

## MACROECONOMIC POLICIES AND INCLUSIVE ECONOMIC GROWTH IN BRI COUNTRIES

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### Abstract:

*This study explores the influence of the macroeconomic policies on the inclusive economic growth in the Belt and Road (BRI) 149 countries from the different regions of Europe, Africa, Asia. The study investigates the short-run and long-run relationship between macroeconomic policies and inclusive economic growth using the CS-ARDL econometric model. The findings reveal that the inclusive economic growth is positively influenced by trade openness, human development and institutional quality while monetary policy, fiscal policy and gross fixed capital formation are negatively influenced. The study recommends enhancing fiscal spending on human development, promoting accessible financial systems, diversifying trade policies, improving institutional frameworks, and optimizing capital allocation to foster sustained and inclusive economic growth. The study is limited by being based on secondary data which proposes promising topics for further research to map out these insights further.*

**Keywords:** Belt and Road Initiative, Inclusive Economic Growth, Macroeconomic Policies, CS-ARDL

*JEL Classifications:* F43, F62, E52

### I. Introduction

For decades, economic growth has been at the core of development research and policy making. Traditionally, economic growth as measured in terms of GDP growth, is concentrated, however the realm of Inclusive Economic Growth (IEG) has become a very important focus point. The World Bank (2020) stresses that IEG is beyond aggregate growth figures to resource distribution equitably, poverty reduction and increasing of total social welfare. To achieve IEG, a wide range of fiscal and monetary policies and investment in human capital supporting open trade and strong institutional frameworks are required.

This is particularly true in the contexts of BRI countries with large socio economic disparities amongst, and within participating nations, inclusive growth especially translates into ensuring that the benefits of economic progress are broadly shared across all societal strata. Unlike the expansion of mere economy that might increase inequalities of income, IEG deals with enforcement of inequality and upholding opportunity for the marginalized (Ali & Son, 2007). Economic growth without inclusivity has been recognized by policymakers and researchers all over the globe, happens to create social discontent, political instability and unsustainable development (Aghion & Howitt, 1998).

The Belt and Road Initiative of China has remade the global economic landscape after his launch in 2013. Under the umbrella of the BRI, infrastructure investments, trade corridors

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and financial cooperation will be used to bring Asia and Europe closer to each other as well as Africa and Europe (Huang, 2016). The initiative covers more than 140 countries, and is commonly presented as the largest infrastructure project in history, with great economic benefits for participating countries. But there is still debate on how the BRI will affect IEG. However, much has been spent on infrastructure development under the BRI which has led to economic activities, although the critics caution that it had also enhanced fiscal burdens, debt sustainability concerns and governance issues in some countries (Hurley et al., 2018). Sustainable development requires that benefits of economic growth be equitably distributed and that is what inclusive economic growth is all about. Job creation, poverty reduction, effective access to resources and reduction in income inequalities are the main characteristics of this. IEG is different from conventional growth metrics in that it looks to deliver a good quality of life to marginalized populations while preserving a large economic footprint.

While the large investments and strategic initiatives under BRI have not helped bring inclusive growth through improved growth in economic growth especially in developing countries like Pakistan. Despite the great potential for economic development and regional integration inferred by the BRI, participating countries in the initiative are struggling to achieve inclusive economic growth. But the benefits of the economic policy are often unevenly distributed across the regions and socio economic groups. For example, macroeconomic policies like fiscal strategies, monetary frameworks and trade liberalization are important determinants of the progress of the economy but it's unclear what impact they had on inclusivity especially in the BRI participating countries.

As a key partner in the BRI, with the flagship China-Pakistan Economic Corridor (CPEC), Pakistan is a critical case study. Despite bringing huge investments in infrastructure, energy and connectivity, CPEC has been accompanied by worries over the equitable distribution of those benefits. Pressing issues though remain regional imbalances, income inequality and limited social mobility. More specifically, some areas, those which have developed enormously, have witnessed their economic opportunities through these projects, while others, particularly the most underdeveloped areas, have not had access to these opportunities. In addition, Pakistan has additional knobs to turn in the process that could challenge the realization of inclusive growth including mounting public debt, governance problems, and human development deficits.

This research fills some of these gaps by examining how macroeconomic Fiscal and monetary policies shape the inclusive economic growth, and the roles of human development and institutional quality. It is important for policymakers to understand these dynamics because designing growth promotion strategies is not only about inducing growth; it is about employing strategies that ensure that the growth is equitably shared, especially in countries like Pakistan, which have deep socio-economic disparities. And the study offers implications for other BRI countries that share the same problems, by making use of insights from this experience in Pakistan.

## II. Literature Review

The literature compiled here covers seminal work as well as recent research drawing out the key findings on how a variety of policy frameworks impacts economic inclusivity. Ifeakachukwu et al. (2024) investigated the relationship between macroeconomic policies and inclusive economic growth through the data range 1996-2021 in the Nigeria. The study used the fully modified ordinary least square method to analyze the results. The study concluded that the macroeconomic policy variables and institutional quality significantly affect the inclusive economic growth in that region. The study also suggested that the institutional quality should be improved through various policies to enhance the inclusive growth. Ugwu

