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Trade Openness, Export Diversification, and Long-Run Economic Growth: Evidence from Developing and Emerging Economies

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ABSTRACT: Purpose: The study focuses on examining the impact of trade openness on the diversification of exports on the developing economies in long run basis. The objective involves in determining whether openness is effective enough in sustaining the growth, and whether diversification is effective as a transmission mechanism.

Design/Methodology/Approach: The study focuses on quantitative panel analysis, which was conducted with data from 16 developing countries, from 2017 to 2025. The various variables were economic growth, diversification of exports, investment, investment and human capital. The statistical techniques, such as Regression, Correlation Analysis, and Descriptive Statistics, are applied for the purpose of evaluating relationships.

Findings: The results showed that trade openness has a positive implication for citizen income level; however, they have a limited ability to drive growth. The diversification of exports in a developing economy suggested an improvement in resilience. The developing countries showed inefficiencies in respect to investment allocation, whereas human capital indicted positive influence.

Practical Implication: The findings showed that openness is required to be complemented through diversification, effective investment, and development of human capital in the developing countries.

Originality/Value: The contribution of the study is in joint basis where the importance and diversification in a long panel framework are shown. This offered a structural and institutional factor that coordinated the growth in the developing economies.

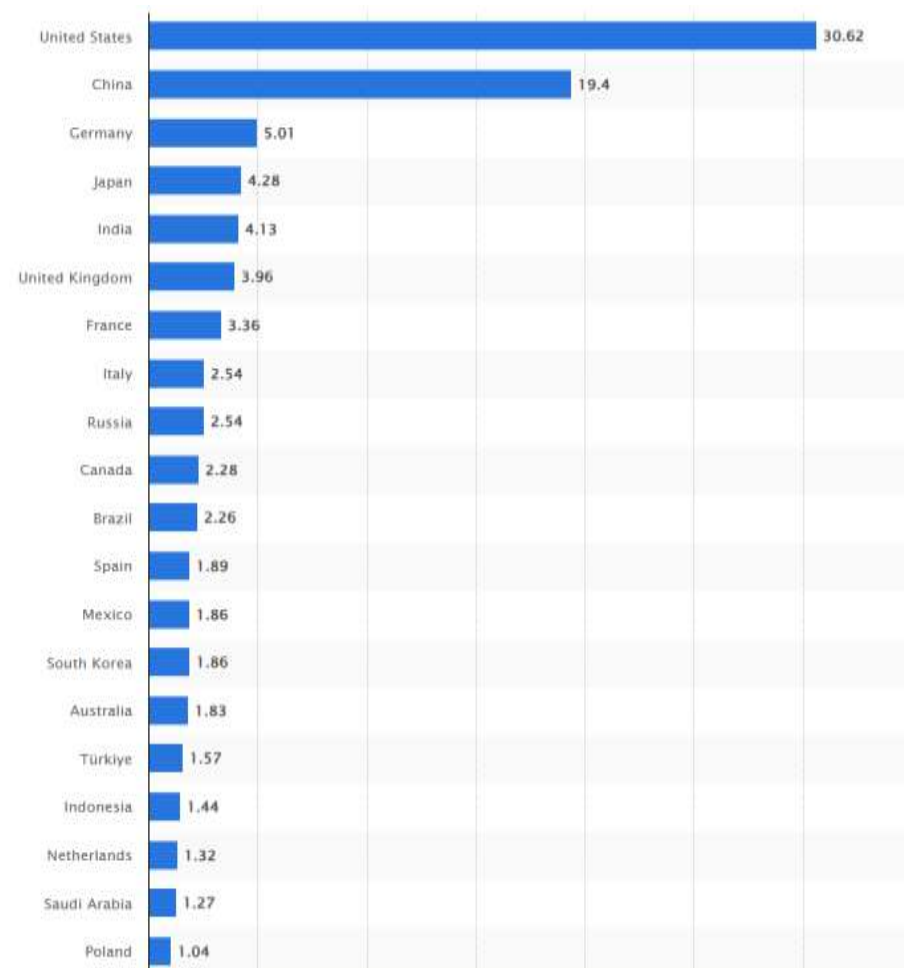
1. INTRODUCTION

Economic growth was long considered as a significant factor in development, especially in the context of developing and increasing economies. In addition, with respect to a country, the economic growth is primarily determined by overcoming structural inefficiencies, unemployment rate, and sustained growth, but it cannot be relatively measured by any statistics (Muhammad, 2023). However, the transformation within a process can effectively enhance the standard of living, the strengths of institutions, and it also promotes social stability. Most importantly, unlike the advanced economies that primarily focus on incremental improvements, various nations can experience the dual challenge of accelerating growth while addressing the deep-rooted structural constraints, which was considered as another challenge (Challoumis, 2025). Due to these potential things, understanding the key drivers that help in economic growth becomes more essential, and within the key drivers, international trade has achieved a central position.

