The Impact of External Debt Maturity on Foreign Direct Investment: Evidence from G20 members

Salvi Singh
Student
M.Com (International Finance)
Dept. of Professional Studies
CHRIST (Deemed to be University)
salvi.singh@mcom.christuniversity.in

Zoya Tabassum
Student
M.Com (International Finance)
Dept. of Professional Studies
CHRIST (Deemed to be University)
zoya.tabassum@mcom.christuniversity.in

Shilpa H Shetty
Asst Professor
Dept. of Professional Studies
CHRIST (Deemed to be University)
shilpa.h@christuniversity.in

Abstract

The present paper aims to investigate the impact of External Debt Maturity on Foreign Direct Investment (FDI) for the countries and unions under the G20 umbrella while controlling Gross Domestic Product, Balance of Payments, and Exchange Rates. Data is collected from the World Bank Database for 2000 to 2021,i.e., for 22 years. GLS regression analysis using statistical software Stata is employed for data analysis. The findings show that External Debt Maturity has a statistically significant positive impact on FDI. This study can have implications for determining a nation's credibility for future obligations, solvency, and liquidity power.

Keywords: *Economic growth, External Debt Maturity, Foreign Direct Investment, G20, Panel data analysis*

JEL: *C23, E2, F3*

Introduction

Economic issues influence the daily lives of people across the world. The standard of living has significantly increased since the end of World War II with the advent of globalisation. Still, it has also been linked to various challenges countries face concerning their economies, such as inflation, interest rate fluctuations,

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and economic inequality. Although it is challenging to distinguish the effects of trade policies from those of other macroeconomic policies and to interpret the observed correlations between trade policies and economic growth, trade can be one of several catalysts for productivity and growth. As such, the contribution of trade depends on the relative importance of trade to the overall economy (Singh, 2010).

Economic indicators generally provide a quantifiable measure of a country's economic growth. It also helps standardize countries' economic data to compare it against other nations. Trends in macroeconomic indicators can be used to forecast a country's economic growth (Oshodi, 2018). Economic governance heavily relies on macroeconomic indicators, particularly those that measure the growth of the gross domestic product, unemployment, and governmental deficits (Mügge, 2015). Some of the major economic indicators to focus on are Foreign Direct Investment (FDI), Gross Domestic Product (GDP), Balance of Payment (BoP), and the exchange rate between two nations. According to the Corporate Finance Institute, Foreign Direct Investment (FDI) is an investment made into a company or business in another country by a party from one country to create a long-term relationship. Research by Tiwari & Mutascu (2011) revealed that exports and foreign direct investment speed up a country's economic expansion. Foreign capital may impact economic growth in three ways: increasing domestic investment rates and company efficiency and boosting the economy (Susic et al., 2017).

The total monetary worth of all finished goods and services delivered in a nation over a given time period is known as the gross domestic product (GDP). GDP has become a measure of economic growth because it is easier to number goods and service production than using an index that can measure other welfare indicators. There is a pattern of complementarity between trade openness and total factor productivity (TFP) development level, such that the greater the TFP level, the more substantial the influence of trade openness on GDP growth (Ramzan et al., 2019). According to Kindle Berger, a nation's balance of payments (BoP) is a systematic account of all economic transactions that occurred during a specific time period between citizens of the reporting nation and citizens of other nations. Due to its cap on the increase in the level of demand that supply can adjust to, the balance of payments can function as a restraint on the output growth rate (Thirlwall & Hussain, 1982). Based on the definition given by the Reserve Bank of Australia, the difference in the relative costs of the two currencies determines the exchange rate. In research from Sibanda et al. (2013), real exchange rates were positively correlated with economic growth, indicating that real exchange rates significantly influence economic growth.

While FDI and GDP are well-known macroeconomic indicators for a country, external debt is another indicator vital for a nation's economic development. External debt is a country's debt portion borrowed from lenders located in foreign regions. These lenders include commercial banks, governments, and international financial institutions. According to empirical data from Ali & Mustafa (2012), external debt has a detrimental effect on economic growth and is directly correlated with lower economic growth. External debt has had a negative and considerable influence on economic growth during the research period, and it is advised that other funding sources, such as foreign direct investment, be used instead (Moh'd AL-Tamimi & Jaradat, 2019). Over a while, either less than 12 months or more than 12 months, these external debts reach a point where they mature. The amount that matures, known as external debt maturity, is the debt the borrowers must repay the lenders to avoid a debt crisis.

