

## Does business cycles influence FDI inflows- A case study of India

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### Keywords

Business cycle, India, FDI inflows

### Abstract

*The present study investigates the dynamic association between foreign direct investment (FDI) inflows and business cycles in India. FDI plays a crucial role in fostering a nation's economic progress and promoting technical growth. Nonetheless, foreign investments also exhibit synchronous relationship with the business cycles, which are relatively more evident in the present uncertain times. Finding reveal that foreign investments in India have a countercyclical trend, meaning they tend to move in the opposite direction of the business cycle, both in the short and long term. Nevertheless, the immediate consequences of this countercyclical activity outweigh the long-term consequences.*

### Introduction

The significant surge in Foreign Direct investments (FDI) in the past three decades may be attributed to the phenomenon of globalization, which has had a profound influence on the macroeconomic transformations of many countries. Foreign Direct Investment (FDI) offers recipient nations substantial benefits, such as a substantial inflow of capital, transfer of expertise, and improved access to international markets, consequently positively influencing economic growth and development prospects (Zekarias, 2016). However, the crucial factor for the successful implementation and achievement of maximum advantages from these investments lies in the supportive policies implemented by the government. The advantages may be derived from the augmentation of the current reservoir of knowledge in recipient countries, the dissemination of information through employee training, the transfer of expertise, effective administration, and organizational techniques (Vujanović et al., 2022). Foreign Direct Investment (FDI) plays a crucial role in providing significant capital resources that have the ability to assist and support technical advancements for local enterprises in the nations where the investment takes place. MNEs enhance the knowledge and connectivity that facilitate the development of enterprises into unfamiliar and undeveloped overseas markets (Mijiyawa, 2017).

Several studies have examined the elements that are associated with global business cycles. There is a widely accepted agreement on the significant influence of business cycles on global trade. There often exists a bi-lateral association between these variables (Grinin et al., 2016); Allegret & Essaadi, 2011).

The relationship between capital flows and crises has been thoroughly examined since the occurrence of the 2008 financial crisis. This literature argues that the increase in capital flows raises the likelihood of crises because it causes inflationary effects on asset values. Nonetheless, the unexpected rises in capital and the formation of financial and real estate asset bubbles have also been noticed by Gallagher, 2011. Investigation reveals that variations in capital flows to developing nations are mostly influenced by shifts in fundamental economic variables, such as foreign output and domestic productivity (Li & Tanna, 2019). In the current volatile global climate, academics are explicitly examining the relationship between economic cycles and the periodic patterns of capital movements (Cerutti et al., 2019). It is worth noting that while business cycles influence FDI inflows, they are not the sole determinant.

The emergence of COVID-19, the ongoing trade conflict between the United States and China, geopolitical tensions, and the trend towards less global integration have significantly threatened and endangered the global economy and international trading system. The epidemic's effect on trade has garnered significant attention, similar to the global financial crisis of 2008-09. Researchers have shown that the pandemic resulted in a more severe decline in trade compared to the global financial crisis of 2008-2009. It is because the epidemic produced both a decrease in demand and a decrease in supply, whereas a decrease in demand mainly caused the recession in 2008-2009.

Therefore, studying the effects of economic cycles on foreign direct investment (FDI) in the current unstable global climate might provide insights on how pandemic-related economic disruptions affect the influx of FDI.

This study examines the influence of the business cycle on foreign investments in India, an emerging Asian economy, considered a potential China plus one destination. The study utilizes the Non-linear ARDL approach to evaluate the short and long-term relationship between FDI inflows and business cycles.

### Literature review

The alternating stages of economic boom and decline characterize business cycles. FDI inflows are higher during economic booms with strong economic growth and consumer demand because investors perceive prospects for expansion and profitability. However, market demand, financial instability, and increased uncertainty may reduce FDI inflows during economic contractions or recessions. There are several instances, such as the 2008-09 subprime crisis, the recent trade wars, covid-19 pandemic, US-Russia war, among many others, where FDI inflows are influenced by business cycles.

Luk and Zheng (2020) examine the movement of funds between nations in developing countries and the link between FDI and debt financing. The model anticipates a rise in FDI during a financial crisis owing to the value differential between foreign and domestic investors. The study contends that their model aligns with evidence of pro economic cycle moments in developing economies.

Doytch (2021) looks at sectoral FDI inflows and the business cycle connection in 19 Eastern European and Central Asian nations. The findings show that aggregate services sector FDI rises during recessions and reduces during booms. Extractive, manufacturing, and financial/non-financial services FDI are acyclical and do not follow the business cycle.