1.1 Importance of Economic Growth in Developing and Emerging Economies

Economic growth within a developing economy is essential for different reasons because, firstly, it provides the necessary resources to sufficiently reduce poverty and inequality in a nation. Economic growth effectively expands a country's fiscal capacity, allowing a country's government to invest in various infrastructure, education, healthcare, and different types of social welfare functions (Lutsyk et al., 2024). Secondly, the economic development creates various employment opportunities for individuals, specifically within those economies where large segments of populations remain unemployed and engaged with various subsistence activities. The third reason behind the economic growth was that it effectively improves the resilience against external shocks, such as crises regarding finance and commodity price fluctuations, by properly diversifying income sources along with boosting the domestic markets (Awolaja et al., 2024). Finally, when the economic growth was sustained, it contributed towards political stability by increasing income and improving welfare, reducing social tensions, and promoting trust within institutions (Kumar, 2023). In addition, as per Igbatayo (2022), it has been found that there are some economically developing countries such as Brazil, China, South Africa, Indonesia, India, etc.

Figure 1: Economically Developing Countries with the Rate of GDP



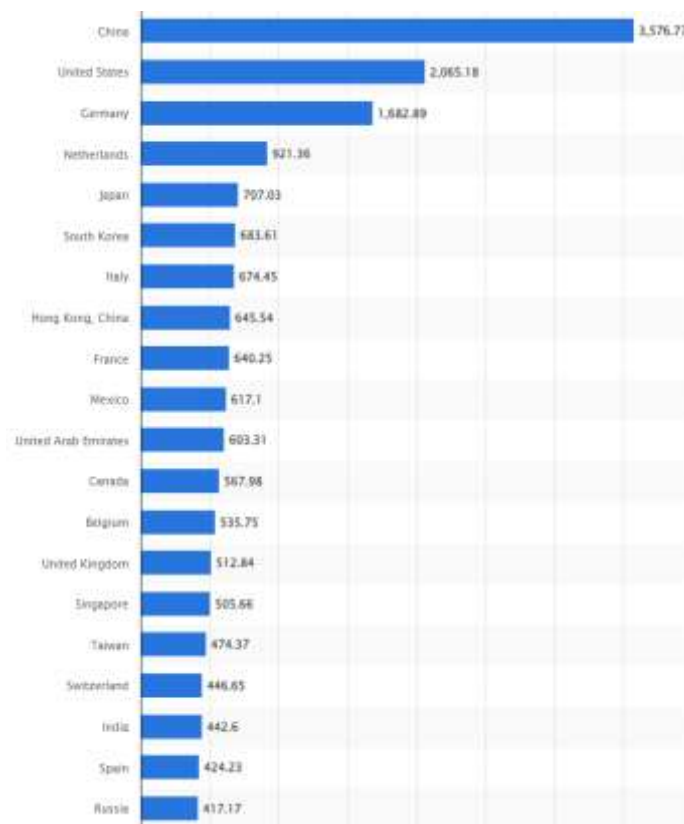
(Source: statista.com, 2025)

The above Figure 1 represents various economically developing countries with their rate of GDP. Based on the above represented Figure, it has been easier to understand that in the year 2025, United States had been considered as the world's largest economically developing country with a 30.6 trillion GDP. After that, China was the second largest with 19.4 trillion GDP, and the third largest was Germany with 4.28 trillion GDP (statista.com, 2025). However, India was also considered the third-largest economically developing country because it had around 4.13 trillion.

1.2 Role of International Trade in Growth Theory

International trade was historically considered a powerful engine of growth; however, the classic economists such as Adam Smith and David Ricardo effectively highlighted the benefits of international trade specialization and the competitive advantages (Abdwlglil & Taib, 2024). These two most recognisable economists are also arguing that trade effectively allows different countries to allocate financial or other resources more efficiently to achieve a higher level of productivity. The modern growth theories in the future also highlighted the dynamic effects of trade, such as technology transfer and knowledge spillovers (Barboza et al., 2025). Additionally, in respect of developing economies, trade plays an essential role because it allows the nations to assess global markets, overcome the limitations of small domestic markets, and attract various foreign investors within the global value chains. Trade also helps different nations to effectively promote innovation and adopt new technologies for improving economic efficiency.

