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ANALYSING THE FDI DISPARITY IN INDIA: A COMPARATIVE STUDY OF KERALA WITH THE TOP THREE FDI RECEIVING STATES (MAHARASHTRA, KARNATAKA, & GUJARAT)

ANALIZA DYSPROPORCJI W ZAKRESIE BEZPOŚREDNICH INWESTYCJI ZAGRANICZNYCH W INDIACH: BADANIE PORÓWNAWCZE STANU KERALA Z TRZEMA STANAMI OTRZYMUJĄCYMI NAJWIĘCEJ BEZPOŚREDNICH INWESTYCJI ZAGRANICZNYCH (MAHARASHTRA, KARNATAKA I GUJARAT)

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Abstract

Subject and purpose of work: Foreign Direct Investment (FDI) is crucial for a nation's development and is a critical driver of technological advancement, employment generation, human capital development, and increased competitiveness. This study investigates the FDI inequalities in India by comparing Kerala with the top three FDI-receiving states.

Materials and methods: A data-specific FDI Attractiveness Index has been developed to evaluate and compare the investment potential of these states.

Results: The findings confirm that the significant regional concentration of FDI inflows in Maharashtra, Karnataka, and Gujarat is driven by superior infrastructure, the extent of industrial activity, and labour conditions. In contrast, Kerala faces limited industrial activity and infrastructural deficits.

Conclusions: The study also provides targeted policy measures that leverage Kerala's unique strengths to promote equitable regional development.

Keywords: FDI, regional inequalities, infrastructure, industrial activity, FDI Attractiveness Index

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Streszczenie

Przedmiot i cel pracy: Bezpośrednie inwestycje zagraniczne (BIZ) mają kluczowe znaczenie dla rozwoju kraju i stanowią kluczowy czynnik napędzający postęp technologiczny, tworzenie miejsc pracy, rozwój kapitału ludzkiego i wzrost konkurencyjności. Niniejsze badanie analizuje nierówności w zakresie BIZ w Indiach, porównując Keralę z trzema stanami o największej liczbie odbiorców BIZ.

Materiały i metody: Opracowano również indeks atrakcyjności BIZ dla danych specyficznych dla tych stanów, aby ocenić i porównać potencjał inwestycyjny tych stanów.

Wyniki: Wyniki potwierdzają, że znaczna regionalna koncentracja napływu BIZ w Maharasztrze, Karnatace i Gudżaracie wynika z lepszej infrastruktury, skali działalności przemysłowej i warunków pracy. Z kolei Kerala boryka się z ograniczoną działalnością przemysłową i deficytami infrastrukturalnymi.

Wnioski: Badanie przedstawia również ukierunkowane środki polityczne, które wykorzystują unikalne atuty Kerali w celu promowania sprawiedliwego rozwoju regionalnego.

Słowa kluczowe: BIZ, nierówności regionalne, infrastruktura, działalność przemysłowa, indeks atrakcyjności BIZ

Introduction

FDI refers to the inflow of capital from a country outside the political boundaries of a nation. As per the Organisation for Economic Cooperation and Development (2009), FDI is characterised by a foreign investor's ownership of 10% or more of the voting power in an enterprise. It is a vital driver of international economic integration since it creates stable links between nations. FDI propels economic growth, aids in employment generation, boosts human capital development, results in the spillover of technological advancements, and creates a competitive market. Before the economic liberalisation in 1991, FDI was severely restricted in India due to the trade protectionist policies emphasising self-reliance.

With the BOP (Balance of Payments) Crisis in 1991, the reforms introduced then increased the cap on foreign equity participation up to 51% in high-priority sectors such as electronics, machinery, and petrochemicals. It also introduced the automatic route for foreign investments, which improved the ease of doing business in India. State governments also attempted to attract FDI through policies such as tax holidays, development rebates, subsidised inputs, and providing public utilities at a lower price (Chatterji, 2019). The Make in India campaign, introduced in 2014, which aimed to transform India into a global manufacturing hub also attracted FDI inflows to the manufacturing sector. As a result, according to the Press Information Bureau or PIB (2024), since 2014, India has attracted a cumulative FDI inflow of USD 667.4 billion, registering an increase of 119% over the preceding decade (2004-14).

