Manager
Nippon India Mutual Fund

NIPPON LIFE INDIA ASSET MANAGEMENT LTD. PANAJI

Place: Panjim, Goa

Date: 26th April 2024

AON BESTEMPLOYER INDIA | 2018

GREAT PLACE TO WORK 2018

Nippon Life India Asset Management Limited
(Formerly Reliance Nippon Life Asset Management Limited)
1st Floor, Block "D", Office No. F17, F18, F19 & F20, Alfran Plaza,
Mahatma Gandhi Road, Panjim - 403001.
(CIN : L65910MH1995PLC220793) | www.nipponindiamf.com

1. Profile of the company

1.2. Introduction

Nippon India Mutual Fund, formerly known as Reliance Mutual Fund, is one of the leading mutual fund houses in India and is headquartered in Mumbai India. Backed by Nippon Life Insurance Company, a renowned Japanese financial services company, to meet the needs of both individual and institutional investors, Nippon India Mutual Fund Offers a wide variety of mutual fund schemes.

Nippon India Mutual Funds (NIMF) which is one of the fastest-growing mutual funds in India, offers investors a well-rounded portfolio of products to meet varying meet investors requirements and has a presence in 270 locations across the country. NIMF constantly efforts to launch innovative products and customer service initiatives to increase value to investors.

1.3. Task handled

During my 8-week internship at Nippon India Mutual Fund in Panaji branch, I was assigned to the operations department.

I was assigned the following roles and responsibilities:-

a) As part of my roles and responsibilities, I was assigned to record and save the Partial transactions of customers like recording new purchases, SIP, redemption, and so on.
b) Tasked with filling out KYC, Transaction Slips, Common Applications, Change of Bank Details Forms, and Other Forms. I have been responsible for emailing statements to customers, verifying KYC information, and other queries of customers as part of after-sales services. And this includes verifying whether the new KYCs are registered and then KYCs are dispatched and recorded to know how many are new customers and sent to R&T.
c) I also did marketing with a few customers regarding Nippon India Mutual Fund schemes. I also enquired with customers regarding their pending information to be filled out in forms. Also, I was assigned general tasks in the operations department.

TABLE OF CONTENTS

"The Impact of Macroeconomic Variables on FDI Inflows into Asian and European Countries."

Abstract- The objective of this study is to examine the relationship between macroeconomic variables and Foreign Direct Investment (FDI) inflows in Asian and European economies during the period from 2018 to 2022. The data used in this study includes the top 9 countries from Asian economies, namely China, Hong Kong, Indonesia, India, Israel, Japan, Malaysia, Singapore, and Vietnam, as well as the top 9 countries from European economies, which are Belgium, Germany, Denmark, Spain, Finland, France, Italy, Netherlands, and Sweden. Statistical software E-views have been used to conduct the necessary analysis using panel data. Various statistical techniques, such as the fixed effect model, random effect model, and Hausman test for fixed and random effects, have been employed to analyze the variables.

Keywords- FDI net inflows, GDP, Inflation CP, Exports, Imports, EU, EA, Asian.

2. Introduction

Foreign Direct Investment (FDI) is an essential driver of economic growth, serving as a conduit for international capital flows. It involves tangible investments in assets like factories, land, and inventories, promoting entrepreneurship and enabling investors to leverage their capital, but Dhahri and Omri (2020) have represented a globalized production paradigm. FDI benefits the economy through knowledge transfer, which can boost the competitiveness of domestic companies. Therefore, it is crucial to recognize the importance of FDI in facilitating economic growth and promoting global business activities. (Chandra & Handoyo, 2020).

The primary aim of the liberalization program was to foster stability, economic growth, and development through a strategy known as liberalization, privatization, and globalization (LPG). (Singhania & Gupta, 2011).

Recently, developing countries have been actively and assertively promoting FDI by offering liberalized policies to attract investors. The World Bank Group (2013) has emphasized their unwavering focus on improving macroeconomic stability, as measured by factors such as the inflation rate, and promoting trade openness, typically gauged by the trade GDP ratio (Chandra & Handoyo, 2020).

Some research explores the relationship between financial development (FD), foreign direct investment (FDI), and economic growth in emerging and developing Asian economies. Beyond a certain level, increased FD enhances the growth effect of FDI. However, excessively high levels of FD do not necessarily translate into economic growth benefits (Romdhane, 2022).

International trade nowadays frequently depends on the particular production phases that businesses have within production networks. Every step is moved to the most productive location, done by local or international businesses. Global production fragmentation has increased as a result of recent drops in service link costs, which minimize costs by utilizing various comparative advantages in host nations. The international system in which we now live is increasingly shaped by the interplay between regions and regional powers. We live in a world of regions. The European Union is regarded as the world's most advanced form of integration among the current regional blocks. East Asian countries frequently view the European Union as a model to aspire to.

The Asia region has experienced rapid economic growth in recent years, leading to significant improvements in competitiveness (WEF,2012). FDI has played a crucial role in driving this growth, particularly in countries like China, India, Malaysia, and Singapore. These nations have offered tax incentives, monopoly rights, and cost advantages to attract foreign investors. By absorbing knowledge and technology and producing high-tech, high-value-added products, they have successfully entered and competed in the global market. According to many analysts, foreign investment is a key factor in economic growth. In the Asian region, FDI has increased significantly in the past few decades, and this region has emerged as the global beneficiary of FDI, Over the past 20 years, FDI has been credited with helping most Asian emerging nations. (Xu & Wu, 2021).

Developing nations often struggle with limited financial resources, which is why FDI and foreign aid are crucial for long-term, economic success. Several factors contribute to the attractiveness of inward FDI, including technology advancement, skills, training, and current information. In turn, domestic investment encouraged by FDI and other countries can

significantly increase production by taking advantage of changes in comparative advantages through trade openness. Despite numerous theoretical and empirical analyses, that have examined this relationship (Li and Liu, 2004), it is still unclear what the considerable impact of FDI and exports is on GDP. However, it is evident that there are ripple effects from the research and development (R&D) in host nations. It is not entirely clear in developing nations how various factors relate to each other and which one is causing the other. However, in some nations, there seems to be an inverse relationship between entrepreneurship and commerce. In developing nations, the relationship between entrepreneurship and commerce is not clear. Iamsiraroj and Ulubasoglu found that about 43% of 108 countries had a significant impact on growth with FDI and GDP. However, conflicting data raises doubts about the inverse relationship between FDI and growth. (Saleem, 2020).

In contrast to Europe's experience, East Asia's regional integration has been driven by market forces and a bottom-up strategy due to the absence of a formal institutional structure. The integration in East Asia began with the international fragmentation of production when Japanese companies started relocating their labor-intensive assembly activities to other Asian countries. This led to raising international investment, finance, and trade in the region. It created a unique network in East Asia that is different from the network in other parts of the world. (Camarero et al., 2021).

In recent years, global FDI has been affected by external shocks, which have led to both hope and anxiety in economic projections for 2023. Raising FDI levels is crucial to closing the financial gap and achieving the Sustainable Development Goals (SDGs). Although Asia-Pacific is expected to see its highest level of greenfield FDI in 2023, the amount of money coming into the region will not be enough to make a significant contribution to the 2030 Agenda for Sustainable Development. (Trade, 2023).