Figure 2: Leading Export Countries in the World



(Source: statista.com, 2025)

The above Figure 2 makes it easier to understand that through the utilization of growth theory within international trading in the year 2024, China has become the largest or recognizable export country in the world. In addition, in the year 2024, China announced 14.33% exportation of global merchandise (statista.com, 2025). In addition, as per the above Figure, it has been easier to understand that various countries are utilizing growth theory for international trading because it allows for shaping the institutional reforms, encourages transparency, and promotes rule-based governance.

Concept of Trade Openness and Export Diversification

As for a broader disclosure on growth and trade, two different types standpoints are coming out such as export diversification and trade openness. Trade openness primarily refers to the degree to which a country is engaging with international trade, which is related to its size of economy (Udeagha & Ngepah, 2022). The trade openness is also measured by the ratio of trade means exports plus imports. A high level of trade openness indicates a significant association within the global markets, while a low openness indicates relative isolation.

Figure 3: Stands of Different Countries in Trade Openness

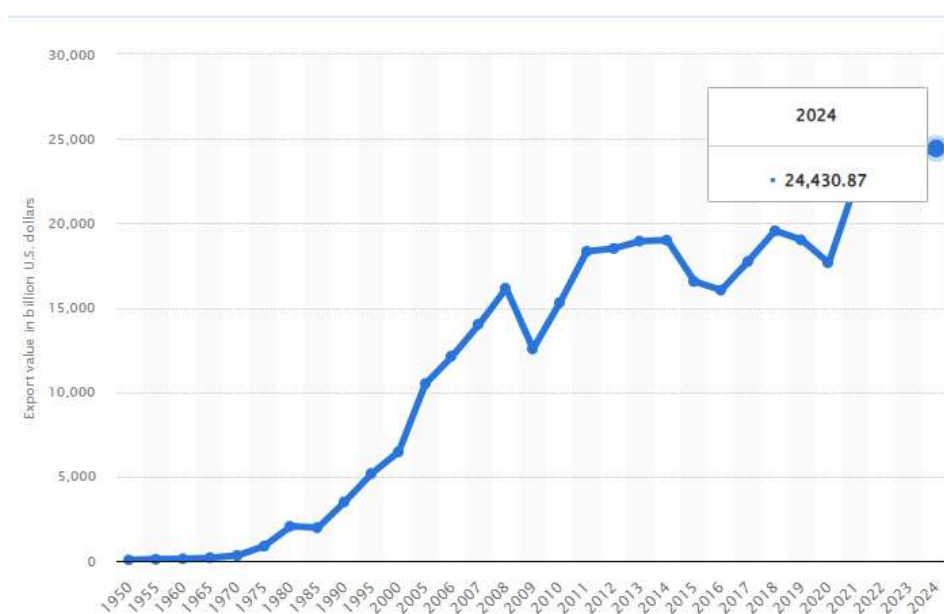


(Source: statista.com, 2025)

The above Figure 3 represents different countries trade openness position in the year 2024, and based on the above Figure it has been easier to understand that India's trade-to-GDP ratio stood at 45%, China at 37%, US at 25%, but among these countries EU had most effective position because its trade-to-GDP ratio stood at 92% (statista.com, 2025)).

Export diversification reflects the breadth and difficulties of a country's export portfolio (García et al., 2025). In addition, various economies are effectively relying on a narrow range of commodities with respect to trade openness. On the other hand, diversification can mitigate the economic risk factors by spreading exposure across multiple sectors and markets (Duho et al., 2023). It also promotes structural transformation when economies move from primary commodities to manufactured goods. Finally, the association between diversification and openness was especially relevant for the developing economies.

Figure 4: Trends in Global Export Value of Trade



(Source: statista.com, 2025)

Through the above Figure 4, it has been easier to understand that with the help of export diversification in the year 2024, the global trade value of goods was exported around 24.4 trillion (statista.com, 2025). This increase in the value of goods export in the world reflects a significant development in globalisation, international trade, and advancement in technology. Additionally, as per the Global Trade Report, it has been found that China is the largest source of goods export in the world because in the year 2024, its goods export value was around 3.37 trillion (statista.com, 2025).