At the same time, it is worth considering that the remarkable growth in FDIs worldwide has also been accompanied by regional inequalities since several regions of a country typically do not receive FDI on an equal basis. A mutually reinforcing relationship is found to exist between FDI and growth (Bonassi et al., 2006), and in most plausible scenarios, FDI and inequality are positively correlated (Basu & Guari-glia, 2007). Similarly, in India, it is observed that a few developed states such as Maharashtra, Gujarat, and Karnataka attract more FDI inflows, accentuating regional disparities. In contrast, foreign investors largely ignore the other regions. Sabharwal (2021), points out that states already rich in FDI receive more FDI, and Mukherjee (2011) states that this strong regional concentration deprives several states of the benefits of FDI. Sinha and Nayan (2017) statistically estimated that the concentration of FDI inflows in a few states is increasing at 2.4% per annum. This results in skewed economic growth, infrastructural development, social inequalities, and political instability. This unequal distribution can be associated with various historical, political, social, and economic factors.

Gajapathy and Chinchane (2021) stated that FDI inflows depend on macro and microeconomic, regional, institutional, and firm-level determinants. Sabharwal (2021) noted that the factors that influence skewed FDI include the size and growth of the local market, the level of industrial activity, the growth of the service sector, and the availability of quality physical infrastructure. While Gajapathy and Chinchane (2021) specifically studied the location-specific determinants such as infrastructure, market size,

openness of the economy, and economic stability. On the other hand, factors such as industrial linkages, labour conditions, policy environment, and agglomeration economies were used by Mukherjee (2011). Population is another factor, whereby a higher population indicates a growing workforce that allows corporations to pool talented and cheap labour (Benfratello & Nadimpalli, 2022). Research and development (R&D) efforts, domestic investment, transport and communication infrastructure, and educational infrastructure are other significant determinants (Chatterjee et al., 2013). Later, Mukherjee (2011) found that infrastructure, market size, agglomeration effect, and size of manufacturing base have a significant positive impact on the regional distribution of FDI flows in India. The correlation between higher economic growth and foreign direct investment was also found to be positive across India (Kayam et al., 2011).

However, most existing literature provides country-specific determinants of FDI inequalities, which cannot be used to study at a state level. The relatively few studies which explore the inter-state FDI inequalities in India identify the general factors determining the FDI inflows without offering selective, state-specific analyses. In particular, there is a lack of empirical research that compares a high-social-indicator state such as Kerala with the leading FDI-receiving states (Maharashtra, Karnataka, and Gujarat). Kerala has been chosen as the focal point of study because of its unique economic profile compared to other states, which is characterised by its well-developed social indicators and high reliance on remittances. Additionally, its distinct policy frameworks and governance structures which differ from the top FDI-receiving states make it a valuable case for exploring the structural factors limiting investment inflows. This contrast raises the question: Why does a state with advanced social development and human capital, such as Kerala, continue to experience comparatively low FDI inflows? The existing literature does not offer a cohesive understanding of how Kerala's unique socio-political and economic profile and FDI inflows are linked. Hence, this study fills the gap by constructing a specific FDI Attractiveness Index which evaluates and compares the investment potential of Kerala with that of the top FDI-receiving states, thereby identifying areas for policy interventions and improvements.

Selection of Variables

According to the FDI statistics from DPIIT, the states that received the highest cumulative FDI equity inflows during October 2019-June 2024 were Maharashtra (US\$ 77.57 billion), followed by Karnataka (US\$ 53.31 billion), Gujarat (US\$ 40.22 billion), Delhi (US\$ 33.01 billion), and Tamil Nadu (US\$ 11.93 billion). Hence, the dependent variable in this study is the state-wise FDI equity inflows. Equity inflows are a primary component of FDI and refer to the stakes or shares in companies bought by foreign investors. Figure 1 depicts the FDI disparity among the four Indian states.

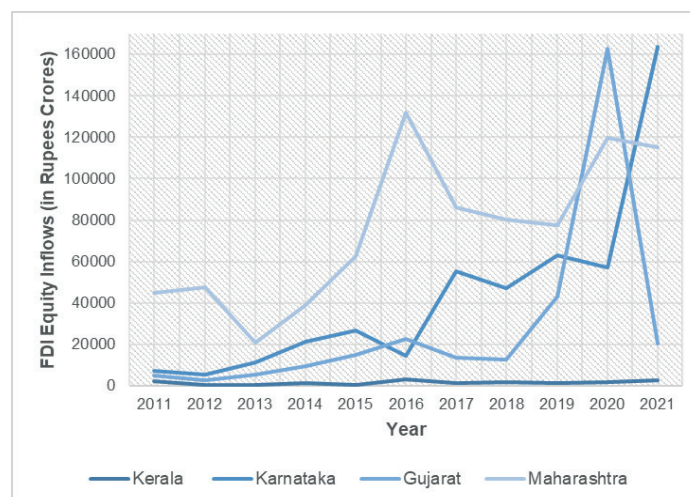


Figure 1: State-wise FDI equity inflows 2011-2021

Source: DPIIT, GoI.