A lower inflation rate attracts more FDI, whereas trade openness has a positive correlation with FDI. Multinational corporations (MNCs) with an export-oriented approach prefer to invest in economics with open trade policies. Good institutional quality and political stability increase the potential of a country to attract FDI. (Chandra & Handoyo, 2020).

This study examines the impact of macroeconomic variables on foreign direct investment (FDI) inflows into Asian and European countries between 2018 and 2022. The study focuses on the top 9 countries in the European region and the top 9 countries in the Asian region. Various

variables such as FDI net inflows, GDP growth, inflation on consumer prices, exports, and imports of goods and services will be used to determine the impact of these factors on FDI inflows. The study will employ models and variables used in earlier research, as well as prior research in the same field.

3. Literature Review

This literature review is a comprehensive analysis of the macroeconomic variables that significantly impact FDI inflows into Asian and European countries. We have synthesized the available evidence to shed light on the key variables that are driving the impact on FDI inflows.

Mishra & Jena (2019) There are only a few studies that investigated FDI determinants from leading developed countries into major Asian economies, revealing that market size, macroeconomic indicators, and institutional factors influence foreign investors. Additionally, factors like distance, language, and border proximity play roles, alongside infrastructural elements such as telecommunications and openness, highlighting the multifaceted nature of FDI attraction. Frenkel et al. (2004) studied the determinants of bilateral FDI flows between major industrial countries and a total of 22 emerging economies. The result of this study shows that market size, risk, and economic growth play an important role in determining the extent of FDI flows, Furthermore, distance seems to be inversely related to FDI.

FDI inflows are impacted by several factors, according to Athukorala (2019). This implies that the list of FDI factors is not exhaustive. Nevertheless, the most often mentioned factors from earlier research on FDI inflows include market size, potential growth, trade openness, exchange rate volatility, clustering effects, political stability, institutional quality, labor cost, productivity, and natural resources (Level, 2019)

The following statement highlights the unique features of production networks in East Asia (EA) and European Union (EU), particularly emphasizing the prevalence of intermediate goods trading within these regions. It suggests that despite similarities in network trade, differences in sociocultural, political, historical, and institutional factors lead to varying patterns between the two regions. Specifically, the paper mentions a “hub-and-spoke pattern” in the EU, contrasting it with a more complex “network pattern” in EA. (Asia, 2021)

Singhania & Gupta (1991) The relationship between FDI and economic growth is complex and has varying views. Although some studies indicate that FDI has different sectoral impacts due to varying knowledge and technology levels of MNCs and domestic firms, others believe that the disparities are not significant. Due to unique market conditions, the impact of FDI on growth cannot be generalized across nations or industries. Nonetheless, developing countries are advised to actively pursue FDI to potentially boost economic growth despite these uncertainties.

Few studies examine the various factors that affect FDI in 31 Asian countries from 20002 to 2017. The study identifies political stability, interest rate, trade openness, inflation, exchange rates, and market size as significant variables. The results indicate that FDI inflows are positively correlated with market size, trade openness, and political stability, while a negative correlation with the market inflation rate. However, the exchange rates and interest rates do not show any significant correlation with FDI inflows. These findings can be valuable for policymakers who aim to increase economic growth and attract FDI to their country (Chandra & Handoyo, 2020).

Asia (2021) In 2003, Fukao et al. categorized trade flows between the EU and EA into three patterns: inter-industry trade (IIT), IIT in horizontally differentiated products (HIIT), and IIT in vertically differentiated products (VIIT). The analysis showed that VIIT and HIIT had the highest shares in bilateral trade in the more developed and larger EU economies like Germany and France. However, in relatively more advanced and larger EA economies such as Japan, and Korea, their VIIT shares are lower compared to smaller countries like Singapore, Philippines, and Malaysia. Additionally, during the period from 1996 to 2000, the IIT share in most EU countries remains stable, while many developing EA countries experience a rapid increase in the share. This suggests divergent trends in trade patterns between the two regions during the specified time frame. These differences may be influenced by various economic factors and policies within each region.

Few research conclusively investigates the determinants that affect FDI and how they vary based on the development status of the host country (emerging versus developed) or its geographical region (EU versus East Asia). It is conclusively shown that horizontal strategies are the dominant motive for FDI in developed countries and EU nations. In contrast, vertical FDI is more pronounced among EA and emerging economies (Camarero et al., 2021).

Multinational corporations (MNCs) tend to choose countries where their product markets are large and rapidly growing. According to Carbaugh (2019), MNCs' preference for large and emerging markets is driven by demand. MNCs are motivated to explore new markets to increase their profits. They are inclined to invest in countries with large and growing markets due to the high demand for their products. The size of a market indicates the level of purchasing power in a country (Chandra & Handoyo, 2020).

Numerous researchers worldwide have conducted in-depth studies to determine how serval factors affect FDI. They have recognized the importance of this type of investment in promoting globalization's benefits, such as resource utilization, market development, and technological transfers. Ang (2008) focused on macroeconomic data and financial growth as key drivers of FDI inflows into Malaysia. The result revealed a favorable correlation between FDI and expansion of the financial sector and trade openness. By implementing effective policy interventions, a country can attract foreign direct investment (FDI) and create a thriving economy. The right policies can make a significant difference in promoting economic growth and development. Some studies indicate that before the COVID-19 pandemic, factors such as economic growth, domestic investment, imports, and exports had positive effects on FDI. However, the pandemic era has brought about a shift in the factors that influence FDI. Currently, the economic strength of a region is the primary factor in attracting FDI inflows. It shows that economic resilience is a crucial factor in attracting FDI after the pandemic. This resilience is achieved through factors like trade openness and effective government responses during a pandemic (Ben Romdhane et al., 2022).

Few studies have examined the factors that contribute to FDI across SAARC, ASEAN, and Central Asian countries. In SAARC, real GDP, domestic investment, and economic freedom increase FDI, while labor force and governance index have negative effects and economic freedom increases FDI, while labor force and governance index have negative effects. In Central Asia, real GDP, domestic investment, and governance index attract FDI, while the economic freedom index has negligible and negative effects. In ASEAN, FDI is positively influenced by all the indices mentioned above. And also stated that ASEAN has better institutional features that attract FDI than Central Asia and SAARC (Ullah & Khan, 2017).

3.1: Research Gaps

It should be noted that this particular study has limitations. Specifically, there has been a lack of extensive research conducted on the patterns and determinants of Foreign Direct Investment (FDI) flow in Asian countries and European countries. Furthermore, only a handful of studies have focused on the macroeconomic variables that impact these countries' FDI inflows. Further, I tried to find factors that might impact FDI inflows in both nations but as it differs from one country to another, So enhance, I have taken common macroeconomic variables based on data availabilities between these two nations.

3.2. Research Objective

To analyze the impact of macroeconomic variables that affect Foreign direct investment (FDI) inflows in both Asian and European countries.

For this purpose the dependent variable is “FDI inflows” and the independent variable are GDP growth, Inflation, Total natural resources, Exports of goods and services, and Imports of goods and services.

3.3. Research Question

What are the macroeconomic variables that affect net FDI inflows in Asian and European countries?