Why Long-Run Analysis is Important?

Economic growth is taking a long process where the short-term fluctuation was effectively driven by the cyclical factors and temporary shocks (Moreira & Carvalho, 2025). In addition, the underlying structural dynamics can determine a country's development path. However, a long-run perspective allows different researchers to capture these dynamics in a structured way. The long-run analysis also helps in determining the difference between sustained trends and transient effects.

Motivation for Studying Both Variables Together

The motivation for analysing the trade openness and export diversification effectively drive because of their complementary role in shaping a country's economic outcomes. A country's trade openness without sufficient export diversification can experience economic volatility (Sarin et al., 2022). On the other hand, a country's export diversification without trade openness can experience limited opportunities for expansion. Moreover, the primary motivation for studying these variables was that these two variables together can provide a more complete and historical understanding of how trade can influence a country's economic growth and sustainability.

2. REVIEW OF LITERATURE

2.1 Trade Openness and Economic Growth

Trade openness has long been debated as a significant driver of economic growth, with some effective classic theories highlighting that economic efficiency can be gained from specialization (Dibor et al., 2025). However, the endogenous models of growth effectively highlight the knowledge regarding innovation and spillovers. Various empirical evidence remains mixed, but some studies reflecting that others reveal weak or negative outcomes, but it depends on the quality of the institution and the country context.

Theoretical Perspectives

Theoretical perspective representation is essential because with some effective theoretical implication, it has been easier to creatively understand which are the main drivers of increasing a country's economic growth along with sustainability. However, from a theoretical perspective, here two categorical theories have been presented, such as classical growth theories and endogenous growth theories.