The study considers eight independent variables based on existing literature and theory. These eight variables have been grouped under five sub-groups: industrial activity, infrastructure, political factors, labour conditions, and demographic indicators. These variables have been selected carefully to fulfil the primary research objective of assessing the state-specific economic, political, and social factors contributing to interstate FDI disparity.

Industrial activity

Greater industrial activity can create a more attractive market for foreign investors, thereby increasing the FDI inflows to a state. Growing industrial activity is indicative of economic expansion and a rising consumer base. Additionally, industrial activity stimulates infrastructural development and technological advancements, other key determinants of FDI inflows. Two variables are considered to measure the industrial activity of the states involved – net state value added by economic activity – industry (at constant prices) (NSVA – Industry)¹ and net state value added by economic activity – service (at constant prices) (NSVA – Service)². NSVA – Industry refers to the total economic output generated by the industrial sector of a state adjusted for inflation to reflect real growth. Meanwhile, NSVA – Service refers to the total economic output generated by the service sector of a state adjusted for inflation to reflect real growth. The service sector is grouped under industrial activity, considering the service sector boom in several states. This is supported by P. Nunnenkamp and Stracke (2008), who pointed out a weakening relationship between FDI and a developed manufacturing base since FDI was shifting increasingly towards the services sector. It is assumed that states with higher NSVA – Industry and NSVA – Service have better infrastructure, skilled labour force, technological advancements, and greater innovation potential, making them attractive to investors.

Infrastructure

Infrastructure refers to the facilities and systems that aid in the smooth functioning of a market. Fundamentally, it includes physical infrastructure such as roads, railways, bridges, airports, warehouses, etc., and technological infrastructure such as telecommunication networks and digital platforms. Other types of infrastructure include social, financial, and human infrastructure. Infrastructural improvements enhance connectivity, improve market accessibility, increase the ease of doing business, and reduce the costs incurred. In this paper, infrastructure is represented by two indicators: the state-wise availability of power and the state-wise length of roads. The state-wise availability of power (in net crore units) refers to the total amount of electricity available for consumption in a state in a year. Whereas, state-wise length of road refers to the total road network in each state. State-wise railway route was another factor considered and later dropped since the 1980s India became a road-dominant economy and the railways had a declining share in both freight and passenger traffic (Chaudhury, 2005). It is expected that states with better infrastructure attract more significant FDI inflows.

Political factors

Political factors play a crucial role in either encouraging or discouraging FDI. These factors include political stability, government policies and regulations, bureaucratic efficiency, and government attitude toward FDI. Especially policies related to taxation, investment incentives, and trade tend to have

¹ NSVA – Industry will be used to refer to Net State Value Added by Economic Activity – Industry (at constant prices) throughout this paper.

² NSVA – Service will be used to refer to Net State Value Added by Economic Activity – Service (at constant prices) throughout this paper.

a profound effect on FDI inflows. Due to the lack of available data concerning government tax policies, the variable state-wise primary deficit is chosen to represent political factors. It refers to the fiscal deficit of a state government, excluding the interest payments on previous borrowings. A well-managed primary deficit is indicative of good governance, policy stability, and room for government investment in infrastructure and other financial facilities. Fiscal prudence is thus related to political stability and effective leadership. Hence, state-wise primary deficit is more or less like an economic-political factor.

Labour conditions

Labour conditions refer to the working conditions of the labour force available, including wages, working hours, worker rights, and worker literacy rates. Low wages may attract FDI, while low labour productivity discourages FDI. A well-educated, skilled, and productive labour force draws in FDI inflows. Two variables are considered to measure the labour conditions of the states involved – wage rate and gross enrolment ratio. The wage rate in the states is taken as a measure of average labour cost per man-day worked (in Rs.). On the other hand, the gross enrolment ratio (GER) was chosen as a proxy variable for literacy rate since the latter is a census variable. GER is an education measure of the total enrolment in a specific level of education. The gross enrolment ratio for classes I-VIII (6-13 years of age) was explicitly used for the same.

Demographic indicators

Demographic indicators are statistical measures of population characteristics, including urbanisation rate, life expectancy, fertility rate, birth rate, death rate, and population growth. They serve as social indicators of a country's market potential. This paper uses the state-wise natural population growth rate to represent demographic indicators. Existing literature indicates a positive relationship between a country's population and FDI inflows.