Over the past years, the world economy has seen a significant change, as it has become more organized than ever, and many nations have constantly come together for its governance. With international trade being one of its significant characteristics, several countries have formed various international unions and forums to address issues of the world economy, such as global imbalances, economic crises across the

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globe, poverty, and many more. One of the significant associations here is the Group of Twenty, more commonly known as the G20.

The G20 was established in 1999 to discuss policies to achieve global financial stability. As per the G20 main webpage, 60% of the world population resides in the G20 countries. The members contribute 80% to the global GDP and form 75% of global exports. The strategic goal for the G20 is to secure future global economic growth and prosperity. At the forum's annual summit, the country holding the Presidency invites guest countries, and several international and regional organizations, allowing them to expand their representation. Recent issues in the G20 summits include international financial stability, climate change, and sustainability.

The paper is organized as follows: the introduction is followed by a review of the literature. In this section, the relationship between various economic indicators is explored, and the research gap is identified. Thereafter, the objective and research methodology are stated. The next section analyses and interprets the data. This is followed by a section on discussion and conclusion. Finally, the limitations, implications, and scope for future research are laid out.

Review of Literature

FDI is crucial to global economic integration since it forges strong, long-lasting ties between nations' economies. Research has shown different relationships between FDI and other economic indicators like Gross Domestic Product, Balance of Payments, and exchange rate. In research from Shahzad & Al-Swidi (2013), the effects of the GDP growth rate, exports, imports, and balance of payments on FDI inflows were confirmed to be positive and significant. The bi-directional relationships between FDI inflows and GDP were confirmed by Kosztowniak (2016), who used the Vector Error Correction Method impulse responses and variance decomposition analysis for the same. However, few researchers have also shown that FDI and GDP have an insignificant relationship in the long run. In most nations, FDI has no long-term or short-term impact on growth; in fact, there is not a single nation where FDI has a long-term positive unidirectional impact on GDP (Herzer et al., 2008). Real GDP has a solid and unidirectional short-term positive impact on net FDI inflows; however, there is no long-term impact of net FDI inflows on real GDP, despite the existence of a long-term impact in the other way (Gokmen, 2021).

It has also been observed that FDI significantly impacts a nation's capital account and current account, which constitutes its corresponding Balance of Payments (BoP). According to the empirical findings of Sarode (2012), FDI has a favourable impact on the capital account but a negative impact on the current account. Foreign Direct Investment Inflows and Capital Account Balance are causally related in both directions, which implies that the capital account balance in India affects both the foreign direct investment inflows and the outflows, as well as the capital account balance (Rahman, 2016). While some studies have found a correlation between FDI and the exchange rate to be positive, others have found a negative correlation. It was revealed that FDI is negatively impacted by inflation and the real exchange rate in a study by Sengupta & Puri (2018). However, a study by Alba et al. (2010) shows that the exchange rate positively and significantly impacts the average rate of FDI inflows in an FDI-friendly climate. FDI is also affected by other economic factors such as economic policies, interest rates, etc.

The term "external debt" refers to money borrowed from abroad. External debts of a nation are significant because it is at this facility that countries seeking to attract capital must go to be valued. Nations typically use foreign lenders to finance infrastructure development, bloated government spending, disaster relief, and, occasionally, the repayment of previous external debt. Like FDI, external debt also had varying effects on macroeconomic indicators such as GDP, BoP, and exchange rate. A study by Ndubuisi (2017) used the

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Johansen cointegration test, demonstrating the long-term link between GDP and external debt. It also used a causality test, which reveals a one-way relationship between GDP and external debt. External debt has a detrimental influence on GDP growth.

According to research, the Balance of Payment also affects a country's external debt. The study of Ogbonna et al. (2021) found that the exchange rate had a statistically small impact on Nigeria's economic development throughout the review period but had a statistically significant impact on foreign debt, external debt service payments, and balance of payments. Public spending and debt service positively impact foreign debt, whereas the current account balance, inflation rate, and domestic savings have a negative and sizable impact (Sağdiç & Yildiz, 2020). The fluctuation also impacts external debt in the exchange rate of a country. A study by Saheed et al. (2015) states that the need for foreign currency that may result from servicing external debt tends to influence the country's exchange rate. Short-term changes in exchange rates are significantly influenced by external debt, debt servicing payments, and foreign reserves (Aderemi et al., 2020).