Shi (2019) examines the correlation between currency devaluation and the amount of foreign direct investment (FDI) flowing into a country. It finds that fluctuations in short-term FDI significantly impact the extent of utility loss caused by monetary shocks in business cycles. They exert minimal influence on overall welfare throughout economic cycles caused by productivity shocks. To achieve optimal outcomes, the authors recommend maintaining long-term FDI while reducing abrupt changes in the locations where firms carry out their production activities.

Cavallari & d'Addona (2013) establish a favourable association between US foreign direct investments (FDIs) and the cyclical circumstances of the host country. According to the study, the responsiveness of foreign investments to changes in output is greater during periods of economic boom than during periods of economic decline. However, the surge in currency volatility deters US foreign investment.

Alfaro et al. (2004) discovered evidence of pro-cyclical FDI in 69 countries. Furthermore, they discovered that FDI flows positively affect the host country's GDP growth. In contrast, Neagu and Schiff (2007) discovered that FDI inflows were counter-cyclical when they examined a panel of 116 developing country states from 1980 to 2007.

During economic downturns, Bengoa and Sanchez-Robles (2003) discovered evidence of counter-cyclical FDI in Latin American countries. On the other hand, Albulescu & Ianc (2016) examined the impact of counter-cyclical fiscal policies and foreign direct investment (FDI) inflows on the overall economic stability in several nations within the Eurozone. The correlation between business cycles and FDI inflows may vary among different areas. The study conducted by Nunnenkamp & Spatz (2004) across 50 developing nations found that FDI had a stronger correlation with Latin American economic cycles than Asia. Buckley et al. (2004) studied the relationship between inward foreign direct investment (FDI) and economic growth in developing host countries. They found that FDI has substantially impacted promoting economic growth in these countries by facilitating the transfer of capital, managerial expertise, and technical skills.

Warzała (2014) examines the impact of the worldwide economic crisis and shifts in FDI on the economy of Poland. The study highlights that the decline in FDI inflows in Poland from 1990 to 2012 was due to reduced business investment capacity, decreasing profits, increased bank loan fees, and negative global economic growth projections.

Rodríguez & Bustillo (2015) asserts that Overseas FDI flows display a pro-cyclical trend, i.e. witnesses a rise during economic expansion and a decline during economic contractions. Furthermore, the study illustrates that interest rates and currency rates in the domestic nation have an adverse effect on OFDI flows.

Wang & Wong (2007) investigate the influence of economic growth volatility on FDI outflows from OECD nations. Their research demonstrates that increased volatility in economic development has a significant detrimental effect on outflows of FDI. The findings highlight the fact that economic shocks can have different impacts on FDI outflows, depending on whether it is a boom or a recession. This suggests that fluctuations of the same magnitude throughout these two periods have diverse outcomes.

The literature study indicates that economic variations, such as periods of expansion and recession, have a significant influence on foreign direct investment. However, it is crucial to acknowledge that several additional macro variables have a substantial impact on the association. Considering this, the current study investigates the aforementioned relationship while controlling for key macro variables, as described in the literature.

### Methodology

The study utilizes a commonly used ARDL (non-linear Autoregressive Distributed Lag) econometric approach to analyse the non-linear connection between FDI inflows and the business cycle in both the long and short term. This approach allows for the use of lagged variables in conjunction with non-linear functions. Further, we model FDI inflows as a function of the variables under consideration as follows:

$$FDI_t = f(lnFDI_{t-1}, O_{gap_p}, O_{gap_n}, lnGDP, lnReer, lnForex, Inf, Pvt_{inv}, Ir_{diff})$$

Where  $FDI_{t-1}$ ,  $O_{gap_n}$ ,  $O_{gap_p}$ ,  $lnGDP$ ,  $lnReer$ ,  $lnForex$ ,  $Inf$ ,  $Pvt_{inv}$  and  $Ir_{diff}$  represent the lagged FDI, positive output gap, negative output gap, real effective exchange rate, foreign exchange reserves, inflation, private investment and interest rate differentials, respectively, sourced from World Bank and <https://fred.stlouisfed.org/>. To ensure that the sufficiently long period of data is in a time series format, the study considers quarterly data series of the variables as mentioned earlier.

In order to gauge the business cycle and comprehend the cyclical fluctuations in an economy, the output gap is used as a proxy. Therefore, the Hodrick-Prescott (HP) filter is used in the study to calculate the output gap. The HP filter is a popular approach in macroeconomics for separating a time series into its trend and cyclical components.

The output gap is derived from the estimated cyclical component. It represents the deviation of the actual GDP from its potential level or trend. The output gap at time  $t$  is calculated as:

$$Output\ Gap_t = (GDP_t - \tau_t) / \tau_t$$

Here the trend component is depicted by  $\tau_t$  and the cyclical component by  $y_t - \tau_t$ .