& Ehinomen (2024) evaluated the macroeconomic policy on the economic growth uncertainty in the region of West Africa through the utilization of panel data from 1980-2020. The study used the Generalized Linear Model (GLM) and a fixed effect procedure for evaluation of the data. The results indicated that there is a strong relationship between the macroeconomic uncertainty and macroeconomic related policies. Inflation is negatively related while Government debts are positively related to the growth uncertainty. Hussen (2023) assessed the impact of institutional quality on the inclusive economic growth in the region of Sub-Saharan Africa. Using the panel data of 33 countries from 1991-2015, the study employed the two step GMM technique to analyze the results. The results of the study indicated that the certain factors like investment-promoting, regulatory and democratic institutions have a significant impact on the growth while the conflict-preventing institutions have no impact at all on the growth. They study also recommended to enhance the institutional reforms in the region for the betterment of growth. Amponsah et al. (2023) determined the relationship between poverty, inequality and inclusive growth in the sub-Saharan Africa region. The study implied a panel data from 1990-2018 in 35 countries and analyzed the data through the generalized method of moments to assess the effect of poverty. The results indicated that inclusive growth plays a crucial role in mitigating the negative impact of income inequality on poverty. The study results emphasized the significance of fostering inclusive growth, underscoring its critical role in alleviating the detrimental effects of poverty and income inequality on livelihoods in Sub-Saharan Africa. Ahiadorme (2022) assessed the effectiveness of monetary policy on inclusive growth in 144 countries with most suitable data maintaining countries during a period of 2000-2018. The study analyzed the data through the generalized methods of moment technique. The study results indicated that there is no trade-off between the monetary policy and inclusive economic growth in the selected time period and countries. Further study also indicated that effective policies can promote inclusion by stabilizing prices and average incomes, which are vital for enhancing household incomes and boosting overall economic efficiency. Voskanyan (2022) studied about the macroeconomic policies towards the economic instability in the region of Armenia through the propositions of the economics. The study used the different methods to analyze the data which was collected from the CBRA for a period of 1990-2021. The statistical and qualitative analysis along with the observations and synthesis was used to perform the tests on the data. The study revealed that the macroeconomic policies adopted for the economic stability led towards the decrease in the economic growth. The study suggested to reconsider the macroeconomic policies in terms of efficiency to achieve the economic growth. Adeleye et al. (2021) examined the impact of the ICT-trade relationship on inclusive economic growth in the Africa. The study used a panel data for a period of 2005-2015 covering the 53 countries of an African region. This study adopted the bootstrapped LSDV and dynamic GMM methods to analyze the data and results concluded that ICT adoption significantly promotes inclusive Economic growth, and a negative relationship between trade and ICT exists while it does not diminish the positive effect of trade on growth. The study suggested to enhance the African goods' global competitiveness, reducing trade barriers, and implementing the Africa Continental Free Trade Agreement (AfCFTA). Additionally, regulating the ICT sector can improve access and support economic growth. Batool & Bhatti (2021) analyzed the interactive role of fiscal and monetary policies in promoting inclusive Economic growth. The Study used a panel data of 51 developing countries from 1995 to 2017. The Study revealed that expansionary fiscal and monetary policies both affect economic inclusiveness in the developing region. The study also observed that high expenditures in developing countries are a leading factor to debt crises, which not only directly affect economic inclusiveness but also reduce the effectiveness of monetary policy. The Study suggested the governments of

those countries to cut their spending. Erlando et al. (2020) studied the impact of financial inclusion on economic growth, poverty and income inequality in the Eastern Indonesia through the panel data from 2010-2016 comprising on 12 states. The study adopted different estimation techniques to analyze the data including the Oda-Yamamoto and Panel Vector Autoregression (PVAR). The results indicated that higher financial inclusion reduces poverty and promotes even income distribution while the financial inclusion positively impacts economic growth in Eastern Indonesia. The study suggested that non-economic factors should be considered to increase the financial inclusion for more inclusive economic growth within a region. Batool & Bhatti (2020) studied the impact of macroeconomic policies on the social inclusion in the developing countries. The study used the panel data of developing countries from 1995-2017. The 2SLS technique was used to analyze the results. The results indicated that the well versed resource mobilization can promote the social inclusion. The study suggested the mix policy to enhance the social inclusiveness in the society. Olakanmi & Olagunju (2020) examined the effect of monetary policy on the inclusive growth in Nigeria. The study adopted a Vector Auto-Regressive (VAR) model for data analysis collected on the PCI as a proxy. The analysis revealed that monetary policy not only promotes inclusive growth but also helps stabilize inflation and ensures overall macroeconomic stability. Effiong et al. (2020) investigated the consequences of macroeconomic policies on the inclusive economic growth in the region of Nigeria through the inclusive growth index. The autoregressive distributed Lag model and error correction techniques were used to analyze the results. The results showed indicated that the fiscal policy reduces the inclusive economic growth in Nigeria while positive effect of monetary policy on inclusive growth. The study suggested the government to channelize her deficit financing expenditure towards the growth stimulating sectors of an economy. Anand et al. (2019) investigated the relationship of inclusive growth and its macroeconomic determinants using the time series date from 1994-2017 in Pakistan. The study adopted the Autoregressive distributed Lag model (ARDL) and Error correction model (ECM) to analyze the results. The study revealed a positive and significant effect of infrastructure development and government spending on inclusive growth while it showed an inverse relation between health expenditure, inflation and inclusive growth. Based on the study findings, the study recommended certain policies to achieve inclusive growth via controlling inflation, infrastructure development spending and focusing on the health sector. Sajid & Ali (2018) performed an empirical analysis to measure the situation of macroeconomic policies and inclusive growth in the South Asia region. The study focused on the impact of macroeconomic situations on the inclusive growth over a period of 1991-2004. The study used the ARDL to analyze results. The study suggests that in South Asia, per capita income and education levels are decreasing inclusiveness. In contrast, factors such as macroeconomic conditions, population growth, and female labor force participation are enhancing inclusive growth. The study also recommended certain policies to focus on quality education, GDP per capita and female labor force enhancement. Güreşçi (2018) evaluated the effects of macroeconomic volatility on the economic growth in the region of European Union through the panel data from 1995-2015. The study adopted the Second Generation panel data analysis techniques to analyze the data collected from World Economic Development indicators. The results showed that the economic growth is less in the presence of economic volatility and suggested the stable macroeconomic policies to ensure the smooth economic growth. Zulfiqar (2018) examined how fiscal policy influences poverty reduction, inequality reduction, productive employment creation, and the achievement of broad-based inclusive economic growth in Pakistan. Using the data from the period 1980-2015 and implied the Vector Auto-regressive (VAR) technique