3.4. Research Methodology

Data

The present study is focused on analyzing the impact of macroeconomic variables on FDI inflows into Asian and European countries. The study considers secondary data which has been

extracted from the World Bank database. The period selected for the present study is from 20018 to 2022. The data includes top 9 countries from Asian economies namely China, Hong Kong, Indonesia, India, Israel, Japan, Malaysia, Singapore, and Viet Nam, and the top 9 countries from European economies namely Belgium, Germany, Denmark, Spain, Finland, France, Italy, Netherlands and Sweden. These countries are selected based on FDI net inflows.

This study uses variables such as FDI net inflows, GDP, Inflation Consumer price, Total Natural resources, Exports of goods and services, and Imports of goods and services. FDI net inflows as the dependent variable and other variables such as GDP, Inflation Consumer price, Exports of goods and services, and Imports of goods and services as independent variables.

Tools And Techniques

Panel regression analysis involves estimating different models to analyze panel data, which combines cross-sectional and time-series observations for the same entities over multiple periods. The main models used in panel regression are the Common Effect Model, Fixed Effect Model, and Random Effect Model.

Common Effect Model (Pooled Least Squares):

The Common Effect Model combines time-series and cross-sectional data, assuming that the behavior of the entities is consistent across various time periods. The model employs Ordinary Least Squares (OLS) or the least square technique for parameter estimation. The panel data regression equation is represented as follows: The form of the panel data regression equation is similar to an ordinary least square, ie:

$$\boldsymbol{y_{it}} = \boldsymbol{\alpha} + \boldsymbol{\beta^I X_{it}} + + \boldsymbol{\varepsilon_{it}}$$

Where $\boldsymbol{y_{it}}$ is the dependent variable for entity at time $\boldsymbol{X_{it}}$ represents the vector of independent variables for entity $\boldsymbol{i}$ at time $\boldsymbol{t}$, $\boldsymbol{\alpha}$ is the intercept, β represents the coefficients to be estimated, and $\boldsymbol{\varepsilon it}$ is the error term.

Fixed Effect Model (FE):

The Fixed Effect Model considers individual-specific differences by introducing dummy variables for each entity to capture their unique intercepts. This technique is also known as the Least Squares Dummy Variable (LSDV) approach. The panel data regression equation is as follows: The regression equation of fixed effects model panel data is as follows:

$$y_{it} = \alpha_i + \beta^I X_{it} + u_i + \varepsilon_{it}$$

Here, y_{it} is the dependent variable for entity i at time t, X_{it} represents the vector of independent variables for entity i at the time, X_{it} represents the individual-specific fixed effect for entity i, β^I are the coefficients to be estimated, u_i is the entity-specific intercept, and ε_{it} is the error term.

Random Effect Model (RE):

The Random Effect Model accommodates interconnected interference variables between time and entities by considering the differences in intercepts as random variables. It uses the principle of maximum likelihood or general least square for parameter estimation. The panel data regression equation is represented as follows:

$$y_{it} = \alpha + \beta^I X_{it} + u_i + \varepsilon_i$$

Description:

In this equation, y_{it} is the dependent variable for entity at time t, \(X_{it}\) represents the vector of independent variables for entity i at time t, α is the intercept common to all entities, β represents the coefficients to be estimated, u_i is the entity-specific intercept considered as a random variable, and εit is the error term. The choice between the Fixed Effect Model and the Random Effect Model can be determined using the Hausman Test, which helps to select the appropriate method based on the data characteristics and model fit.

3.4. Null Hypothesis and Alternative Hypothesis

Hypothesis 1

H_0. GDP growth has no significant impact on FDI net inflows.

H_1 GDP growth has a significant impact on FDI net inflows.

Hypothesis 2

H_0. Inflation (consumer price) has no significant impact on FDI net inflows.

H_1. Inflation (consumer price) has a significant impact on FDI net inflows.

Hypothesis 3

H_0. Exports of goods and services have no significant impact on FDI net inflows.

H_1. Exports of goods and services have a significant impact on FDI net inflows.

Hypothesis 4

H_0. Imports of goods and services have no significant impact on FDI net inflows.

H_1. Imports of goods and services have a significant impact on FDI net inflows.

Hypothesis 5

H_0. Total Natural resources have no significant impact on FDI net inflows.

H_1. Total Natural resources have a significant impact on FDI net inflows.

4. Data Analysis

4.1 Asian Countries

Descriptive

	LFDI	LGDP	LINFLATION	LEXPORTS	LIMPORTS	LTOTAL_N...
Mean	8.353111	3.130222	2.223778	70.44067	65.13444	1.997668
Median	2.510000	3.700000	2.070000	29.40000	27.22000	1.425184
Maximum	37.19000	9.050000	6.700000	204.0400	198.4700	9.815487
Minimum	0.500000	-6.540000	-1.140000	15.53000	15.64000	0.000169
Std. Dev.	11.26342	4.286524	1.827726	66.23654	60.11586	2.445282
Skewness	1.501402	-0.664951	0.572210	0.963732	1.022013	1.397470
Kurtosis	3.614301	2.555654	3.100854	2.304921	2.545426	4.342025
Jarque-Bera	17.61412	3.686401	2.474757	7.871717	8.221272	18.02385
Probability	0.000150	0.158310	0.290144	0.019529	0.016397	0.000122
Sum	375.8900	140.8600	100.0700	3169.830	2931.050	89.89504
Sum Sq. Dev.	5582.047	808.4685	146.9857	193040.3	159012.3	263.0937
Observations	45	45	45	45	45	45

Fixed Effect

Dependent Variable: LFDI
Method: Panel Least Squares
Date: 05/02/24 Time: 15:53
Sample: 2018 2022
Periods included: 5
Cross-sections included: 9
Total panel (balanced) observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	0.036409	0.140452	0.259229	0.7972
LINFLATION	-0.339800	0.360541	-0.942471	0.3532
LEXPORTS	0.970691	0.262831	3.693215	0.0009
LIMPORTS	-0.645942	0.261300	-2.472036	0.0191
LTOTAL_NATURAL_RESOURCES	-0.654313	0.571207	-1.145493	0.2608
C	-16.00112	7.369121	-2.171375	0.0377

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.957156	Mean dependent var	8.353111
Adjusted R-squared	0.939190	S.D. dependent var	11.26342
S.E. of regression	2.777535	Akaike info criterion	5.130552
Sum squared resid	239.1557	Schwarz criterion	5.692624
Log likelihood	-101.4374	Hannan-Quinn criter.	5.340087
F-statistic	53.27383	Durbin-Watson stat	3.394677
Prob(F-statistic)	0.000000		

Fixed effects in panel data analysis refer to including individual-specific effects in the regression model. When interpreting the fixed effects of European countries and their impacts on the variables in the regression analysis, it is important to consider the standard errors, t-statistics, coefficients, and the inclusion of cross-section fixed effects in the model.