### Findings and Discussion

The study tests both the short and long-run asymmetric effects of the output gap (a proxy for the business cycle) on the FDI inflows. Table 1 below shows the short-run coefficients for the independent variables (IVs) on the dependent variable (DV) FDI inflow. The Output Gap effects are broken down into positive output gap ( $O_{gap_p}$ ) and negative output gap ( $O_{gap_n}$ ), signifying the periods of economic boom and economic downturns or recessions, respectively. Findings reveal significant short-run asymmetric effects with total FDI Inflows appear countercyclical in nature, given the negative coefficient for the positive gap and positive coefficients for the negative gap. GDP, foreign exchange reserves and private investments have a significant and positive relationship with FDI Inflows.

REER, inflation and the long-run interest rate differential (10-year G-Sec yield minus 10-year treasury bond yield US) have a negative relationship with FDI inflows, with inflation exhibiting the sole significant relationship. While a negative relationship between REER and FDI inflows is theoretically expected due to factors like exchange rate risk and reduced competitiveness; nonetheless, the insignificant relationship in could be attributed to several reasons, including market size, political stability, investment climate, regulatory environment and overall economic conditions. Henceforth, in the presence of these other

determinants, the impact of REER on FDI inflows may be overshadowed, leading to an insignificant relationship, as in the case of India.

Significant worldwide inflation frequently exerts an adverse influence on the influx of FDI and the volume of exports. The study conducted by Phan et al. (2023) asserts that Vietnam's FDI and export value may be negatively influenced by excessive inflation, hence impeding economic development in the aftermath of the COVID-19 epidemic. Research indicates that inadequate inflation control might potentially result in Vietnam losing its competitive edge in attracting FDI. Nevertheless, if Vietnam can effectively manage inflation below the average of other nations, it will have a competitive edge in attracting FDI inflows. Tan & Tang (2016) analyse the causal relationships among domestic investment, foreign investment, exports, the rate of interest, and economic development in the ASEAN-5 nations.

A significant trend of forex accumulation is widely evident in the East and Southeast Asian region, over the last three decades (Matsumoto, 2022). The existing body of research examining the reasons behind this active accumulation of reserves indicates that the main motivations are a precautionary measure to mitigate the impact of sudden capital inflow disruptions on the economy and a growth-oriented strategy involving currency depreciation and export promotion. Osigwe & Uzonwanne (2015) examined the Granger causality relationship between Nigeria's foreign reserves, exchange rate, and FDI. They suggested that policymakers determine the optimal exchange rate level that effectively enhances foreign reserves and FDI.

A higher interest rate differential, which indicates higher interest rates in India compared to the US, can increase foreign investors' capital costs (Garg & Prabheesh, 2021). Higher borrowing costs and higher expected returns required by investors discourage FDI inflows, as they reduce the potential profitability of investments. Nevertheless, it is evident that while higher interest rate differentials may signal economic instability, a favourable investment climate can still attract foreign investors despite the higher interest rates, as in the case of India.

Private investments significantly influence FDI inflows since they demonstrate confidence in the growing local economy (Jenkins, 2006). Domestic private enterprises' investment in their own markets signals potential profitability and market opportunities. Foreign investors may be attracted to invest in such markets to tap into the consumer base and benefit from the growth potential. The findings reveal that assets generally lose value during economic downturns. These periods allow foreign investors to acquire cheaper assets and enter into host country and establish operational footprints, so in India. National authorities frequently utilise the tactic of providing appealing incentives to entice investors to perceive their country as a highly profitable choice. Foreign investors frequently perceive India as an emerging market with significant long-term growth prospects. Consequently, even during economic downturns, they remain eager to invest, assuming these downturns to be temporary. They aim to exploit lower asset valuations and capitalize on potential growth opportunities.

The study indicates that despite the short-term economic decline, investors view India as a market with significant long-term growth prospects. This is because investor sentiment and risk perception greatly influence decisions on FDI. Therefore, during economic contractions, investors may be inclined to capitalize on reduced risk. However, international investors have a distinct inclination towards avoiding risk during periods of economic growth.

Table1: Non-Linear ARDL Model

Variables	Coefficients	Std error
Const	-218.161***	72.621
Log fdi (-1)	-1.278***	0.145
O_gap_p	-42.485***	15.306
O_gap_n	14.008*	7.024
Lngdp	6.618***	2.312
Log(reer)	-0.593	1.338
Log(forex)	2.452**	1.003
Inflation	-0.055**	0.022
Pot_invest	0.050*	0.027
Ir_diff	-0.04	0.079

$\Delta fdi (-1)$	.0555*	0.023
$\Delta O\_gap\_p$	-0.052**	0.014
$\Delta O\_gap\_p(-1)$	0.093**	0.242
Adjusted R-square:0.644		
F-statistics:9.679		

Note: \*\*\*, \*\*, \* refers to 1%, 5% & 10% significance level

Std. errors are reported in parenthesis

The diagnostic tests, namely the JB test, LM test, and Arch test, provided in Table 2 below, provide additional evidence supporting the significance of short-run asymmetry effects. The model is free from autocorrelation and heteroskedasticity.