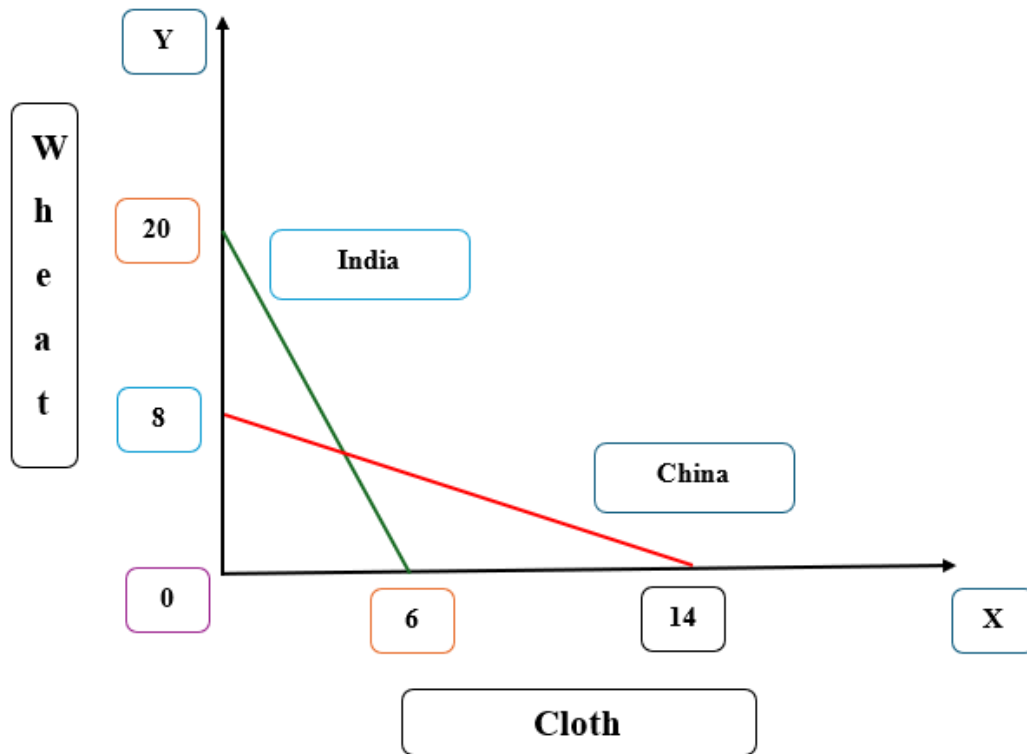
Classical Growth Theories

Adam Smith & David Ricardo

According to Challoumis (2025), the Theory of Adam Smith and David Ricardo was considered as one of the most recognisable aspects that effectively help in understanding the key concept of economic growth and stability of a country. Adam Smith and David Richardo also considered among the notable classical economists. Adam Smith plays a most essential role in the development of classical value theory. However, these economists primarily focus on developing the theory of value based on the cost of production and the concept of security, which is eventually illustrated by the water paradox and diamonds (Assafii et al., 2024). These two economists also sufficiently highlight that trade openness can effectively promote a nation's economic growth by allowing comparative advantage and specialisation. In addition, as argued by Morlin et al., (2024) with the help of Adam Smith and David Ricardo's Classic Growth Theories, different countries are also able to allocate their resources more efficiently, which helps them to increase productivity and overall welfare. As a Classic Cost Advantage Theory by Adam Smith and David Richardo, various economically developing countries, such as China and India, can achieve a competitive cost advantage. For example, if two countries such as China and India export both wheat and cloth,

but China's labor cost was 8 for wheat and 14 for cloth, moreover, India's labor cost was 20 for wheat and 6 for cloth. Based on these assumptions, the theoretical illustration was discussed below.

Figure 5: Example of Adam Smith & David Ricardo's Theory



(Source: Self-Created)

Through the illustration of Figure 5 above, it has been easier to understand that India has an absolute advantage in the significant production of wheat over China. On the other hand, China has the absolute advantage in the production of cloth over India. Therefore, India needs to focus on wheat production and import clothes from China. In addition, China needs to focus on cloth production and import wheat from India.

Neoclassical Models (Solow framework)

As argued by Nikolaos et al., (2022), the neoclassical models primarily explain the long-run of economic growth through an increase in the labor force, technological progress, and capital accumulation. As per this model, it has been easier to understand that trade affects growth indirectly by improving capital allocation and accelerating convergence to steady-state income levels (Sinha, 2024). However, long-run growth is determined by exogenous technological progress, not trade itself.

Empirical Findings

The empirical findings regarding this research effectively represent positive, negative, and mixed findings, which are discussed below.

Positive Evidence

Different types of panel studies show that open economies grow faster than closed ones, especially when they are effectively supported by strong institutions and infrastructure of a country (Hadipour et al., 2023). In addition, the growth theory of endogenous growth is effectively supported by the findings that highlight that openness increases productivity through technology transfer and foreign investment. Most importantly, as per Finocchiaro (2023), the countries in East Asia, such as South Korea, Taiwan, etc. utilized openness to achieve rapid economic growth and sustainability.

Negative Evidence

As Umeaduma & Dugbartey (2023) articles regarding the research topic, openness can expose economies to volatility, specifically with developing countries that effectively rely on primary exports. In addition, Schedelik et al., (2023) have also highlighted that without diversification within trade openness a country can experience dependency traps where growth has stagnated due to commodity price shocks.

Mixed Evidence

As of mixed evidence, it has been easier to disclose that some studies have effectively utilized the panel causality tests that properly revealed a bidirectional relationship where openness promotes growth, but higher growth can also encourage greater openness. In addition, achieving openness to increase economic growth was dependent on the region. While the institutional quality, governance, and macroeconomic stability can generate a positive impact of that openness.

2.2 Export Diversification and Economic Growth

Product vs Market Diversification

The export emerged as one of the most important and central themes in developmental economics specifically for developing and emerging economies which are opting for sustained growth. Product diversification refers to an expansion of the product range exported by the country. Further supported by Shi et al., (2023), export product diversification refers to the increase in demand for new and exciting products in both markets. The process of market diversification refers to broadening the destination of the exports of the product. As per the opinion of Mora & Olabisi (2023), export market diversification is shown to be increasing in developing countries and declining in higher-income countries. In developing countries, both dimensions are important for the purpose of reducing vulnerability to shocks and developing long-term resilience.

The product diversification is expected to be closely linked to structural transformations. Thus, developing economies through moving from the primary commodity to knowledge-intensive goods and manufacturing have shown to be chafing higher value exports resulting simulation in growth productivity. Supported by the opinion of Sarin et al., (2022), in a growing economy, the growth of product diversification is double than the product diversification. It is argued by Ferraz et al., (2021) that the diversification of complex products in countries such as Latin America and Asia has been improving economic capacity and inclusive development.

The factor of market diversification indicates that the diversification is not just focused on the growth of the market, but also on reducing the dependence on a limited number of trading partners. As per the opinion of Iskenderoglu (2023), market diversification, with respect to conglomerate industries, is shown to have a higher diversification value. On the contrary, Nguyen & Schinckus (2023), export market diversification reduces economic growth; however, indices higher misery index. Thus, in this respect, the diversification of risk in different markets helps the countries in stabilizing foreign exchange risk and reducing geopolitical shocks.