Significant inequalities can be observed among the above-mentioned socio-political-economic explanatory variables (see Appendix). In 2021, Kerala had the lowest natural population growth rate of 5.98%, while Gujarat had the highest growth rate of 13.58%. Maharashtra offered the highest average wage rate of Rs. 1427.26, and Gujarat the lowest with Rs. 1088.93. As of 2021, Maharashtra (7,06,137 km) has the best road connectivity among the four Indian states, followed by Karnataka (3,72,228 km). In terms of industrial activity, Gujarat has a booming industrial sector, and Maharashtra is at the forefront of the service sector.

Methodology

The chosen methodology to identify the relevant socio-political-economic determinants of state-wise FDI disparity is the random effects model (REM). This decision was based on the Hausman test to determine whether a fixed or random effects model should be used when analysing panel data, focusing on the relationship between individual effects and explanatory variables. The fixed effects model assumes individual traits influence the outcome and focuses on changes within each unit over time. On the other hand, the random effects model assumes individual traits are random and uncorrelated with variables, using both within- and between-unit variations.

In the context of the data set used, the random effects model is better suited since it accommodates both within-state (time variation among each state) and between-state (variation across the states) aspects to produce more efficient estimates. Secondly, the random effects model can effectively utilise the limited time dimension ($T = 11$ years), which might otherwise cause the fixed effects model to suffer. The REM model also provides greater generalizability, improving the model's scope. Lastly, this model offers improved policy-making prospects due to its comprehensive advantages. For the reasons mentioned

above, Chatterjee et al. (2013) and Kayam et al. (2011) have used the random effects model to compute the FDI inequalities among the Indian states. The REM equation used in this study can be specified as follows:

$$FDI_{it} = \beta_0 + \beta_1(NSVA-Industry_{it}) + \beta_2(NSVA-Service_{it}) + \beta_3(Power_{it}) + \beta_4(Pdeficit_{it}) + \beta_5(Pop_{it}) + \beta_6(Ger_{it}) + \beta_7(Wage_{it}) + \beta_8(Road_{it}) + u_i + \epsilon_{it}$$

The variable names have been shortened to create a concise regression equation. Hence, FDI = state-wise FDI equity inflows, Power = state-wise availability of power, Pdeficit = state-wise primary deficit, Pop. = state-wise natural population growth rate, Ger = state-wise gross enrolment ratio, Wage = state-wise wage rate, and Road = state-wise road length. Here, u_i represents the state-specific random effects, and ϵ_{it} is the idiosyncratic error term. On the other hand, the Principal Component Analysis (PCA) was employed for the FDI Attractiveness Index. This is because PCA reduces the variables into a smaller set of uncorrelated components, captures the shared variance among the variables, and eliminates multicollinearity.

Empirical Results

The empirical analysis is carried out in this paper using state-level panel data set from 2011-21 for the four states – Kerala, Karnataka, Gujarat, and Maharashtra. The annual state-wise FDI equity inflow data has been sourced from the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, Government of India. Various other sources have been used to source data for the explanatory variables. Data on NSVA – Industry and NSVA – Service calculated with the base year 2011-12 have been obtained from the National Statistics Office, Ministry of Statistics and Programme Implementation (MoSPI), Government of India (GoI), and the Handbook of Statistics on Indian states published by the Reserve Bank of India. The annual state-wise availability of power and the state-wise length of road have been sourced from the Central Electricity Authority, Ministry of Power, and the Ministry of Road Transport and Highways, respectively. The variable used to represent labour conditions, including gross enrolment ratio (GER), was taken from the Economic Survey published by the Ministry of Finance, GoI. While the wage rate measured as the average labour cost per man-day worked was obtained from the Annual Survey of Industries (ASI), Labour Bureau. Lastly, the state-wise natural population growth rate data has been sourced from the Sample Registration Survey Bulletin, Census of India.

The estimation method used in this study is the random effects model, based on the Hausman test run (p-value: 0.9855 > 0.05). This p-value indicates that the random effects model is suitable for the data set since the differences in coefficients are not systematic. The Wald Test (test value = 76.28 and the associated p-value = 0.0000) run confirms that the overall model is sound and that the independent variables as a group are important determinants of state-wise FDI inflows. This model has an overall R-square value of 0.6855, indicating a good model fit. Table 1 provides the detailed random effects GLS regression results.