Table 1: Model Diagnostic tests

	JB test	LM test	Arch Test
Stat	0.969	6.632	1.016
P value	0.298	0.235	0.313
Lags	0	1	1
Short Run Asymmetry Test			
W- stat: 7.792			
P-value: 0.020			

The significance of the long-run relationship between the IVs and DV is confirmed by the Bounds test presented in Table 3.

The test is significant at the 1% level, given that the F-Statistic lies above the upper-bound critical value of 7.197. The ARDL bound test also allows for successfully handling a wide range of optimal lags. Furthermore, it does not impose the limiting requirement that all variables must have the same integration order, especially when variable integration is borderline I (0)/I (1).

Table 3: NARDL bound test of co-integration

Cointegration Test		
Observation: 44		
Number of Regressors (K)		
	I(0)	I(1)
10% critical value	3.33	4.34
5% critical value	4.08	5.2
1% critical value	5.92	7.19
F- statistic= 9.678		

The findings presented in Table 4 demonstrate that the long-term impact of the business cycle is asymmetrical. Both positive and negative coefficients are statistically significant. The long-run asymmetry test confirms the significance of this effect. FDI inflows appear to be countercyclical in the short and long run, but the countercyclical effects are more significant in the short run relative to the long run. Also, the negative effects of the output gap on FDI inflows are far higher than the positive effects. In the short run, FDI inflows are influenced by the timing of investment decisions. During economic contractions or downturns, foreign investors may take advantage of lower asset valuations and invest in positioning themselves for future growth. The countercyclical behaviour in the short run reflects the opportunistic nature of investors capitalizing on undervalued assets. However, in the long run, FDI decisions may be driven by more fundamental factors such as market potential, infrastructure, and policy stability, which can dampen the countercyclical effect.

Table 2: Long-Run Asymmetry results

Variables	Coefficients	Std error
$O\_gap\_p$	-33.231***	12.211
$O\_gap\_n$	10.957**	5.517

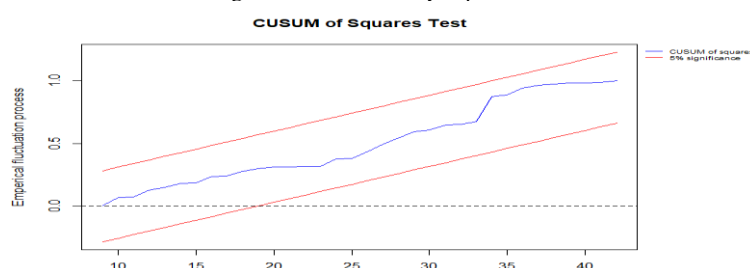


<i>Lngdp</i>	5.177***	1.861
<i>Log(reer)</i>	-0.464	1.045
<i>Log(fores)</i>	1.918**	0.751
<i>Inflation</i>	-0.043**	0.017
<i>Pvt_invest</i>	0.039*	0.022
<i>Ir_diff</i>	-0.033	0.0621
<b>Long Run symmetry test</b>		
<b>W stat: 4.767</b>		
<b>P value: 0.092</b>		

Note: \*\*\*, \*\*, \* refers to 1%, 5% & 10% significance level  
Std. errors are reported in parenthesis

The stability of the parameters is confirmed by the CUSUM of Squares Test below (Fig.1).

Figure 1: CUSUM of Squares Test



## Conclusion

The analysis reveals that FDI inflows exhibit a countercyclical pattern, displaying a significant positive correlation with Gross Domestic Product (GDP), foreign currency reserves, and private investments. Conversely, FDI inflows have a robust negative correlation with inflation rates. During periods of economic recession or depression, the value of assets such as real estate, infrastructure, and enterprises may decrease. As a result, foreign investors may see this as a favourable opportunity to invest due to the reduced prices of these assets (Lane, 2003). Furthermore, having sufficient reserves instils trust in foreign investors, ensuring them ample liquidity to mitigate possible risks and uphold stability in the financial system. This, in turn, draws foreign direct investment inflows to India. Additionally, the increased GDP growth, which signifies a more prominent and growing market, entices investors to emerging nations such as India as it communicates a rise in consumer demand and company prospects. Conversely, higher inflation diminishes local currency's buying ability, escalating manufacturing costs, such as labour, raw materials, and other resources. Consequently, this renders it costlier for foreign investors to conduct operations within the host nation. As a result, their ability to generate a profit may suffer, reducing the attraction of FDI. The findings provide valuable insights for policymakers.

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