Structural Transformation Literature

The structural transformation literature has presented that the diversification process is not just focused on markets and products, but is shifting towards markets with higher productivity. As per the opinion of Botta et al., (2023), the economies which are diversifying in technologically sophisticated industries, more diversified productive structures, and non-price competitiveness are more resilient to finance led competitive cycles. Further, it is stated by Sharma & Aditya (2023), diversification showed to be interacting positively to trade openness through the liberalization channel, transforming in sustainable growth. Thus, showing that export diversification is positively contributing to economic growth through improved resilience and higher industrial growth.

2.3 Interaction between Diversification of Export and Openness of Trade

The relationship between the openness of trade growth is long point of debate in developmental economics. The openness in a developmental economy is often shown to be associated with gains in technology, access to a larger market; however, this factor alone does not guarantee sustained growth. In this respect, diversification of exports plays an important role in ensuring the benefits of trade openness are followed by economies in stable and inclusive basis.

Openness is Not a Sole Option for Growth

Trade liberalization is shown to be exposing global economies to different forms of global competition and external shocks. Further supported by Nguyen et al., (2023), trade openness is solely negatively associated with growth stability in Asian countries. The countries with highly concentrated export structures are shown to be reliant on a few commodities which results in volatility of price and fluctuation of demand. As per the opinion of Asongu et al., (2021), trade openness without diversification might result in economic instability, which can result in a cycle of “boom and bust” instead of steady growth. Thus, openness in commodity dependent economy is shown to be associated with volatility in growth, due to the speedy transmission of external shocks because of a lag in export diversity.

Diversification Role as a Transmission Channel

The diversification of exports in the economy is highly effective in mitigating risk through the policy of widening exports across different products and markets. In addition to this, economies with a high level of export diversification are shown to be more industrialized and developed in terms of higher income per capita as compared to less export-diversified countries (Sarin et al., 2022). In addition to this, diversification is highly effective in stabilizing the risk of foreign exchange and establishing a structural transformation. In the case of Nigeria, the structural reformation through the implementation of export diversification have showed to be highly effective in generating economic growth, reducing the dependence on oil revenue, and generating a more diversified landscape (Abiola Olawale, 2024). In this respect, the countries with a diversified form of export are experiencing more stringent and resilient outcomes of growth in their approaches.

Thus, the diffusion of export indicated a critical channel of transmission where openness is showed to be effective in leading structural transmission, resilience, and sustainable development.

2.4 Research Gap

Within the study of examining the role of trade openness and export diversification in a country's economic growth and sustainability. Here, different types of existing articles have been reviewed, and within those articles, various gaps have been identified that need to be acknowledged. At first, in the articles here, there was a lack of long-run panel evidence, and for that reason, it has been difficult to critically examine the dynamic relationship between international commodities trading and growth across multiple contexts. Another limitation is that most of the articles focus on describing the developing and emerging economies, which are rarely studied together, but there are vulnerabilities and structural differences. Finally, these articles boost their econometric techniques such as frequency domain causality and the advanced ARDL approaches to capture various information about economic trades and growth.

3. Data and Methodology

3.1 Data Description

Trade openness effectively drives long-term economic growth for various developing countries because it can boost a country's efficiency, market size, and technology transfer. However, export diversification is essential to mitigate volatility from economic development. However, to analyses the role of these two factors within a country's stabilization and long-term economic growth, here the secondary quantitative method has been followed, where vicarious data have been collected and represented through statistical tests by utilizing STATA software. Within this research the quantitative data have been collected based on the key variables such as economic growth (GDP per capita (log), GDP growth, trade openness (Exports plus Imports, GDP), export diversification (Herfindahl–Hirschman Index, Export diversification index), and some control variables (FDI, Inflation, Human Capital, Gross Capital Formation). In respect of these variables, five years of data have been collected from the year 2017 to 2025. The data have also been collected regarding sixteen developing countries, such as Bangladesh, Nepal, Sri Lanka, Myanmar, Thailand, Indonesia, India, Nigeria, The Philippines, Cambodia, Ethiopia, Madagascar, Uganda, Brazil, Argentina, and Colombia. Moreover, the data or information has been collected by following some effective sources such as the World Bank (WDI), UNCTAD, and IMF.