to analyze the data. The results indicated that the fiscal policy is not effective towards the inclusive growth in Pakistan. The study recommended that a coordinated fiscal policy can significantly reduce poverty and inequality. Abdu et al. (2018) worked on the examination of inclusiveness of growth and perspective of the macroeconomic stability towards the inclusive economic growth in the region of Nigeria through the panel data for a period of 1960-2012. The study evaluated the results by implementing vector error correction and Johansen Cointegration and other various econometric techniques. The results emphasize a long-run connection between regressors and inclusive growth, with macroeconomic stability being a key factor. Additionally, GDPV, INV, TOP, FDI, C-GDP, and GFC impact the inclusive growth negatively. The study recommended to diversify the economy and implement a macroeconomic policy targeting moderate inflation to reduce oil sector dominance and support inclusive growth. Waeyenberge & Bargawi (2018) examined the government policies to foster growth and employment in Uganda through the Employment Diagnostic analysis (EDA) technique. The study was based on the data period of 2016-2018 and the results indicated that despite advancements in poverty reduction, Uganda faces challenges in generating enough quality jobs for its expanding working-age population. Most employment opportunities are concentrated in low-productivity sectors like agriculture and informal services. The study suggested that the macroeconomic policies should be crafted to facilitate the broader strategic aim of structural transformation to ensure the growth in an economy. Yien et al. (2017) studied the dynamic relationship between monetary policy and inclusive economic growth in Malaysia for a period 1980-2015. Using the VAR technology, the study examined the per capita growth and monetary policy via the structural break in data processing. This study finds that interest rates, rather than money supply, drive key economic variables in Malaysia, including growth per capita, inflation, and unemployment. The shift from monetary to interest rate targeting in Malaysia's monetary policy is shown to be successful, with evidence of bidirectional causality between unemployment and growth per capita. The study suggested that Malaysia should focus on enhancing foreign direct investment to drive growth per capita. Adediran et al. (2017) evaluated the relationship of inclusive growth and monetary policy shocks in the Nigeria. Using the annual data set for a period of 1980-2014 from the Nigerian central Bank statistical bulletin. The study implied the advanced Vector Auto-Regressive (VAR) technique to analyse the results of the data. The results indicated that the monetary policy variables especially money supply and exchange rate has a positive impact on the inclusive growth while the stable monetary policies were recommended to have a better inclusiveness within an economy. Nwosa (2016) examined the effect of macroeconomic policy variables, unemployment and poverty to attain the inclusive economic growth in the region of Nigeria through the data period from 1980-2013. The study used an ordinary least square method to evaluate the results and results indicated that the macroeconomic policy variables does not enhance the inclusive growth significantly. The study also recommended to re-examine the macroeconomic policies especially exchange rate to promote the inclusive growth. Secondly, the study focused on the entrepreneurial development. Zulfiqar et al. (2016) explored the current status of financial inclusion in Pakistan and its role in fostering inclusive growth. This study utilized the data from the 2014 Global Findex database, across 147 countries, representing 97% of the world's population. The study used a Probit models to assess socio-economic and geographic impacts and Maximum Likelihood is used to determine the probability of an individual facing financial inclusion barriers in Pakistan. The results concluded that lack of money, documentation, distance, and the cost of financial services are major barriers to financial inclusion in Pakistan and Sources of borrowing are based on gender, education level, and income. The study suggested to expand the financial access for marginalized groups and simplifying loan

processes can reduce poverty, inequality, and enhance societal welfare in Pakistan. Adeleke et al. (2015) explored that how monetary policy can promote inclusive growth in Nigeria. Using a Structural Vector Autoregressive model, the results revealed that change in money supply and interest rates affected variations in inclusive growth. The research also showed that an abrupt change in the monetary policy rate leads to a rise in unemployment in the months that follow. The study recommended a mix of traditional and innovative monetary policies to foster inclusive growth in Nigeria.

Domonkos & Ostrihon (2015) investigated the inclusive growth in the six selected European countries for a period 2006-2012. The study imposed an assumption of Pro-poor Growth and implied the Poverty equivalent growth rate methodology to analyze the results. The results indicated a positive economic growth in those selected countries in presence of Pro-Poor Growth. The Study suggested that a targeted growth strategies can help improve the economic well-being of the less advantaged. Azizi et al. (2011) conducted a study on the impact of macroeconomic policies on poverty in Iran. The study employed a general equilibrium model combined with a social accounting matrix to analyze data from the year 2002. The findings of the research revealed that a significant proportion of Iranian households continued to live below the poverty line, suggesting that the macroeconomic policies in place during the study period were ineffective in fostering inclusive growth. The study also highlighted the limitations of these policies in addressing income disparity and improving the living standards of marginalized groups. The research suggested the need for more targeted and equitable policy interventions to ensure that economic growth reaches all segments of the population particularly in developing economies like Iran. Sodipe & Ogunrinola (2011) examined the effect of economic growth on employment rate in the region of Nigeria. The study employed an Ordinary Least Squares method on data collected for a period 1981-2006, the study results showed a positive and significant relation between employment level and economic growth while a negative relation was observed between employment and the GDP growth rate in the economy. The study recommended to increase the labor-promoting investment strategies to decrease the high unemployment level in Nigeria.

### III. Empirical Model and Methodology

#### A. Model Specification

To explore the impact of monetary and fiscal policies on inclusive economic growth in Belt and Road Initiative countries, following models are constructed.