1. GDP (growth): Coefficient: 0.036409, Standard Error: 0.140452, t-Statistic: 0.259229, Probability (Prob): 0.7972. GDP does not appear to have a statistically significant impact on the dependent variable FDI inflows, given its high p-value is 0.7972.
2. Inflation (CP): Coefficient: (-0.339800), Standard Error: 0.360541, t-Statistic: (-0.942471), Probability (Prob): 0.3532. Inflation does not seem to significantly influence FDI inflows, as indicated by its high p-value is 0.3532.
3. Exports of goods and services: Coefficient: 0.970691, Standard Error: 0.262831, t-Statistic: 3.693215, Probability (p-value): 0.0009. Exports have a statistically significant positive impact on FDI inflows, as evidenced by the low p-value is 0.0009 and the positive coefficient.
4. Imports of goods and services: Coefficient: (-0.645942), Standard Error: 0.261300, t-Statistic: (-2.472036), Probability: 0.0191. Imports have a statistically significant negative impact on FDI inflows, as evidenced by the low p-value is 0.0191 and the negative coefficient.
5. Total natural resources: Coefficient (-0.654313), Standard Error: 0.571207, t-Statistic: (-1.145493), Probability: 0.2608. Cross-sectional fixed effects consider country-specific impacts on the total natural resources endowment on the relationship between total natural resources and FDI inflows. A one-unit change in total natural resources leads to a (-0.654313) unit change in FDI inflows. However, this relationship is not statistically significant at conventional levels.

Random Effect

Dependent Variable: LFDI
Method: Panel EGLS (Cross-section random effects)
Date: 05/02/24 Time: 16:07
Sample: 2018 2022
Periods included: 5
Cross-sections included: 9
Total panel (balanced) observations: 45
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	0.089167	0.124323	0.717225	0.4775
LINFLATION	0.021589	0.327605	0.065900	0.9478
LEXPORTS	0.321405	0.128367	2.503791	0.0166
LIMPORTS	-0.180322	0.141103	-1.277939	0.2088
LTOTAL_NATURAL_RESOURCES	-0.620216	0.405874	-1.528099	0.1346
C	-1.629833	2.123932	-0.767366	0.4475

Effects Specification	S.D.	Rho
Cross-section random	3.569231	0.6228
Idiosyncratic random	2.777535	0.3772

Weighted Statistics			
R-squared	0.641762	Mean dependent var	2.745509
Adjusted R-squared	0.595834	S.D. dependent var	4.652697
S.E. of regression	2.957910	Sum squared resid	341.2200
F-statistic	13.97321	Durbin-Watson stat	2.236363
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.874018	Mean dependent var	8.353111
Sum squared resid	703.2367	Durbin-Watson stat	1.085114

The following is an interpretation of random effects in panel data analysis, which involves understanding how variables affect the dependent variable while accounting for unobserved individual-specific effects that are assumed to be random. The impact of each variable on the dependent variable (FDI inflows) is described below, based on the provided information:

1. GDP (growth): A one-unit increase in GDP is expected to increase the FDI inflows by 0.089167 units. However, this relationship is not statistically significant at the 5% level, as indicated by the coefficient of 0.089167, the std. error of 0.124323, the t-statistic of 0.717225, and the probability (p) is 0.4775.
2. Inflation: The coefficient for inflation is 0.021589, which indicates minimal impact on FDI inflows, and the relationship is not statistically significant. The std. error is 0.327605, the t-statistic is 0.065900, and the probability is 0.9478.
3. Exports of goods and services: An increase of one unit in exports is associated with an increase of 0.321405 units in FDI inflows, and this relationship is statistically

significant at the 5% level. The coefficient is 0.321405, the std. error is 0.128367, the t-statistic is 2.503791, and the probability is 0.0166.

4. Imports of goods and services: The coefficient is (-0.180322), indicating a negative impact on FDI inflows. However, the relationship is not statistically significant, as shown by the coefficient of (-0.180322), the standard error of 0.141103, the t-statistic of (-1.277939), and the probability of 0.2088.
5. Total Natural Resources: The coefficient is (-0.620216), suggesting a negative relationship with FDI inflows. However, the relationship is not statistically significant, as indicated by the coefficient of (-0.620216), the standard error of 0.405874, the t-statistic of (-1.528099), and the probability of 0.1346.

Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.229844	5	0.0690

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LGDP	0.036409	0.089167	0.004271	0.4195
LINFLATION	-0.339800	0.021589	0.022665	0.0164
LEXPORTS	0.970691	0.321405	0.052602	0.0046
LIMPORTS	-0.645942	-0.180322	0.048367	0.0342
LTOTAL_NATURAL_RESOURCES	-0.654313	-0.620216	0.161543	0.9324

Cross-section random effects test equation:
Dependent Variable: LFDI
Method: Panel Least Squares
Date: 05/02/24 Time: 16:07
Sample: 2018 2022
Periods included: 5
Cross-sections included: 9
Total panel (balanced) observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-16.00112	7.369121	-2.171375	0.0377
LGDP	0.036409	0.140452	0.259229	0.7972
LINFLATION	-0.339800	0.360541	-0.942471	0.3532
LEXPORTS	0.970691	0.262831	3.693215	0.0009
LIMPORTS	-0.645942	0.261300	-2.472036	0.0191
LTOTAL_NATURAL_RESOURCES	-0.654313	0.571207	-1.145493	0.2608

Effects Specification

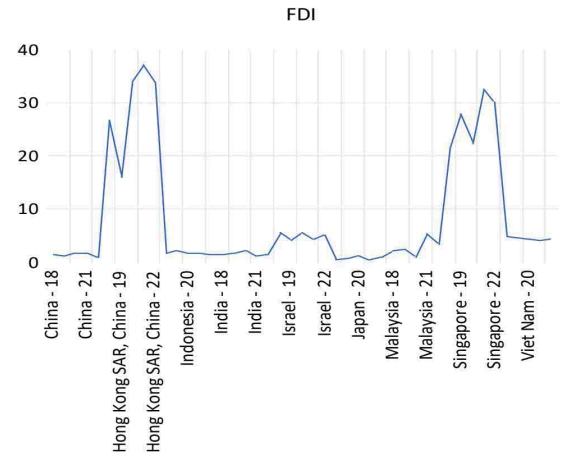
Cross-section fixed (dummy variables)

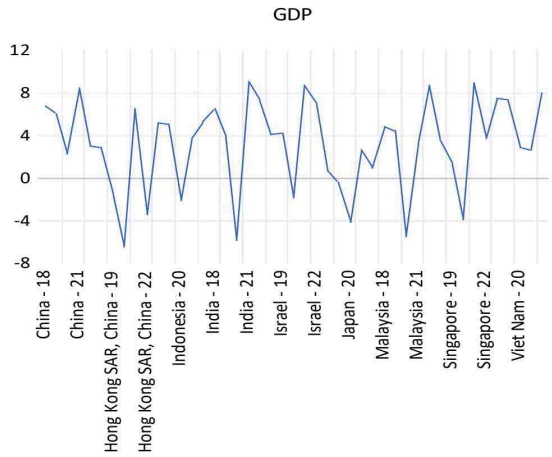
R-squared	0.957156	Mean dependent var	8.353111
Adjusted R-squared	0.939190	S.D. dependent var	11.26342
S.E. of regression	2.777535	Akaike info criterion	5.130552
Sum squared resid	239.1557	Schwarz criterion	5.692624
Log likelihood	-101.4374	Hannan-Quinn criter.	5.340087
F-statistic	53.27383	Durbin-Watson stat	3.394677
Prob(F-statistic)	0.000000		