Table 1. The Random Effects GLS Regression Results

FDI	Coef.	Std. Err.	z	p> z	[95% Conf. Interval]	
NSVA - Industry	0.5260156	0.1962265	2.68	0.007	0.1414188	0.9106124
NSVA - Service	0.1875334	0.0834172	2.25	0.025	0.0240387	0.351028
Availability of Power	-15.20539	6.825537	-2.23	0.026	-28.5832	-1.827587
Primary Deficit	1.104839	0.5221051	2.12	0.034	0.0815322	2.128147
Natural Population Growth Rate	2677.577	4122.589	0.65	0.516	-5402.548	10757.7
Gross Enrolment Ratio	2835.766	1859.512	1.53	0.127	-808.8104	6480.342

FDI	Coef.	Std. Err.	z	p> z	[95% Conf. Interval]	
Wage Rate	-28.06734	33.5614	-0.84	0.403	-93.84647	37.7118
Road Length	-0.0401878	0.1154642	-0.35	0.728	-0.2664936	0.1861179
_cons	-337332	176553.4	-1.91	0.056	-683370.2	8706.276

Source: author's calculation.

Table 1 shows that the signs of the estimated coefficients of most explanatory variables are in accordance with prior expectations. According to the model, NSVA – Industry is the most significant determinant of state-wise FDI inflows with a p-value of 0.007, which aligns with the idea that a strong industrial base attracts more FDI. As a result, Gujarat and Maharashtra, owing to their well-developed industrial sector, outperform the other two states in attracting FDI. NSVA – Service follows NSVA – Industry with a significance value of 0.025. This highlights the growing importance of the service sector. All four states offer varied services and have framed policies to propel their respective service sectors. Notably, Bangalore in Karnataka is a global hub for IT services, Kerala is known for tourism, and Maharashtra offers financial services. Amongst the four, Gujarat has the least service sector-driven economic activity, reflecting its secondary role in driving FDI in states that rely more on industries. Overall, industrial activity comprising both NSVA – Industry and NSVA – Service emerges as a key determinant of state-wise FDI inflows.

Surprisingly, the coefficients of the infrastructural variables, i.e. state-wise availability of power and state-wise road length, are negative. This is unexpected since we usually assume better power availability and road infrastructure attract more FDI. However, despite the negative coefficient, state-wise availability of power is statistically significant with a p-value of 0.026. Similarly, despite being a statistically significant determinant, primary deficit has a positive coefficient, which is against the a priori expectation. The other three remaining variables – gross enrolment ratio, wage rate, and natural population growth rate- are found to be statistically insignificant. Notably, the wage rate exhibits a negative correlation with FDI, affirming that higher wage rates deter FDI inflows, possibly due to increased costs for investors.

Diagnostic tests such as the Breusch-Pagan test, Woolridge Serial Correlation test, and VIF (Variation Inflation Factor) were additionally conducted on the model. The tests indicated that the model exhibited heteroskedasticity, prompting the use of robust standard errors as a corrective measure. After applying robust standard errors, it was determined that the state-wise primary deficit became insignificant, while all other factors remained unchanged. The model does not exhibit first-order autocorrelation and has a mean VIF value of 18.83.

To achieve the study's second objective, Principal Component Analysis (PCA) was utilised to develop a data-specific FDI Attractiveness Index. For the same, all the previous eight variables were standardised to ensure that they were on the same scale. As mentioned in the 'Selection of Variables' section, the sub-grouped variable heads with more than two variable components were combined using Principal Component Analysis (PCA). Specifically, the standardised variables for NSVA – Industry and NSVA – Service were merged to create a new variable called 'industrial activity.' Secondly, the standardised variables representing state-wise power availability and road length were combined to form 'infrastructure.' Lastly, the standardised variables for wage rate and gross enrolment ratio were consolidated into the variable 'labour conditions.' Thus, for the creation of the index, only five variables were considered – industrial activity, infrastructure, labour conditions, standardised state-wise primary deficit, and standardised state-wise natural population growth rate. The PCA run for the same is provided in Table 2.

Table 2: PCA of FDI Attractiveness Index

pca industrial_activity infrastructure labour_conditions std_Pdeficit std_Population				
Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.55171	1.16411	0.5103	0.5103
Comp2	1.3876	0.624453	0.2775	0.7879
Comp3	0.763146	0.492737	0.1526	0.9405
Comp4	0.270409	0.243269	0.0541	0.9946
Comp5	0.0271402		0.0054	1.0000

Principal components (eigenvectors)						
Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Unexplained
industrial_activity	0.5805	0.1910	-0.2889	0.2132	-0.7054	0
infrastructure	0.5808	0.1725	-0.3146	0.1805	0.7081	0
labour_conditions	0.5108	-0.2651	0.3371	-0.745	-0.0147	0
std_Pdeficit	0.2192	-0.7038	0.3676	0.5668	0.0105	0
std_Population	0.1295	0.6067	0.7542	0.2136	0.0265	0

Note: std_Pdeficit = standardized state-wise primary deficit and std_Population = standardized state-wise natural population growth rate

Source: author's calculation.