#### **Model 1: Macroeconomic Policies and Inclusive Economic Growth**

$$IEG = f (FPI, MPI, GFCF, Trade, HDI, IQ)$$

The model analyzes the determinants of inclusive economic growth in BRI countries. Fiscal policy Index (FPI) is measured by government expenditure and tax revenue, indexed through principal component analysis through the representation of public spending and total revenue. Monetary Policy index (MPI) is constructed through the PCA using the indicators, Broad Money (M2) as a percentage of GDP and domestic credit to private sector as a percentage of GDP. Gross Fixed Capital Formation (GFCF) is expressed as a ratio to GDP, which accounts for the share of investments in physical infrastructure, productive assets. Trade as a percentage of GDP is known as Trade, which stands for Trade as a percentage of GDP which captures the openness and international integration of economies in the global trade system. HDI measures of dimensionality of development are of an important multi latitudinal nature and the most important aspects are education, health, and the provision of living standards, which are important for inclusive growth. Finally, Institutional Quality (IQ) that stands for governance, regulatory frameworks, and institutional efficiency as the key elements for

development. These variables work together to create a robust analytical framework with which to examine the interaction between fiscal and monetary policies, trade, investment and human development and institutional quality for contributing to inclusive economic growth within BRI countries. An econometric model is formulated to assess the determinants of fiscal and monetary policy on inclusive economic growth.

$$IEG_{it} = a_0 + a_1 FP_{it} + a_2 MP_{it} + a_3 GFCF_{it} + a_4 Trade_{it} + a_5 HDI_{it} + a_6 IQ_{it} + \mu_{it}$$

### Model 2: Causality between Macroeconomic Policies and Inclusive Economic Growth

Using this model, we investigate the causal relationship between macroeconomic policies and inclusive economic growth by simplifying the economy to different economic factors such as fiscal policy index, Monetary Policy index, gross fixed capital formation, trade, human development index, and institutional quality. It deals with the interaction of variables within the scope of overall inclusive economic growth in developing economies in a case of the BRI countries. Following are the general forms of the granger causality relationship.

$$Y_{it} = \alpha_0 + \sum_{j=1}^J \alpha_j Y_{it-j} + \sum_{j=1}^J \delta_j X_{it-j} + f_{yi} + \mu_{it}$$

$$X_{it} = \beta_0 + \sum_{j=1}^J \beta_j Y_{it-j} + \sum_{j=1}^J \delta_j X_{it-j} + f_{xi} + v_{it}$$

### B. Variable description

The study has used the panel data of Belt and Road Initiative countries, comprising 151 countries in various regions of the world, with two countries excluded, Cooks Island and Niue due to unavailability of the data on the 12 periods from 2013<sup>5</sup> to 2024. The description of the variables, unit of measurement and source of data collection is given in Table 1.

**Table 1: Variables Descriptions, Measurement Unit and Data Source**

Variables	Description	Unit of Measurement	Data Source
<b>IEG</b>	Inclusive Economic Growth	Index	World Development Indicators (WDI)
<b>LI</b>	Labor income Share of GDP	(% of GDP)	
<b>G</b>	Gini Index for Income inequality	Index	
<b>GDPPC</b>	GDP Per Capita	USD	
<b>PI</b>	Physical Infrastructure	Index	
<b>ELC</b>	Access to Electricity	(% of GDP)	
<b>SETS</b>	Mobile Cellular	Per 100 People	
<b>BBND</b>	Fixed Broadband Subscription	Per 100 People	
<b>TX</b>	Tax Revenue	(% of GDP)	
<b>GE</b>	Government Expenditure Excluding Military Expenses	(% of GDP)	
<b>FPI</b>	Fiscal Policy Index	Index	
<b>BM</b>	Broad Money	(% of GDP)	
<b>DCPS</b>	Domestic Credit to Private Sector	(% of GDP)	
<b>MPI</b>	Monetary Policy Index	Index	
<b>GFCF</b>	Gross Fixed Capital Formation	(% of GDP)	
<b>TRADE</b>	Trade	(% of GDP)	
<b>HDI</b>	Human Development Index	Index	
<b>IQ</b>	Institutional Quality	Index	

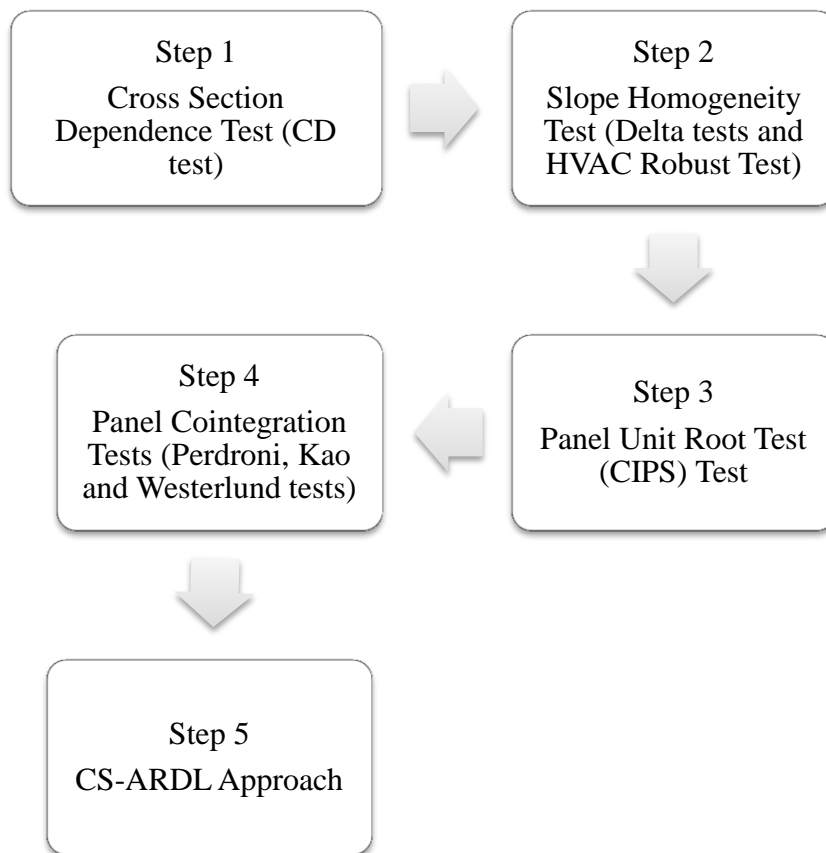
<sup>5</sup> The Belt and Road Initiative (BRI) was launched by China in 2013.