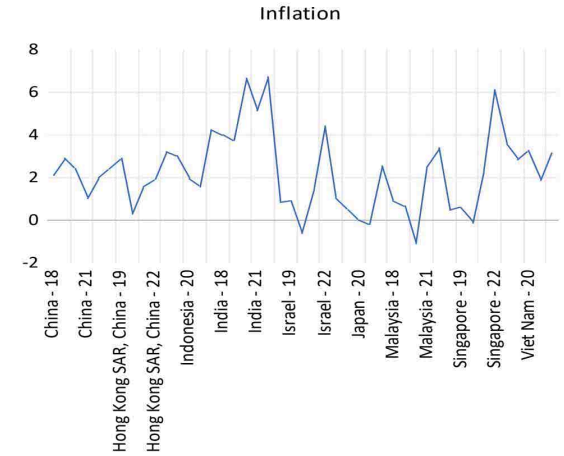
The Hausman test is a statistical method used in panel data analysis to decide if a random effects model is suitable for the data, or if a fixed effects model would be a better fit. The test compares the correlation between individual-specific effects and independent variables in both models. If the result of the Hausman test is significant, it indicates that the random effects model is not consistent with the data, and the fixed effects model should be used instead. Conversely, if the result is non-significant, it suggests that the random effects model is appropriate for the analysis.

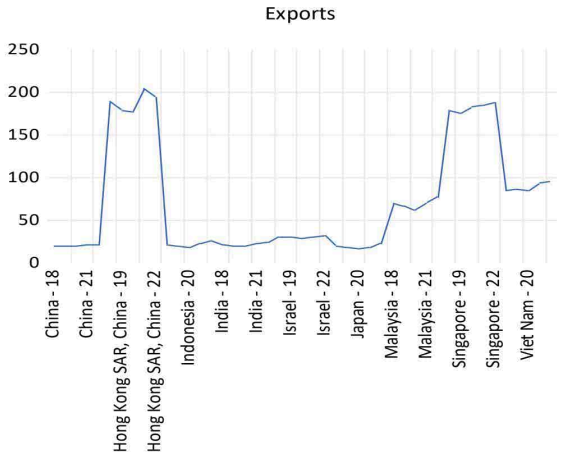
The Hausman test is a helpful tool to choose the right model for your analysis. If the probability value (Prob) is lower than the chosen significance level (usually 0.05), it means that the random effects model does not fit the data, and the fixed effects model is preferred. On the other hand, if the probability value is higher than the significance level, then the random effects model is appropriate for the dataset. This indicates that the unobserved individual effects are not related to independent variables.

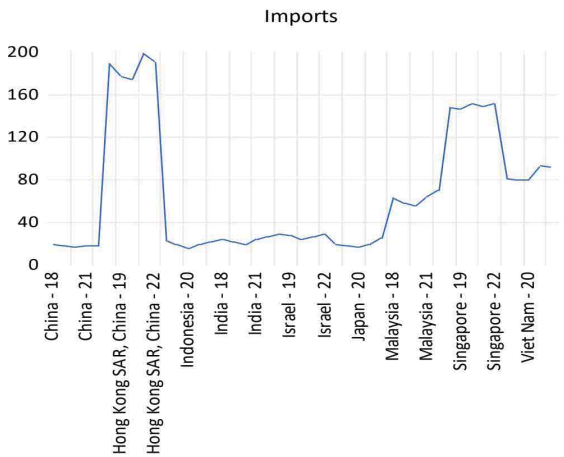
Graphs

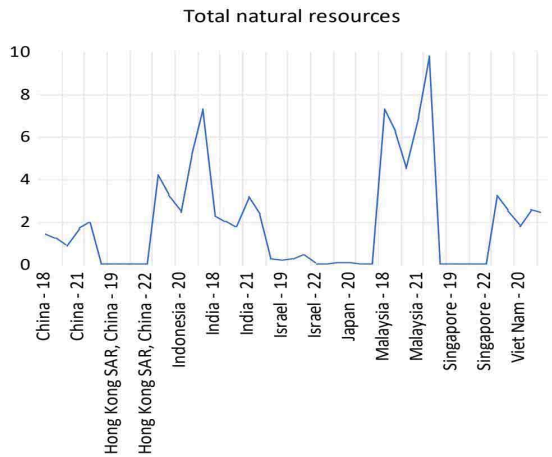

FDI
40
30
20
10
0
China - 18
China - 21
Hong Kong SAR, China - 19
Hong Kong SAR, China - 22
Indonesia - 20
India - 18
India - 21
Israel - 19
Israel - 22
Japan - 20
Malaysia - 18
Malaysia - 21
Singapore - 19
Singapore - 22
Viet Nam - 20


GDP
12
8
4
0
-4
-8
China - 18
China - 21
Hong Kong SAR, China - 19
Hong Kong SAR, China - 22
Indonesia - 20
India - 18
India - 21
Israel - 19
Israel - 22
Japan - 20
Malaysia - 18
Malaysia - 21
Singapore - 19
Singapore - 22
Viet Nam - 20


Inflation
8
6
4
2
0
-2
China - 18
China - 21
Hong Kong SAR, China - 19
Hong Kong SAR, China - 22
Indonesia - 20
India - 18
India - 21
Israel - 19
Israel - 22
Japan - 20
Malaysia - 18
Malaysia - 21
Singapore - 19
Singapore - 22
Viet Nam - 20


Exports
250
200
150
100
50
0
China - 18
China - 21
Hong Kong SAR, China - 19
Hong Kong SAR, China - 22
Indonesia - 20
India - 18
India - 21
Israel - 19
Israel - 22
Japan - 20
Malaysia - 18
Malaysia - 21
Singapore - 19
Singapore - 22
Viet Nam - 20


Imports
200
160
120
80
40
0
China - 18
China - 21
Hong Kong SAR, China - 19
Hong Kong SAR, China - 22
Indonesia - 20
India - 18
India - 21
Israel - 19
Israel - 22
Japan - 20
Malaysia - 18
Malaysia - 21
Singapore - 19
Singapore - 22
Viet Nam - 20


Total natural resources
10
8
6
4
2
0
China - 18
China - 21
Hong Kong SAR, China - 19
Hong Kong SAR, China - 22
Indonesia - 20
India - 18
India - 21
Israel - 19
Israel - 22
Japan - 20
Malaysia - 18
Malaysia - 21
Singapore - 19
Singapore - 22
Viet Nam - 20

4.2. European Countries

Descriptive

	LFDI	LGDP	LINFLATION	LEXPORTS	LIMPORTS	LTOTAL_N...
Mean	0.195111	1.411333	2.696000	51.43178	48.26556	0.250461
Median	1.960000	1.960000	1.730000	45.68000	41.21000	0.099201
Maximum	8.460000	8.310000	10.00000	95.73000	97.36000	1.208280
Minimum	-36.14000	-11.17000	-0.320000	27.33000	25.83000	0.023640
Std. Dev.	7.660192	4.105915	2.830908	20.48245	18.78546	0.296430
Skewness	-3.049558	-1.100898	1.387705	0.816559	1.021732	1.894544
Kurtosis	13.83484	4.414993	3.580968	2.308651	2.891003	6.256344
Jarque-Bera	289.8618	12.84396	15.07580	5.896946	7.851803	46.80181
Probability	0.000000	0.001625	0.000533	0.052420	0.019724	0.000000
Sum	8.780000	63.51000	121.3200	2314.430	2171.950	11.27075
Sum Sq. Dev.	2581.856	741.7755	352.6177	18459.36	15527.32	3.866311
Observations	45	45	45	45	45	45