Since only those components with eigenvalues greater than one are considered significant, Comp1 (2.55171) and Comp2 (1.3876) (see Table 2) are the most relevant in explaining the variance in the data. Other components – Comp3, Comp4, and Comp5, are therefore not considered. Both industrial activity and infrastructure dominate Comp1 with positive loadings of 0.5805 and 0.5808, respectively. This suggests that states with robust industrial sectors and well-developed infrastructure tend to attract more FDI. Similarly, labour conditions exhibit a positive relationship (0.5108) in Comp1, indicating that favourable labour environments enhance FDI potential. Additionally, standardised state-wise primary deficit and standardised state-wise natural population growth rate have weaker positive contributions to Comp1. On the other hand, Comp2 shows a strong positive loading for population (0.6067) and a strong negative loading for primary deficit (0.1295). Therefore, Comp1 was chosen to generate the FDI Attractiveness Index since it has strong positive loadings for variables that are well-established determinants of FDI and explains 51.03% variance in the dataset.

The generated FDI Attractiveness Scale can be interpreted in this manner: Scores further away from 0 in the positive direction indicate higher FDI attractiveness, and scores further away from 0 in the negative direction indicate lower FDI attractiveness. While scores closer to 0 reflect a neutral or average level of attractiveness. It is a dynamic index that varies over time based on changes in economic policies, infrastructure development, industrial growth, and labour reforms. It also allows for comparing the four states' relative performance in attracting FDI. Table 3 provides the FDI Attractiveness Index and the corresponding FDI equity inflows to the four states year-wise.

Table 3: FDI Attractiveness Index and Corresponding FDI Inflows per State and Year

s_id	State	Year	FDI Equity Inflows (in Rs Crores)	FDI Attractiveness Index
1	Kerala	2011	2274	-2.433916
1	Kerala	2012	390	-2.42689
1	Kerala	2013	411	-2.366387
1	Kerala	2014	1418	-2.706993
1	Kerala	2015	589	-2.104503
1	Kerala	2016	3050	-1.741809
1	Kerala	2018	1807	-1.773484

s_id	State	Year	FDI Equity Inflows (in Rs Crores)	FDI Attractiveness Index
1	Kerala	2019	1472.31	-1.792292
1	Kerala	2020	1581	-0.7467683
1	Kerala	2021	2597.5	-0.4360505
2	Karnataka	2011	7235	-1.245588
2	Karnataka	2012	5553	-0.8845693
2	Karnataka	2013	11422	-0.7624065
2	Karnataka	2014	21255	-0.705232
2	Karnataka	2015	26791	-0.4864264
2	Karnataka	2016	14300	0.3206781
2	Karnataka	2017	55334	0.2465503
2	Karnataka	2018	46963	0.5561564
2	Karnataka	2019	63177	0.7224876
2	Karnataka	2020	56884	1.56073
2	Karnataka	2021	163795	1.420731
3	Gujarat	2011	4730	-0.5847232
3	Gujarat	2013	5282	-0.1342499
3	Gujarat	2014	9416	-0.7221271
3	Gujarat	2015	14667	-0.5404449
3	Gujarat	2016	22610	-0.4041398
3	Gujarat	2017	13457	-0.2968782
3	Gujarat	2018	12618	0.0042702
3	Gujarat	2019	42976	0.0526024
3	Gujarat	2020	162830	0.2974968
3	Gujarat	2021	20169	0.317894
4	Maharashtra	2011	44664	0.2245474
4	Maharashtra	2012	47359	0.4698622
4	Maharashtra	2013	20595	1.199503
4	Maharashtra	2014	38933	1.524388
4	Maharashtra	2015	62731	1.763206
4	Maharashtra	2016	131980	2.300753
4	Maharashtra	2017	86244	1.970469
4	Maharashtra	2019	77389	2.746615
4	Maharashtra	2020	119734	3.339126
4	Maharashtra	2021	114964	4.142458

Source: author's calculation.

Corresponding to Kerala's low FDI inflows, the FDI Attractiveness scores for Kerala remain consistently the weakest among all the four states. However, Kerala's scores show marginal progress from 2011 to 2021, reflecting the need for better measures to attract FDI. The low FDI attractiveness in Kerala can be mainly attributed to the lack of a significant industrial base. Though it has well-developed social indicators, its physical infrastructure may not meet the needs of large-scale industries. Additionally, as Mukherjee (2011) pointed out, the prevalence of strong labour unions and a large number of industrial disputes reflecting the pro-labour government policies in Kerala adversely affect the profitability of the manufacturers and the FDI inflows.