<b>GE</b>	Government Effectiveness	Estimate	
<b>CC</b>	Control of Corruption	Estimate	
<b>PS</b>	Political Stability and Absence of Violence/Terrorism	Estimate	
<b>RQ</b>	Regulatory Quality	Estimate	
<b>VA</b>	Voice and Accountability	Estimate	
<b>ROL</b>	Rule of Law	Estimate	

### C. Methodology

The methodology of the paper is given in five key steps shown by Figure 1.

**Figure 1: Econometric Modeling Process Flow**



The cross sectional dependency test described by Pesaran et al (2004) is used to examine the effects of a cross sectional dependent of variables. Second, the homogeneity of slope parameters across the panel data is assessed by the group-wise heteroscedasticity test using the delta and HAC Robust tests and then the CSDIPS root test which is a second generation panel unit root test to check the stationarity of variables. In the fourth step a long run relationship is verified between variables using the Pedroni, Kao and Westerlund Panel cointegration tests. Chudik and Pesaran's (2015) and CS-ARDL approach is used to check the short and long run relationships among the inclusive economic growth and macroeconomic policies.

## IV. Empirical Findings

### Descriptive Statistics

The descriptive statistics of the key variables provide an essential overview of the dataset, summarizing the central tendencies, dispersion, and distribution characteristics. The Descriptive statistics of key variables for the period of 2013-2024 with a consistent sample size of 1788 observations on all variables are presented in below table 2. This summarizes the diverse set of distributions of the variables, distinguished by different degrees of skewness and kurtosis. Trade and MPI are highly variable and appear positively skewed, meaning that there is a bending at the extreme high end. Other variables such as GFCF and FPI shows more moderate variation, but more or less normal distributions. The findings indicate that the data is heterogeneous, some variables being significantly dispersed or even present with outliers, which may have subsequent important implications for future analysis and interpretation of the data.

**Table 2: Descriptive Statistics of Key Variables (2013-2024)**

	Mean	Std. Dev.	Min	Max	Skew.	Kurt.	Jarque -Bera	Probability
<b>IEG</b>	0.24	0.24	0	1	0.97	3.05	295.9	0.00
<b>FPI</b>	0.023	0.986	1.043	1.748	1.154	2.503	415.5	0.00
<b>MPI</b>	64.796	31.872	0.023	260.618	1.162	7.49	1904	0.00
<b>GFCF</b>	36.868	25.552	1.225	80.318	-0.986	2.231	333.4	0.00
<b>TRADE</b>	87.495	50.096	2.208	394.221	2.864	14.663	1300	0.00
<b>HDI</b>	14.362	30.038	0.352	80.318	1.741	4.031	982.5	0.00
<b>IQ</b>	-0.036	0.949	-0.394	3.075	2.969	9.832	6105	0.00

### Correlation Analysis

The correlation matrix reveals the strength and direction of linear relationships among key variables in the study. Table 3 shows the correlation analysis of the key variables which are used throughout the study. It is shown that IEG has a positive correlation with the MPI and Trade, implying that these factors might be important to economic growth.

**Table 3: Correlation Analysis of Key Variables (2013-2024)**

	IEG	FPI	MPI	GFCF	TRADE	HDI	IQ
<b>IEG</b>	1.000						
<b>FPI</b>	-0.056	1.000					
<b>MPI</b>	0.390	0.093	1.000				
<b>GFCF</b>	-0.130	0.833	0.143	1.000			
<b>TRADE</b>	0.415	-0.041	0.226	-0.022	1.000		
<b>HDI</b>	0.068	0.437	0.149	0.418	-0.024	1.000	
<b>IQ</b>	-0.007	0.293	0.092	0.285	0.020	0.32	1.000

On the other hand, IEG has an inverse relation with Gross Fixed Capital Formation (GFCF) and Fiscal Policy index (FPI). Moreover, there exists a positive week correlation between IEG and human development index (HDI) and a negative week correlation with the institutional quality (IQ).

### Cross-section Dependence Analysis

The reliability of subsequent econometric analyses depends on the cross-sectional dependence of included variables in the study. Table 4 presents the results of cross-sectional dependence (CD) tests for various variables. The results show a significant level of cross

sectional dependence in IEG, Fiscal Policy index (FPI) and Monetary Policy index (MPI) which indicates a strong interdependencies.

**Table 4: Cross-Sectional Dependence Test Results**

VARIABLE	CD-TEST	P-VALUE
IEG	86.15	0.00
FPI	24.8	0.00
MPI	53.64	0.00
TRADE	166.99	0.00
GFCF	15.99	0.00
HDI	359.52	0.00
IQ	135.20	0.00

The HDI displays the highest cross-sectional dependence. Gross Fixed Capital Formation (GFCF), Human Development Index (HDI) and Institutional Quality (IQ) also have significant dependence. The findings highlights the need to correctly account for cross-sectional dependence in an econometric modeling to avoid a biased results.

#### Slope Homogeneity Test

Slope Homogeneity test finds out whether the relationship between the variables is consistent across the countries studied. Table 5 shows the Slope Homogeneity Test results. In the adjusted delta test, the slope coefficients are heterogeneous across countries with significant values (16.255 and -17.121) with  $p < 0.000$ , which means that the impact of macroeconomic variables is different across countries. This also confirms the finding as the unadjusted delta test results (9.385 and -9.885) with  $p$  values 0.000 further evidence that heterogeneity has to be considered when evaluating the macroeconomic relationships as is the case in BRI countries.