Extensive research is done to understand the relationship between FDI and external debt. Growth fuelled by FDI relies on the external debt limit (Tanna et al., 2018). However, in a study by Azolibe (2022) it is shown that when external debt was combined with macroeconomic factors like corporate tax, infrastructure development, economic growth, and military spending, the result revealed a positive interaction effect between external debt and infrastructure development on FDI, indicating that external debt can have a positive impact on FDI if it is used to build essential infrastructure. A different analysis reveals that whereas the balance of payments has an immensely beneficial impact on FDI both in the long and short-run, external debt is found to have a considerable negative impact on FDI in the long run but is inconsequential in the short run (Muhammad Mahmud Mostafa, 2020). Adedigba (2019) research discovered that the link between the external debt to total exports ratio and the foreign investment to total exports ratio is both positive and inconsequential.

Numerous studies have shown a connection between significant macroeconomic variables like GDP, BoP, the exchange rate, FDI, and external debt. They have demonstrated how the variables affect one another in the short and long term. However, the impact of external debt maturity on foreign direct investment has not been studied. Additionally, while studies have shown how the indicators, as mentioned earlier, affect various federations of states and economic forums, the G20 members have received less attention from economists. As a result, this enables viewing of these components from more nations widely dispersed worldwide. Therefore, the following research is being carried out utilising GDP, the Balance of Payments, and currency rates as the regulating elements to close these research gaps.

Objective

To investigate the impact of External Debt Maturity on Foreign Direct Investment (FDI) for the countries and unions under the G20 umbrella

Research Design & Methodology

Table 1 : Variables and Hypothesis

Particulars	**Details**
Independent Variable	External Debt Maturity (EDM)
Dependent Variable	Foreign Direct Investment (FDI)
Controlling Factors	Gross Domestic Product (GDP), Balance of Payments (BOP), Exchange Rates (ER)

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Significance Level (α)	95% Level of Confidence
MODEL I	
Null Hypothesis (H_0)	External Debt Maturity does not have a statistically significant impact on Foreign Direct Investment.
Alternate Hypothesis (H_1)	External Debt Maturity has a statistically significant impact on Foreign Direct Investment.
MODEL II	
Null Hypothesis (H_0)	When influenced by the controlling factors, External Debt Maturity does not have a statistically significant impact on Foreign Direct Investment.
Alternate Hypothesis (H_1)	When influenced by the controlling factors, External Debt Maturity has a statistically significant impact on Foreign Direct Investment.

Source: Author

Data Collection

Secondary data forms the basis for investigating External Debt Maturity's impact on Foreign Direct Investment. The study is conducted based on the data collected for the period 2000 to 2021 for G20 countries. The entire dataset has been collected from the Data Bank of the World Bank Database. EDM was collected under the header of 'Joint External Debt Hub,' while FDI, GDP, BoP, and ER were taken from the 'World Development Indicators' section of the Data Bank. EDM, FDI, GDP, BoP, and ER were converted from millions to thousands for easy computation. In this research, we have taken External Debt Maturity as an independent factor, FDI as a dependent variable, and GDP, BoP, and ER as controlling factors.

Statistical Tool for Analysis

The variables' means, standard deviations, and minimum and maximum values are computed to describe the data. Correlation analysis is undertaken to check for multicollinearity. Further, cross-sectional time-series FGLS regression analysis is done to examine the impact of External debt Maturity on Foreign Direct Investment of G20 Countries. Statistical software Stata is employed to estimate the impact of External debt Maturity on Foreign Direct Investment of G20 Countries.

Data Analysis & Interpretation

The study examines the impact of EDM on FDI. The data analysis and interpretation section is divided into five subsections. The descriptive statistics are presented first, followed by the correlation matrix. This is followed by presenting the results of the Cross-sectional Time-series Regression Analysis. The analysis begins by describing the variables using Mean, Standard Deviation, Minimum and Maximum values in Table 2. The mean and SD, the number of observations, and the minimum and maximum values are also given.

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Table 2 : Descriptive Statistics of the Indicators for G20 members

Variable	Obs	Mean	S.D	Min	Max
FDI	440	3,471,017	7,358,019	2,380	41,700,000
EDM	440	2,645.836	69,478.13	-344,331	384,606
GDP	440	3,194,212	4,490,918	97,724	23,000,000
BOP	440	1,750.89	157504.7	-824,091	423,620
ExR	440	0.5432768	0.531008	0.0000686	2.000914

Source: Computed by the authors

The total number of observations constitutes data from G20 countries for 22 years. Mean denotes the average of all observations and standard deviation indicates the spread of observations for each variable. Table 2 displays the mean, SD, minimum and maximum values of each variable under study.

Table 3 : Correlation Matrix of the Variables using the 10-year data of G20 members

r	EDM	GDP	BoP	ExR
EDM	1	-	-	-
GDP	0.6637	1	-	-
BoP	0.0157	-0.2635	1	-
ExR	0.5565	0.3316	-0.1855	1

Source: Computed by the authors

Table 3 presents the correlation between the variables. Correlation values represent the statistical link between two quantitative variables.