Fixed Effects

Dependent Variable: LFDI
Method: Panel Least Squares
Date: 05/02/24 Time: 16:21
Sample: 2018 2022
Periods included: 5
Cross-sections included: 9
Total panel (balanced) observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	0.181368	0.235422	0.770396	0.4469
LINFLATION	1.308193	0.900411	1.452885	0.1563
LEXPORTS	1.201325	0.746166	1.609996	0.1175
LIMPORTS	-1.514707	0.845528	-1.791432	0.0830
LTOTAL_NATURAL_RESOURCES	-1.988708	4.902947	-0.405615	0.6878
C	8.232245	28.62429	0.287597	0.7756

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.657312	Mean dependent var	0.195111
Adjusted R-squared	0.513604	S.D. dependent var	7.660192
S.E. of regression	5.342376	Akaike info criterion	6.438765
Sum squared resid	884.7704	Schwarz criterion	7.000838
Log likelihood	-130.8722	Hannan-Quinn criter.	6.648300
F-statistic	4.573951	Durbin-Watson stat	2.834151
Prob(F-statistic)	0.000252		

Fixed effects in panel data analysis refer to the inclusion of individual-specific effects in the regression model. Interpretation of Fixed effects of European countries and their impacts on the variables in the regression analysis as follows:

1. GDP (Growth): Coefficient: 0.181336, Std. Error: 0.235422, t-Statistic: 0.770396, Probability: 0.4469. Cross-sectional fixed effects: These effects account for unobserved heterogeneity across different countries that may influence the relationship between GDP and FDI inflows. A one-unit increase in GDP is associated with a 0.181368 unit increase in FDI inflows. However, this relationship is not statistically significant at conventional levels.
2. Inflation (CP): Coefficient: 1.308193, Std. Error: 0.900411, t-Statistic:1.452885, Probability: 0.1563. Cross-sectional fixed effects capture country-specific inflation dynamics that affect the relationship between inflation and FDI inflows. A one-unit increase in inflation leads to a 1.308193 unit increase in FDI inflows and does not have a statistically significant effect on FDI inflows.
3. Exports of goods and services: Coefficient: 1.201325, Std. Error: 0.746166, t-Statistic: 1.609996, Probability: 0.1175. Cross-sectional fixed effects consider country-specific export patterns that influence the association between exports and FDI inflows. A one-unit increase in exports results in a 1.201325 unit increase in FDI inflows. However, this relationship is not statistically significant at conventional levels.
4. Imports of goods and services: Coefficient: (-1.514707), Std. Error: 0.845528, t-Statistic: 1.791432, Probability: 0.0830. Cross-sectional fixed effects consider country-specific import patterns that affect the relationship between imports and FDI inflows. A one-unit increase in import is associated with a (-1.514707) unit change in FDI inflows. However, this relationship is statistically significant at a 10% significance level.
5. Total Natural Resources: Coefficient: (-1.988708), Std. Error: 4.902947, t-Statistic: (0.405615), Probability: 0.6878. Cross-sectional fixed effects consider country-specific impacts on the total natural resources endowment on the relationship between total natural resources and FDI inflows. A one-unit change in total natural resources leads to a (-1.988708) unit change in FDI inflows. However, this relationship is not statistically significant at conventional levels.

Random Effect

Dependent Variable: LFDI
Method: Panel EGLS (Cross-section random effects)
Date: 05/02/24 Time: 16:23
Sample: 2018 2022
Periods included: 5
Cross-sections included: 9
Total panel (balanced) observations: 45
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	0.166551	0.221977	0.750308	0.4576
LINFLATION	0.914206	0.380796	2.400776	0.0212
LEXPORTS	-0.018839	0.431364	-0.043673	0.9654
LIMPORTS	-0.216739	0.475799	-0.455527	0.6513
LTOTAL_NATURAL_RESOURCES	1.384709	4.209195	0.328972	0.7439
C	8.578506	4.934540	1.738461	0.0900

Effects Specification

	S.D.	Rho
Cross-section random	4.830391	0.4498
Idiosyncratic random	5.342376	0.5502

Weighted Statistics

R-squared	0.220590	Mean dependent var	0.086502
Adjusted R-squared	0.120666	S.D. dependent var	5.737534
S.E. of regression	5.380247	Sum squared resid	1128.935
F-statistic	2.207573	Durbin-Watson stat	2.220135
Prob(F-statistic)	0.072994		

Unweighted Statistics

R-squared	0.311517	Mean dependent var	0.195111
Sum squared resid	1777.563	Durbin-Watson stat	1.410014

The following is an interpretation of random effects in panel data analysis, which involves understanding how variables affect the dependent variable while accounting for unobserved individual-specific effects that are assumed to be random. The impact of each variable on the dependent variable (FDI inflows) is described below, based on the provided information:

1. GDP: Coefficient: 0.166551, Std. Error: 0.221977, t-Statistic: 0.750308, Probability: 0.4576. The cross-sectional random effects. These effects account for unobserved heterogeneity across different countries that may influence the relationship between GDP and FDI inflows. A one-unit change in GDP leads to a 0.166551 unit change in FDI inflows. However, this relationship is not statistically significant at conventional levels.
2. Inflation (CP): Coefficient: 0.914206, Std. Error: 0.380796, t-Statistic: 2.400776, Probability (p): 0.0212. The cross-sectional random effects consider country-specific

inflation dynamics that influence the association between inflation and FDI inflows. The coefficient suggests that for every unit increase in inflation, FDI increases significantly by 0.914206 units. This relationship is statistically significant, with a low p-value of 0.0212, indicating that higher inflation rates are associated with increased FDI inflows.

3. Exports of goods and services: Coefficient: (-0.018839), Std. Error: (0.431364), t-Statistic: (-0.043673), Probability: (0.9654). The coefficient implies that when exports increase, there is a small reduction in FDI. However, this relationship is not statistically significant where p is 0.9654. This Lack of significance suggests that the link between exports and FDI inflows not be trustworthy and could be affected by country-specific factors that were not observed.
4. Imports of goods and services: Coefficient: (-0.216739), Std. Error: 0.475799, t-Statistic: (-0.455527), Probability: 0.6513. The coefficient implies that an increase in imports is associated with a decrease in FDI inflows. However, this relationship is not statistically significant where p is 0.6513. Thus, the observed association between imports and FDI may not be reliable and could be influenced by unobserved country-specific factors, as captured by cross-sectional random effects.
5. Total Natural Resources: Coefficient: 1.384709, Std. Error: 4.209195, t-Statistic: 0.328972, Probability: 0.7439. The coefficient suggests that a one-unit change in natural resources leads to a substantial increase of 1.384709 units in FDI inflows. However, this relationship is not statistically significant (p is 0.7439), indicating that the observed association between total natural resources and FDI inflows may not be reliable and could be influenced by unobserved country-specific factors.

Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.554889	5	0.3520

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LGDP	0.181368	0.166551	0.006150	0.8501
LINFLATION	1.308193	0.914206	0.665734	0.6292
LEXPORTS	1.201325	-0.018839	0.370689	0.0451
LIMPORTS	-1.514707	-0.216739	0.488533	0.0633
LTOTAL_NATURAL_RESOURCES	-1.988708	1.384709	6.321559	0.1797

Cross-section random effects test equation:
Dependent Variable: LFDI
Method: Panel Least Squares
Date: 05/02/24 Time: 16:23
Sample: 2018 2022
Periods included: 5
Cross-sections included: 9
Total panel (balanced) observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.232245	28.62429	0.287597	0.7756
LGDP	0.181368	0.235422	0.770396	0.4469
LINFLATION	1.308193	0.900411	1.452885	0.1563
LEXPORTS	1.201325	0.746166	1.609996	0.1175
LIMPORTS	-1.514707	0.845528	-1.791432	0.0830
LTOTAL_NATURAL_RESOURCES	-1.988708	4.902947	-0.405615	0.6878

Effects Specification

Cross-section fixed (dummy variables)

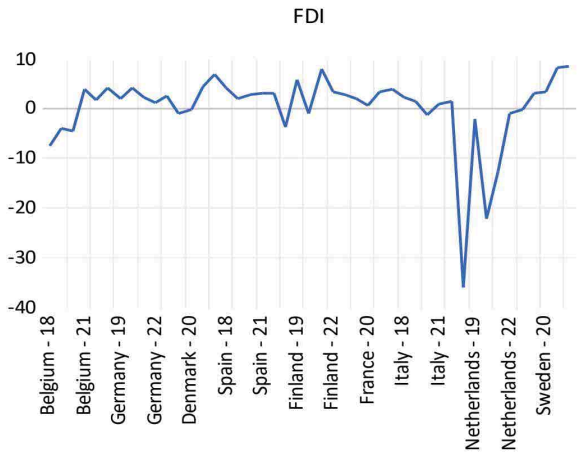
R-squared	0.657312	Mean dependent var	0.195111
Adjusted R-squared	0.513604	S.D. dependent var	7.660192
S.E. of regression	5.342376	Akaike info criterion	6.438765
Sum squared resid	884.7704	Schwarz criterion	7.000838
Log likelihood	-130.8722	Hannan-Quinn criter.	6.648300
F-statistic	4.573951	Durbin-Watson stat	2.834151
Prob(F-statistic)	0.000252		

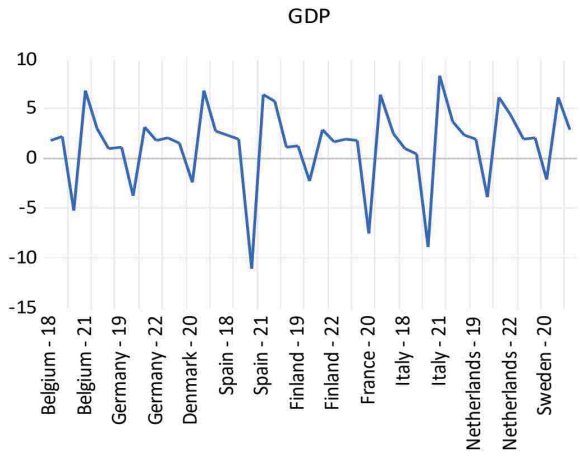
The Hausman test is a statistical method used in panel data analysis to decide if a random effects model is suitable for the data, or if a fixed effects model would be a better fit. The test

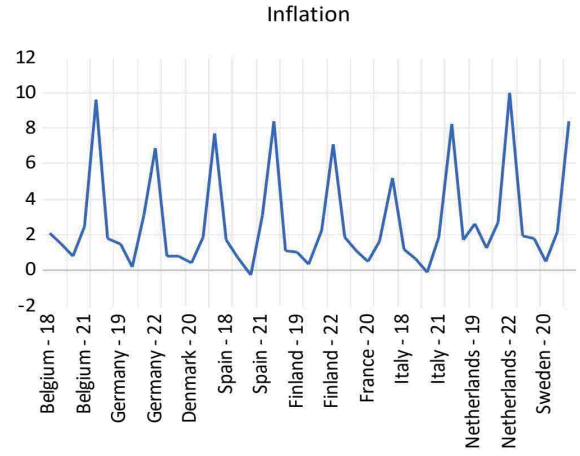
compares the correlation between individual-specific effects and independent variables in both models. If the result of the Hausman test is significant, it indicates that the random effects model is not consistent with the data, and the fixed effects model should be used instead. Conversely, if the result is non-significant, it suggests that the random effects model is appropriate for the analysis.

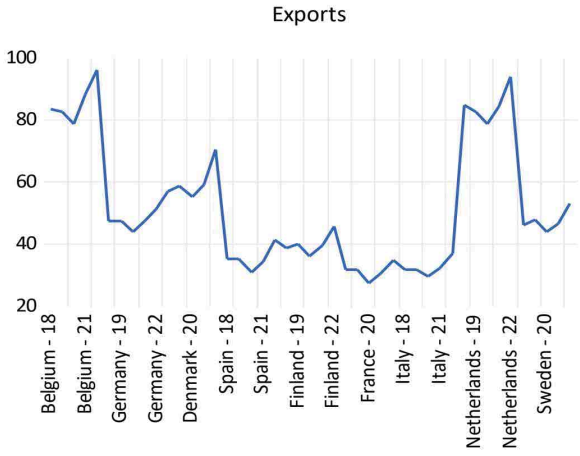
The Hausman test is a helpful tool to choose the right model for your analysis. If the probability value (Prob) is lower than the chosen significance level (usually 0.05), it means that the random effects model does not fit the data, and the fixed effects model is preferred. On the other hand, if the probability value is higher than the significance level, then the random effects model is appropriate for the dataset. This indicates that the unobserved individual effects are not related to independent variables.

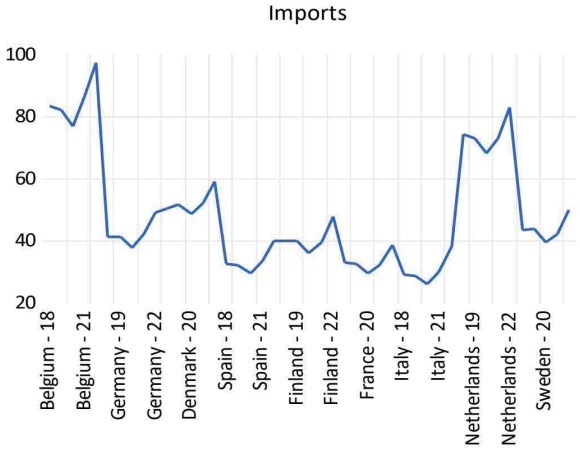
Graphs

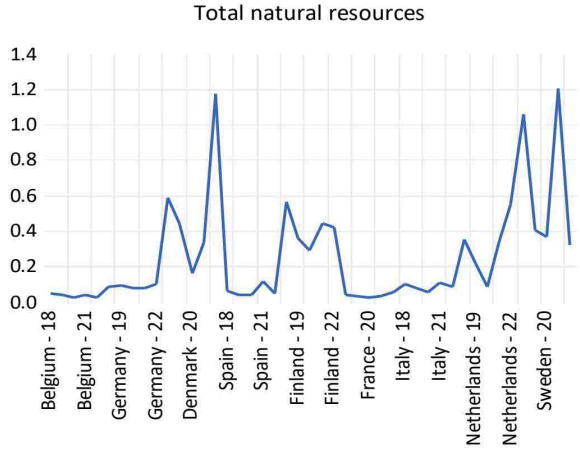

FDI
10
0
-10
-20
-30
-40
Belgium - 18
Belgium - 21
Germany - 19
Germany - 22
Denmark - 20
Spain - 18
Spain - 21
Finland - 19
Finland - 22
France - 20
Italy - 18
Italy - 21
Netherlands - 19
Netherlands - 22
Sweden - 20