**Table 5: Slope Homogeneity Test on BRI Countries**

Models	(Pesaran and Yamagata, 2008)		(Blomquist and Westerlund, 2013)		
	Delta Test	P-Value	HAC Robust Delta Test	Adjusted Delta Test	P-Value
1	Adjusted	16.255	0.000	-17.121	0.000
	Un-Adjusted	9.385	0.000	-9.885	0.000

#### Unit Root Analysis

The application of the Cross Section Dependence based LM Pesaran Shin (CSDIPS) Unit Root Test to the variables confirms a mixture among the stationary and non-stationary behavior for all the variables at lag 0 and lag 1. We find IEG to be non-stationary at lag 0 and lag 1, implying variability over time without a stable mean or variance. Trade Openness, Institutional Quality (IQ), and the Human Development Index (HDI) are also found to be nonstationary under both lag settings, so that transformations or differencing are necessary to ensure stationarity in econometric modeling. Conversely,  $P$  values from lag 0 and lag 1 point to stationarity and mean reversion Fiscal Policy Index, Monetary Policy Index, and Gross Fixed Capital Formation. The results in table 6 show that some variables fail to reject the null hypothesis of non-stationarity whereas others do not thus needing differencing or transformations to make the variables stationary for the panel data analysis.

**Table 6: Results of Second-Generation Panel Unit Root**  
**Second Generation Panel Unit Root Test**

<b>Cross-Section-Dependence based Im-Pesaran-Shin (CSDIPS) Unit Root Test</b>						
<b>Variables</b>	<b>Without Trend</b>			<b>With Trend</b>		
	<b>Lags</b>	<b>Zt Statistics</b>	<b>P-Value</b>	<b>Lags</b>	<b>Zt Statistics</b>	<b>P-Value</b>
<b>IEG</b>	0	12.898	0.906	0	19.438	0.979
<b>FPI</b>	1	17.830	0.000	1	19.602	0.002
<b>MPI</b>	0	11.638	0.000	0	16.556	0.000
<b>TRADE</b>	1	9.516	0.987	1	13.924	0.565
<b>GFCF</b>	0	10.750	0.007	0	9.922	0.029
<b>IQ</b>	1	-11.690	0.086	1	-8.958	0.623
<b>HDI</b>	1	22.513	1.000	1	9.718	1.000

### Panel Co-integration Analysis

The panel co-integration test results are presented in Table 7 which provide insights into the presence of long-term relationships among the panel variables under consideration. The test evaluates the null hypothesis of no co-integration against the alternative hypothesis of co-integration. The modified value of Dickey–Fuller t statistic amounted to -10.39 which implies the strong evidence against the null hypothesis. The values registered in Dickey–Fuller t statistic and Augmented Dickey–Fuller t statistics respectively were -3.91, -5.90, which also indicate the rejection of the null hypothesis. In addition, the Unadjusted Modified Dickey–Fuller t statistic -11.03 as well as the Unadjusted Dickey–Fuller t statistic -4.18, confirm the existence of co-integration between the various variables contained in the dataset. The results as a whole consistently establish the existence of a co-integrating relation among the variables, indicating their long term equilibrium association in the panel.

The results of Pedroni’s Panel Co-integration test examines the long-term relationship among the variables in the model with and without a trend. Pedroni’s test gives us multiple test statistics to test for co-integration from different perspectives. The test assumes the null hypothesis no co-integration, and rejection of this null hypothesis indicates there exists a relationship among the variables which is co-integrated.

**Table 7: Panel Cointegration Tests**

	<b>Gt</b>	<b>Ga</b>	<b>Pt</b>	<b>Pa</b>
<b>Westerlund Test</b>	-1.06 (0.000)	-0.87 (0.000)	-9.40 (0.000)	-1.01 (0.000)
<b>Kao Test</b>	<b>Modified Dickey-Fuller</b>	<b>Dickey-Fuller</b>	<b>Augmented Dickey-Fuller</b>	<b>Unadjusted Modified Dickey</b>
	-10.37 (0.000)	-3.91 (0.000)	-5.90 (0.000)	-11.03 (0.000)
<b>Pedroni Test</b>	<b>Modified Phillips-Perron</b>	<b>Phillips-Perron</b>	<b>Augmented Dickey-Fuller</b>	
	18.8917 (0.000)	-13.8596 (0.000)	-47.4315 (0.000)	

The modified Phillips-Perron t-statistic results for the case with trend are 21.69 and without trend, 20.12 (with P-values of 0.00 in both cases) and rejects the null hypothesis very strongly for both values. Furthermore, the Phillips-Perron statistic gives the values of the -20.03 (with a trend) and the -32.45 (without a trend), that are both significant at 0.00 level of significance,

supporting the conclusion of the Co-integration. The last thing, the Augmented Dickey-Fuller (ADF) statistic gives us values of  $-16.10$  (with trend) and  $-44.86$  (without trend) and P values of  $0.00$ , which confirm the presence of a long-term relationship. The results presented show that the variables of the study have a robust co-integrated relationship whether or not the trend is included. This is because all three test statistics consistently reject the null hypothesis across all three, indicating the existence of a stable, long lasting association between the variables used for inclusive economic growth analysis in BRI countries and validating the theory framework and the selection of the variables used for growth study.

### CS-ARDL Results

CS-ARDL is used to analyze both short-run and long-run relationships between macroeconomic policies and inclusive economic growth in BRI countries. This section has a comprehensive interpretation of the results presented in Table 8 which delves into the empirical findings of the study.

**Table 8: CS-ARDL Estimates**

Variables	Coefficient	Std. Err.
<b>Short-Run</b>		
$\Delta$ ECT(-1)	$-1.724^{***}$	0.252
$\Delta$ FPI	$0.00589^{**}$	0.04709
$\Delta$ MPI	0.000853	0.00279
$\Delta$ GFCF	$-0.0197^{**}$	0.00991
$\Delta$ TRADE	$0.589^{***}$	0.0268
$\Delta$ HDI	$0.601^{***}$	0.0249
$\Delta$ IQ	$0.668^{***}$	0.0204
<b>Long-Run</b>		
MPI	$-0.724^{***}$	0.252
FPI	$0.215^{***}$	0.045
GFCF	$-0.0124^{**}$	0.00587
TRADE	$0.722^{***}$	0.0250
HDI	$0.352^{***}$	0.00147
IQ	$0.0835^{***}$	0.0212
<b>R-squared</b>		0.498

The ECT is highly significant and negative and has a coefficient of  $-1.724$ . The adjustment process refers to approximately 0.58 periods (years), or 6 months and 29 days for the annual data to restore towards the full equilibrium. The study used the Inclusive economic growth as a dependent variable and fiscal policy index, monetary policy index, Gross fixed capital formation, Trade, HDI, IQ are used as the independent variables. This adjustment term is large enough to highlight the self-correcting nature of the model. The magnitude of such a large adjustment term closely resembles self-correction behavior of the IEG model, which is consistent with the Pesaran et al. (1999) comment that dynamic adjustment is important in autoregressive distributed lag specifications.