The correlation coefficients for several variables are displayed in a table called a correlation matrix. The correlation between all potential pairs of values in a table is shown in the matrix. It is an effective tool for compiling a sizable dataset and locating and displaying data patterns. A high correlation between independent variables gives rise to the problem of multicollinearity. Multicollinearity is a concern since it reduces the independent variable's statistical significance. The likelihood that a regression coefficient would be statistically significant decreases, other things being equal, with increasing standard error ("The Problem of Multicollinearity," n.d.). However, no high correlation is found between variables, negating multicollinearity amongst the variables under study.

Table 4 shows the cross-sectional time series regression analysis based on Generalized Least Squares (GLS). When there is a specific level of correlation between the regression model's residuals, the generalised least squares (GLS) technique is used to estimate the unknown parameters. It is a technique for fitting explanatory variable coefficients that aid in forecasting the results of a dependent random variable.

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Table 4: *Regression Results*

	Model I	Model II
EDM	.0032619*	.0037534*
GDP	-	-.0012785
BOP	-	.0169095
ExR	-	515.4244
Constant	-8676.337	-6608.234
Wald Chi2	59.62	63.63
Prob>Chi2	0.0000	0.0000

Source: Computed by the authors

*Significant at a 5% level of significance

Two cases are considered for constructing the model. In the first case, the impact of EDM on FDI is studied without the influence of the controlling factors, GDP and ER. The resulting model is titled Model I. In the second case, the impact of EDM on FDI is studied along with the influence of the controlling factors, GDP and ER. The resulting model is titled Model II.

Table 4 presents the results of the GLS Regression Analysis. The results of Model I shows that EDM has a positive impact on FDI, and the impact is statistically significant. Hence, the regression equations are:

Model I: FDI = -8676.337 + 0.0032619 (EDM)

In Model II, the coefficients of the independent variable EDM are positive along with control variables BOP and ExR, indicating a positive association between the variables. Whereas GDP has shown a negative association with FDI. However, only the positive relationship between FDI and EDM is statistically significant. Further, the model confirms that when in the influence of control variables BOP, GDP, and ExR, EDM continues to have a statistically significant influence on FDI.

Model II: FDI = -6608.234+ 0.0037534 (EDM) -0.0012785 (GDP) + 0.0169095 (BOP) + 515.4244 (ExR)

Discussion & Conclusion

The study was conducted to understand the degree of impact the maturity of external debt has upon Foreign Direct Investment, with evidence from G20 members. Numerous studies have been done on the relationship between external debt and factors like GDP, FDI, BoP, and exchange rates. From our past literature, we can understand that as the external debt of a country increases, foreign direct investment decreases. Research by Azolibe (2022) showed a positive interaction effect between external debt and infrastructure development on FDI when it interacted with macroeconomic variables like corporate tax, economic growth, and military spending, suggesting that external debt can positively influence FDI if it is used to provide essential infrastructure. The research results by Çolak & Özkaya (2020), which focused on military expenditure, show that real GDP, imports of goods and services, real general government revenue, and inflation rate negatively affect external debt. In contrast, real general government final consumption expenditure, FDI flow, and exports of goods and services all positively affect it.

While this research deals with the same parameters, we have taken a slight diversion by considering the maturity of such external debt as the independent variable. However, the present study hypothesizes that

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Foreign Direct Investment would also increase on the increase in the maturity (repayment of debt) of the corresponding external debt. The study concludes that EDM has a statistically significant influence on FDI with or without the influence of other factors.

Implications, Limitations, and Scope for Future Research

Policymakers may refer to the study's results to understand if returns earned on FDI can be another source of external debt maturity. It can also form a basis for analyzing the reverse effect, i.e., the impact of FDI on external debt maturity. Other economists can use this to understand further how external debt can be reduced. This can also act as a reference for implementing strategies to increase the amount of external debt maturity annually. The study may have implications for assessing a country's future solvency, liquidity, and credibility for obligations. Such economic research is unquestionably essential for implementing more effective economic policies to support stable and inflation-free growth and to manage the different risks associated with the dynamic and quick integration of the world's economies.

However, the study is not free from limitations. This study's focus is only on the G20 nations. The data for the study is seen to be skewed for the developed countries due to their relatively high values for their economic indicators, which overshadows the nations with comparatively lower amounts. This might have formed a bias in the analysis further done. Another limitation is that many factors are assumed constant while conducting a regression analysis. In the future, researchers can undertake similar studies by considering more factors.

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