3.2 Variable Definition

Variables selections are the most essential part within a study because without selecting some effective variables, it is not easy to creatively collect valuable data to justify the importance of the study and conduct effective statistical tests for the research

(Ganesha & Aithal, 2022). Most importantly, within this research, some selected variables are economic growth, trade openness, export diversification, and control variables. However, the reason behind selecting these variables is discussed below.

Economic Growth

Economic growth primarily refers to the increasing production of services and goods over time in a country. This growth is effectively measured by Gross Domestic Product (GDP) or per capita income.

Trade Openness

Trade openness mainly measures how much a country trades internationally, which needs to be relative to the size of the economy (Radmehr et al., 2022). Most importantly, to calculate the ratio of total trade, a formula needs to be applied which is exports plus imports to GDP.

Export Diversification

Export diversification refers to a country's exports beyond a few traditional markets or products to a wide range of services, goods, and destinations (Sarin et al., 2022). Export diversification also helps in reducing the reliance on one single source of revenue, and it is also a significant way of stabilizing revenue and increasing a country's economic growth.

Based on the above definitions, it has been easier to justify the selection behind these variables, and with respect to these variables, the chosen dependent variable was long-run economic growth (GDP growth), and the independent variables are trade openness, export diversification, and other control variables.

3.3 Econometric Model Specification

3.4 Estimation Strategy

In respect of estimation strategy within the study of determining the role of trade openness and export diversification on the long-run economic growth, various statistical tests such as descriptive statistics, correlation, regression, and multicollinearity. Descriptive statistics are primarily conducted to effectively summarize the broad and complex dataset in a structured way. Correlation tests help in identifying the association between two different variables. Regression Analysis also helps in identifying the association between variables by modeling and predicting.

4. EMPIRICAL RESULTS

4.1 Descriptive Statistics

Figure 6: Descriptive Statistics Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Serialnumber	144	72.5	41.71331	1	144
Timeperiod	144	2021	2.591001	2017	2025
GDPpercapit~g	144	7.908491	.9126057	6.12905	9.572145
GDPgrowth	144	3.605228	3.936143	-9.9	10.8
ExportsUSB~n	144	79.59528	100.7868	.7	500
ImportsUSB~n	144	96.35333	132.5505	1.2	658
GDPUSBillion	144	543.3519	770.7621	11.1	3400
Herfindahl~x	144	.4271181	.2577923	.11	.98
Exportdive~x	144	93.14936	5.16272	86.5	111.51
FDI	144	1.074151	.9091989	-.9135556	3.385444
Inflation	144	2.825445	1.929133	-1.128667	6.494766
HumanCapital	144	6.023128	10.32458	-9.5	56
GrossCapit~n	144	8.508659	14.17556	-.1995556	78
GrossCapit~n	144	8.508659	14.17556	-.1995556	78

(Source: STATA)

The above-mentioned Figures showed that Descriptive Statistics Analysis was undertaken in respect to a total of 144 variables, which are structured between the period of 2017-2025. The average time period is shown to be centered around the period of 2021 where the GDP per capita log averaging is at 7.91, indicating that the selected developing countries are indicating a moderate-income level. In the countries, the GDP growth indicates a mean of 3.6 percent with high variability at SD 3.93, which ranges from severe contraction (-9.9) to strong expansion at 10.9. The trade indicators show that the average level of exports in developing countries is around 80 billion USD, and the value of imports are round 96 billion USD indicating a wide dispersion between the small and large economies. GDP values shows to average of 543 billion USD with extremes value from 11.1 to 3400 billion, thus indicating the heterogeneity in economic sizes.

The structural indices show evidence regarding the diversification, which is represented through the Herfindahl-Hirschman Index and the export diversification index average. The Herfindahl-Hirschman index showed a value of 0.43, indicating moderate concentration. In the case of the export diversification index, the average is 93.15, thus showing that the developing countries showed different degrees of import and export. The FDI investment is shown to be modest, averaging the value at 1.07 percent of GDP, with occasional negative values and volatility in capital flow. The inflation average is around 2.8 per cent with occasional spikes over 6 percent. The value of human capital showed a mean value of around 6.02, showing large variation and uneven human capital development in the countries. Similarly, the gross capital formation averages a value of around 8.5 percent, showing a difference in the intensity of investment in the economy.