Karnataka, on the other hand, displays moderately positive FDI attractiveness scores. The state serves as India's research and innovation hub and is home to many multinational companies and Research and Development (R&D) centres (Chhina, 2023). Particularly, Bangalore, the IT hub, also draws

considerable FDI. Several policies adopted by the Government of Karnataka during the period of the study facilitated FDI inflows to the state including the establishment of the Karnataka Udyog Mitra, provision of Karnataka Industrial Tax concessions and capital investment subsidies, and establishment of the State High-Level Clearance Committee (SHLCC) and State-Level Single Window Clearance Committee (SLSWCC) (Kumar, 2024).

At the same time, Gujarat shows a steady shift from negative to positive values, demonstrating the state's continuous improvements. Gujarat has a well-established industrial base that includes petrochemicals, textiles, cement, ceramics, etc. and is home to 20 functional Special Economic Zones (SEZs). Additionally, with the longest coastline in India, the state's proximity to several operational ports, such as Mundra and Kandla, facilitates trade and attracts FDI inflows. The sector-specific policies announced by the State Government and the annual "Vibrant Gujarat Summit" since 2003 has also resulted in the FDI surge to Gujarat.

Lastly, Maharashtra has impressive attractiveness scores throughout the years. Mumbai, the financial capital of India, and Maharashtra, which houses major financial institutions, have attracted FDI inflows. Additionally, the state possesses a robust service and industrial sector, outstanding infrastructure, and ports such as Jawaharlal Nehru Port which enhances its export capabilities. The Industrial Policy, 2019 introduced by the Government of Maharashtra also increased FDI inflows to the state for instance through the set-up of Maharashtra Export Promotion Council to facilitate export promotion.

The FDI Attractiveness Index has not been subjected to further diagnostic tests because its scores exhibit a clear and consistent correlation with the state-wise FDI equity inflows. Higher inflows correspond to higher index values and vice-versa. This strong relationship indicates that the index effectively captures the variations in FDI inflows across states.

Conclusion

Based on the index developed and the Government of Kerala's State Planning Board's 14th Five-Year Plan (FYP) Report, a few recommendations that can enhance Kerala's FDI attractiveness have been addressed below. Firstly, the state's industrial sector is underdeveloped due to the absence of large manufacturing bases. This can be combated by promoting value-added industries such as spices and seafood processing industries, which would increase the state's export potential, or by leveraging Kerala's eco-conscious reputation to attract sustainable manufacturing firms. Improving labour dispute resolution mechanisms by establishing fast-track labour courts can also aid in labour-related challenges. Regarding infrastructure, the 14th FYP Report addresses the need to develop multimodal logistics hubs to facilitate trade. The overall ease of doing business can also be improved by simplifying the industrial land acquisition policies and organising regular investor summits. Additionally, establishing dedicated educational hubs can utilise Kerala's high social indicators. Conducting international roadshows to highlight Kerala's unique advantages and leveraging the large Malayali diaspora can further attract FDI inflows.

Thus, the study reveals a stark disparity in state-wise FDI inflows, with Kerala trailing behind Maharashtra, Karnataka, and Gujarat. Despite Kerala's strong social indicators, such as literacy and healthcare, its low FDI Attractiveness Index scores stem from a lack of industrial activity, infrastructural gaps, and labour-related challenges. These findings underscore the need for adopting a multifaceted approach to bridge the FDI gap and promote balanced regional development. By leveraging its unique strengths while addressing existing bottlenecks, Kerala can create a more conducive environment for investment.

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Conflict of interest: On behalf of all authors, the corresponding author states that there is no conflict of interest.