GDP
10
5
0
-5
-10
-15
Belgium - 18
Belgium - 21
Germany - 19
Germany - 22
Denmark - 20
Spain - 18
Spain - 21
Finland - 19
Finland - 22
France - 20
Italy - 18
Italy - 21
Netherlands - 19
Netherlands - 22
Sweden - 20


Inflation
12
10
8
6
4
2
0
-2
Belgium - 18
Belgium - 21
Germany - 19
Germany - 22
Denmark - 20
Spain - 18
Spain - 21
Finland - 19
Finland - 22
France - 20
Italy - 18
Italy - 21
Netherlands - 19
Netherlands - 22
Sweden - 20


Exports
100
80
60
40
20
Belgium - 18
Belgium - 21
Germany - 19
Germany - 22
Denmark - 20
Spain - 18
Spain - 21
Finland - 19
Finland - 22
France - 20
Italy - 18
Italy - 21
Netherlands - 19
Netherlands - 22
Sweden - 20


Imports
100
80
60
40
20
Belgium - 18
Belgium - 21
Germany - 19
Germany - 22
Denmark - 20
Spain - 18
Spain - 21
Finland - 19
Finland - 22
France - 20
Italy - 18
Italy - 21
Netherlands - 19
Netherlands - 22
Sweden - 20


Total natural resources
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Belgium - 18
Belgium - 21
Germany - 19
Germany - 22
Denmark - 20
Spain - 18
Spain - 21
Finland - 19
Finland - 22
France - 20
Italy - 18
Italy - 21
Netherlands - 19
Netherlands - 22
Sweden - 20

6. Research Findings

The key findings of this study are as follows:

- GDP growth: the study's findings indicate that while GDP growth has a positive but not statistically significant coefficient, it does not by itself significantly affect FDI inflows.
- Inflation (CP): While it does not affect FDI inflows into European nations has a favorable effect on inflows into Asian nations. The study demonstrates the correlation between larger FDI inflows and higher inflation rates in Asian nations.
- Imports and Exports of goods and services: exports significantly boost FDI inflows into Asian nations, suggesting that nations with higher exports levels typically draw more FDI. However, imports significantly reduce FDI inflows in both Asian and European nations, indicating that increased imports levels can discourage FDI.
- Total Natural Resources: the study discovered that while the association between total natural resources and FDI inflows is not statically significant in both Asian and European countries, the richness of natural resources by itself may not be a key factor of FDI inflows.

7. Conclusions

This study definitively establishes the relationship between macroeconomic variables and foreign direct investment (FDI) inflows into Asian and European countries from 2018 to 2022. The study suggests that while certain macroeconomic variables such as inflation (CP) and trade (exports and imports of goods and services) play a significant role in attracting FDI inflows, GDP growth and total natural resources may have limited influence. Policymakers in both Asian and European countries should focus on maintaining stable inflation rates and promoting export-oriented policies to attract FDI. Additionally, efforts to reduce dependency on imports of goods and services and diversify the economy beyond natural resources may also help stimulate FDI inflows. Overall, a nuanced understanding

of the determinants of FDI inflows is essential for designing effective policies to attract foreign investment and foster economic growth.

8. Scope for Further Research

The further research can be done beyond the study period 2022 which will enable research to capture the evolving dynamics of FDI inflows and macroeconomic variables in response to major global events, providing valuable insights into the resilience and adaptability of economies in the face of external shocks.

9. References

Asia, E. (2021). Asia and the Global Economy Patterns of network trade : A comparison between East Asia and European. *Asia and the Global Economy*, *1*(2), 100011. https://doi.org/10.1016/j.aglobe.2021.100011

Ben Romdhane, Y., Kammoun, S., & Werghi, I. (2022). Economic resilience to the FDI shock during the COVID-19 pandemic: evidence from Asia. *Journal of Economic and Administrative Sciences*. https://doi.org/10.1108/jeas-12-2021-0250

Camarero, M., Moliner, S., & Tamarit, C. (2021). Japan & The World Economy Japan ' s FDI drivers in a time of financial uncertainty . New evidence based on Bayesian Model Averaging ☆. *Japan & The World Economy*, *57*, 101058. https://doi.org/10.1016/j.japwor.2021.101058

Chandra, T. A., & Handoyo, R. D. (2020). *Determinants of Foreign Direct Investment in 31 Asian Countries for the 2002 - 2017 Period*. 566–581. https://doi.org/10.5709/ce.1897-9254.428

Level, S. (2019). *" Factors Influencing FDI Inflows in South- Asian Countries : A Panel Data Analysis " By Md . Jobaer Hossain " Factors Influencing FDI Inflows in South- Asian Countries : A Panel Data Analysis " Md . Jobaer Hossain Civic Registration Number : 830427-3835*.

Mishra, B. R., & Jena, P. K. (2019). Bilateral FDI flows in four major Asian economies: a gravity model analysis. *Journal of Economic Studies*, *46*(1), 71–89.

https://doi.org/10.1108/JES-07-2017-0169

Romdhane, Y. Ben. (2022). *Economic resilience to the FDI shock during the COVID-19 pandemic : evidence from Asia*. https://doi.org/10.1108/JEAS-12-2021-0250

Saleem, H. (2020). *The short-run and long-run dynamics among FDI , trade openness and economic growth : using a bootstrap ARDL test for co-integration in selected South Asian countries*. *9*(2), 279–295. https://doi.org/10.1108/SAJBS-07-2019-0124

Singhania, M., & Gupta, A. (1991). *Determinants of foreign direct investment in India*. https://doi.org/10.1108/14770021111116142

Singhania, M., & Gupta, A. (2011). Determinants of foreign direct investment in India. *Journal of International Trade Law and Policy*, *10*(1), 64–82. https://doi.org/10.1108/14770021111116142

Trade, A. (n.d.). *No Title*.

Ullah, I., & Khan, M. A. (2017). Institutional quality and foreign direct investment inflows: evidence from Asian countries. *Journal of Economic Studies*, *44*(6), 1030–1050. https://doi.org/10.1108/JES-10-2016-0215

Xu, C., & Wu, A. M. (2021). *International tax competition and foreign direct investment in the Asia – Pacific region : a panel data analysis*. *33*(2), 157–176. https://doi.org/10.1108/JPBAFM-04-2020-0054