In the long run, Monetary Policy Index has a negative impact on inclusive economic growth, which is highly statistically significant. There are several reasons behind this. Firstly, increasing the broad money supply also normally causes an inflating pressure in the economic equilibrium which leads to the reduction of the purchasing power of the low income households. Mishra and Spence (2022) note that since inflation falls disproportionately on the economically vulnerable, it promotes growth that is not inclusive, widens gap between rich and poor. Secondly, if broad money increases too much, financial

resources tend to be diverted to such speculative investments as real estate or any other stock markets instead of to more productive ventures. As per Yang and Li (2021) view, this diversion stifles innovation, long term growth, since speculative activities reduce access to credit for small businesses and entrepreneurs which are the main drivers of economic inclusivity. Thirdly, a rapid expansion of money supply without a commensurate growth of goods and services, can destabilize the financial system. One of the most fundamental ways in which the instability shows up is as asset bubbles or increased volatility of financial markets, which make investment and economic participation less attractive (Chakraborty et al., 2023). At the same time, the distribution of wealth within the economy is uneven, and this may exacerbate inequality because wealthier people and corporations tend to appropriate disproportionately from credit availability while marginalized groups are excluded. Finally, broad money supply that is unregulated often results in lack of monetary policy implementation efficiency, which erodes its suitability for promoting balanced and equitable economic growth. These findings agree with the following studies (Mishra & Spence, 2022; Yang & Li, 2021; Chakraborty et al., 2023).

For several reasons, fiscal policy index has a positive and statistically significant effect on inclusive economic growth in the long run. A fiscal policy framework that is well endowed can promote public investment in key fields of education, health and infrastructure among other fields, which reduces income inequality and contributes towards the human capital development. Fiscal measures that favor social spending over regressive taxation are shown by Johnson and Lee (2020) to be associated with long run economic inclusivity by uplifting the marginalized groups. Secondly, Carter et al. (2021) highlighted the role of progressive taxation systems, which redistribute wealth over different range of income groups. Furthermore, an efficient fiscal policy can stimulate private sector growth by providing incentives for innovation and entrepreneurship, which can lead to more widespread economic opportunities (Smith et al., 2023). Fiscal discipline and transparency in governance is also the last, which ensures that resources are made optimally utilized and corruption is economically minimized, consequently making fiscal interventions such as fiscal interventions towards inclusive growth effect-full. This matches work done by Johnson and Lee (2020), Carter et al. (2021), and Smith et al. (2023).

Gross Fixed Capital Formation has a negative impact on inclusive economic growth, which is highly statistically significant due to several reasons that explain the relationship. First of all, an inefficient allocation of investment in fixed assets can redirect resources towards the wrong areas to results in resource mismanagement as well as lower economic returns, which in turn would lead to suppression of inclusive growth. Li and Wong (2021) further suggest that in many developing countries, infrastructure investments are disproportionately focused in cities, with few in rural areas and the disparities between regions are exacerbated. Secondly, excessive levels of GFCF without working institutional framework and governance will result in corruption and misuse of funds pointed out by Ahmed et al. (2022). The result is that investments have less overall impact on broader economic participation. Thirdly, physical capital formation without a commensurate correspondence between the levels of physical and human capital is requisite to economic inclusivity. And finally, if Gross Fixed Capital Formation is dependent on external borrowing, it has the potential to result in a debt overhang crisis constraining fiscal capacity for investment in social and welfare programs aimed at inclusive growth. These findings support the following studies (Li and Wong, 2021; Ahmed et al., 2022; Chakrabarti and Sinha, 2023).

Trade has a positive impact on inclusive economic growth, which is highly significant.

Several reasons can be behind this effect. Firstly, Trade openness raises the level of access to international markets, thus permitting countries to enjoy economies of scale as well as a better allocation of resources. This is in line with Rodriguez and Loayza (2022), who show that trade liberalization encourages smaller businesses' integration into global value chains to promote inclusive growth. Secondly, higher trade volume leads to technology transfer and technology innovation through exposure to global markets which encourages domestic industries to adopt more efficient production methods (Chen et al., 2021). Finally, trade openness generates new employment opportunities, especially in export developing sectors, which are important for lessening income inequality and enhanced involvement in economic activity of excluded communities (Ghosh and Das 2023). Moreover, liberalized trade policies tend to enhance government revenues through tariffs and taxes that otherwise might not be captured by governments, and which could be reallocated to social programs that increase living standards and reduce poverty. Our findings corroborate with the following studies (Rodriguez and Loayza, 2022; Chen et al., 2021; Ghosh and Das, 2023).

Human Development Index has a positive impact on inclusive economic growth, which is highly statistically significant. There are several reasons. First of all, improvements in human capital, better education, healthcare, which are vital to inclusive growth which increases productivity and labour market participation. According to Banerjee and Sen (2022), HDI level is very strongly correlated with the rate of equitable income distribution and stability of the economy across countries. Secondly, countries with a higher HDI generally are characterized by higher social cohesion, higher inclusive economic growth and a decreased economic disparities. Thirdly, human development investments generate a virtuous economy, higher incomes generate a better living standards which supports the increased level of economic participation. Rahman et al. (2021) indicate that policies related to education, health and social welfare have key roles in long term inclusivity of economic growth. Finally, HDI advancements improve the absence of opportunities from marginalized communities and between different socioeconomic groups. These studies (Banerjee and Sen, 2022, Rahman et al., 2021) support our findings.