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Appendix

The Data Set of all the Variables Used

s_id	State	Year	Nsva - Industry	Nsva - Service	Power	Pdeficit	Pop	Ger	Wage	FDI	Road
1	Kerala	2011	86095.59	173902.44	1947	6521	8.2	97.9	362.13	2274	201220
1	Kerala	2012	87820.43	190424.24	2039	7798	8	96.2	436.05	390	215438
1	Kerala	2013	91639.34	204396.75	2105	8679	7.8	96.2	497.57	411	185030
1	Kerala	2014	95151.65	215076.02	2213	8872	8.2	90.9	571.68	1418	193460
1	Kerala	2015	101374.61	230210.95	2319	6708	8.2	95.8	672.68	589	194854
1	Kerala	2016	114016.35	244791.04	2426	14332	6.8	95.4	880.56	3050	200808
1	Kerala	2017	121148.28	260833.95	2492	11717	7.3	95.4	787.96	1339	240562
1	Kerala	2018	122018.24	280371.54	2490	10210	7.1	94.56	821.87	1807	257085
1	Kerala	2019	123739.73	293133.04	2627	4623	6.4	94.6	884.44	1472.31	259932
1	Kerala	2020	117798.32	245717.15	2510	19994	6.2	97.8	1323.41	1581	262034
1	Kerala	2021	125397.11	286720.29	2657	24280	5.98	99.1	1342.65	2597.5	264136
2	Karnataka	2011	142603.89	288908.22	5402	6239	11.7	98.8	547.7	7235	281773
2	Karnataka	2012	143338.5	319822.98	5704	7674	11.4	99.3	699.25	5553	303128
2	Karnataka	2013	153086.04	354067.59	5805	9255	11.3	99.3	709.04	11422	305448
2	Karnataka	2014	154936.5	378211.54	5993	10173	11.3	98.2	769.4	21255	313184
2	Karnataka	2015	182058.56	426242	6097	8422	11.3	98.6	813.52	26791	321808
2	Karnataka	2016	215708.54	471454.64	6654	16632	10.9	99.4	1107.63	14300	345515
2	Karnataka	2017	220445.45	491563.37	6770	17171	10.9	99.4	978.69	55334	361041
2	Karnataka	2018	234207.38	535795.1	7170	23019	10.9	99.66	1028.24	46963	354505
2	Karnataka	2019	223369.14	585016.69	7280	19646	10.7	100.5	1101.3	63177	358300
2	Karnataka	2020	215390.55	547336.99	6883	45177	10.4	104.5	1170.31	56884	365264
2	Karnataka	2021	237857.19	604514.74	7242	21309	10.26	105	1239.31	163795	372228
3	Gujarat	2011	185203.41	181243.77	7443	93	14.6	107.6	512.08	4730	156188
3	Gujarat	2012	229224.29	204291.73	9351	4331	14.4	107.2	561.2	2676	163149
3	Gujarat	2013	232828.76	214237.23	8849	5091	14.3	107.2	623.76	5282	165640
3	Gujarat	2014	269115.68	232550.14	9621	3374	14.5	98.1	715.65	9416	179063
3	Gujarat	2015	314006.09	249981.08	10354	6715	14.3	96.8	772.56	14667	182287
3	Gujarat	2016	344225.19	268557.83	10371	-1317	14	96.7	946.65	22610	179144
3	Gujarat	2017	376288.48	295806.33	10997	2412	13.7	96.7	863.25	13457	180927
3	Gujarat	2018	419485.28	335251.49	11636	6182	13.8	95.83	918.36	12618	201742
3	Gujarat	2019	446336.74	356632.89	11394	2133	13.9	94.6	973.56	42976	249373
3	Gujarat	2020	429516.03	340058.74	11162	16235	13.7	94.4	1030.25	162830	259549
3	Gujarat	2021	481036.97	354843.88	12367	3926	13.58	93.8	1088.93	20169	269725
4	Maharashtra	2011	351340.26	495972.29	11772	2465	10.3	98.2	713.32	44664	410521
4	Maharashtra	2012	366143.86	536678.08	11997	-5336	10.3	100	819.1	47359	396685
4	Maharashtra	2013	377552.91	574576.12	12367	4811	10.2	100	875.21	20595	589625
4	Maharashtra	2014	410746.3	625933.09	13308	7862	10.5	98.3	1003.34	38933	608690
4	Maharashtra	2015	456775.41	673732.3	14136	2593	10.5	98.9	1041.69	62731	608140
4	Maharashtra	2016	490302.71	732483.49	13923	10085	10.1	98.3	1292.06	131980	613418
4	Maharashtra	2017	504110.57	771922.17	14953	-9057	10.1	98.3	1168.12	86244	623972
4	Maharashtra	2018	505715.45	814295	15816	-11006	10.1	97.94	1215.21	80013	626521
4	Maharashtra	2019	474210.27	868319.78	15517	20326	10	97.7	1284.47	77389	636887
4	Maharashtra	2020	447519.76	754509.97	15066	34588	9.6	102.5	1355.86	119734	671012
4	Maharashtra	2021	463389.55	834551.04	17281	47795	9.51	103.5	1427.26	114964	706137

Note: Here, the variable names have been shortened to fit the table size. Therefore, Power = state-wise availability of power, Pdeficit = state-wise primary deficit, Pop. = state-wise natural population growth rate, Ger = state-wise gross enrolment ratio, Wage = state-wise wage rate, FDI = state-wise FDI equity inflows, and Road = state-wise road length.



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