Institutional Quality has a positive impact on inclusive economic growth, which is highly significant. There are several reasons behind this favorable effect. First of all, transparent governance and a low level of corruption are enabled by high quality institutions, which contribute to equitable economic participation. Therefore, robust institutions are foundational for equitable resources allocation and inclusive policies, according to Kaufmann et al. (2022). Secondly, effective institutions induce growth of the private sector by protecting property rights and enacting contracts, which enhances the confidence and employers opportunities. Thirdly, a strong institutional framework allows it to reduce the economic shocks and stabilize the market to create the basis for sustainable and inclusive growth. According to Chen and Zhang (2021) that institutional quality is an important determinant of policy implementation efficiency and thereby economic inclusivity. Finally, good governance guarantees that the fruits of economic growth reaches every class of society, and income inequality is reducing thereby social welfare. Our results are consistent with these studies (Kaufmann et al., 2022; Chen and Zhang, 2021).

The R-squared for the independent variables backs up this moderately explained 49.8% of the variation in IEG. The presence of sizable short run adjustment term as well as the long run coefficients of HDI highlights the need for policy measures on human development that would ensure sustainable and inclusive growth.

## V. Conclusion

This study provides a holistic accounting of the factors that shape Inclusive Economic Growth in Belt and Road Initiative countries with the aim of understanding the relationship between macroeconomic policies and the process of inclusive development. First, the research starts with a well specified model including fiscal policy index, monetary policy index, trade openness, gross fixed capital formation, institutional quality index and Human Development Index (HDI) as a major independent variables. The multidimensionality of economic inclusiveness is represented by IEG as the dependent variable.

To undertake a comprehensive geographical and temporal analysis, the study used a secondary panel dataset for BRI countries (spanning 2013–2024). Preliminary relationships were explored using statistical techniques (summary statistics, correlation analysis, second generation unit root tests) and then the data was confirmed to be stationary. A mixed order of integration was found in the analysis, thus required robust econometric methods to accommodate a cross sectional dependencies and heterogeneities.

Statistical tests were undertaken with an advanced estimation techniques, including the Cross Sectional Autoregressive Distributed Lag (CS-ARDL) estimation, which is particularly appropriate for estimation of both short and long run dynamics in the presence of cross sectional dependence. A significant cross sectional dependencies had been confirmed using a subset of initial tests such as Pesaran's CD test and delta as well as delta-adjusted slope homogeneity test that had validated consistent slope coefficients amongst countries. Furthermore, the panel cointegration tests based on Westerlund, Pedroni and Kao tests confirmed the existence of a long term equilibrium relationship between the variables.

The results based on robust empirical findings regarding the driver of IEG, suggest that HDI consistently appears as the most important positive determinants both in the short and long runs and that the investments in education, healthcare, and skill development play the critical role. Trade openness was highly significant in the short term, indicating how easy access to the global and local markets is an important determinant for inclusiveness. Inefficiencies and delays in capital utilization had a negative short-term effect on gross fixed capital formation, and its long term viability depends on investments aligning with the goals of inclusive growth. The short-run impact of the Monetary Policy Index was found to be statistically insignificant, while its long-run impact was negative, suggesting potential inefficiencies within monetary transmission mechanisms or misaligned policy frameworks that hinder inclusive growth.

A positive effects of institutional quality were highly significant in the short and long run, suggesting the continued relevance of structural governance reforms for sustained inclusive growth. These findings underscore the role of human capital development, trade integration and institutional quality, as well as the role of improving financial inclusion and targeted investment to achieve full IEG in the long run and in short term.

## VI. Policy recommendations

Based on the results the short-term fiscal policies have shown positive impacts on IEG; however, the long-term negative effects necessitate a shift toward targeted, efficient interventions. Therefore,

- The Governments should focus on performance-based fiscal spending, prioritizing projects with measurable impacts on inclusiveness, such as health, education, and SME development. Enhanced budget monitoring and accountability mechanisms should be introduced.
- Similarly monetary policy aggregates show a negligible direct impact on IEG due to structural inefficiencies in financial markets. Therefore, Government should promote

access to affordable credit, expand digital payment systems, and incentivize financial institutions to cater to underrepresented segments, particularly women and rural populations.

- The HDI consistently drives IEG, emphasizing the central role of human capital in inclusive growth. Underfunded sectors, particularly education and health, often undermine this potential. So Government should allocate a higher proportion of GDP to human development sectors, incentivize private investments in education and healthcare, and establish vocational training programs aligned with market demands.
- Trade openness facilitates access to international markets, increases competitiveness, and enhances efficiency. However, without inclusiveness strategies, benefits may concentrate in certain sectors or regions. So Government should introduce a trade diversification policies, reduce non-tariff barriers, and ensure SME integration into global value chains. Specific programs targeting rural exporters can ensure equitable trade benefits.
- Weak institutional frameworks reduce the effectiveness of macroeconomic policies and erode investor confidence, limiting their potential to foster IEG. Through the implementation of digital governance platforms, Government can reduce a bureaucratic inefficiencies, strengthen anti-corruption measures, and establish independent policy evaluation bodies.
- Study indicated that inefficiencies in capital allocation hinder short-term impacts on IEG, despite its potential for long-term benefits. The government should establish transparent investment appraisal frameworks to prioritize projects with clear inclusiveness metrics and foster public-private partnerships for efficient resource utilization.

## VII. Future Research Recommendations

Future research should explore region-specific macroeconomic policy impacts on IEG beyond BRI countries to include Africa, Latin America, or Southeast Asia. Examining digital innovation, environmental sustainability, and regional cooperation mechanisms as determinants of IEG could provide fresh insights. Additionally, studies focusing on longitudinal impacts of macroeconomic policies, particularly in developing economies, are recommended. Expanding the scope to include household-level data could reveal micro-level inclusiveness patterns.

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