4.2 Correlation Matrix

Explanation of Preliminary Relationship

Figure 7: Correlation Matrix

	Serial-n	Timeperiod	GDPpercapa-g	GDPgrowth	Export-n	Import-n	GDPUS\$-n	Herfindahl-x	Exportdiv-x	FDI	Inflation	HumanCap-l	GrossCap-n
Serialnumber	1.0000												
Timeperiod	0.0621	1.0000											
GDPpercapa-g	0.2097	0.1508	1.0000										
GDPgrowth	-0.1117	0.0072	-0.2157	1.0000									
ExportsUS\$-n	-0.0000	-0.0034	0.4491	-0.0052	1.0000								
ImportsUS\$-n	-0.0771	-0.0314	0.2783	0.0458	0.8743	1.0000							
GDPUS\$-n	0.0582	0.0277	0.3294	0.0566	0.8663	0.8382	1.0000						
Herfindahl-x	0.0785	-0.0534	0.0466	-0.0986	0.0032	-0.0161	-0.0190	1.0000					
Exportdiv-x	-0.0954	0.0498	0.1883	0.1148	0.6939	0.7375	0.8300	-0.0237	1.0000				
FDI	0.2797	0.0175	0.3863	-0.1128	0.1147	0.1427	0.2335	-0.0288	0.2105	1.0000			
Inflation	-0.8725	-0.0752	-0.2259	0.1569	-0.0739	0.2395	0.0963	-0.0847	0.2318	-0.2417	1.0000		
HumanCapital	-0.1329	-0.0733	-0.0487	-0.0620	-0.2114	-0.2180	-0.2103	-0.0373	-0.0827	0.0940	0.0277	1.0000	
GrossCap-n	-0.3618	-0.0274	-0.0951	-0.0825	-0.2244	-0.2195	-0.2736	-0.0447	-0.1028	-0.0731	0.2166	0.9231	1.0000

(Source: STATA)

The above-mentioned Figure showed the relationship among the variables; here, the GDP per log showed that the positive correlation is shown to be positive correlations to exports, imports, GDP, and FDI. This indicated higher income level association with trade volumes and capital inflows. The GDP growth showed a negative correlation with GDP per capita at -0.22. This indicates lower income tends to grow faster which is shown in the convergence theory. The exports and imports are shown to be strongly correlated at 0.87 and with GDP at 0.84, thus indicating a close link between external trade and the economic size of a country. The export diversification index showed strong cooperation with exports at 0.69, imports at 0.74, and GDP at 0.83, which indicated that the larger developing economies tends to be having more diversified form of export structure.

The FDI tends to have a positive correlation with GDP at 0.23 and GDP per capita at 0.39, showing that in developing countries, capital accumulation rather than immediate expansion of trade. The human capital and gross capital formation indicated a high correlation at 0.92, indicating high skill development with physical capital accumulation.

Multicollinearity Check

Figure 8: Multicollinearity Check Analysis

Total	119.097429	143	.032849155	Root MSE	=	.70828
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	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
GDPpercapitalog						
GDPgrowth	-.0238135	.0159037	-1.50	0.137	-.0552683	.0076412
ExportsUSBillion	.0077663	.0013097	5.93	0.000	.0051759	.0103566
ImportsUSBillion	-.0024622	.0010647	-2.31	0.022	-.0045679	-.0003565
HerfindahlHirschmanIndex	.103181	.2320996	0.44	0.657	-.3558715	.5622335
Exportdiversificationindex	-.0314816	.0180395	-1.75	0.083	-.0671606	.0041975
FDI	.3880739	.0759269	5.11	0.000	.2379037	.5382441
Inflation	-.0526341	.0407284	-1.30	0.197	-.1333878	.0277196
HumanCapital	-.0243881	.0184005	-1.33	0.187	-.0607811	.0120049
GrossCapitalFormation	.0193406	.0138283	1.40	0.164	-.0080094	.0466907
_cons	10.2166	1.594171	6.41	0.000	7.063613	13.3696

Variable	VIF	1/VIF
GrossCapital-n	10.95	0.091297
HumanCapital	10.29	0.097201
ImportsGSS-n	5.68	0.176152
ExportsGSS-n	4.97	0.201335
Exportdivers-x	2.47	0.404454
Inflation	1.76	0.568274
FDI	1.36	0.736152
GDPgrowth	1.12	0.895238
Herfindahl-x	1.02	0.979916
Mean VIF	4.40	

(Source: STATA)

The analysis of the above-mentioned Figure indicates that the Multicollinearity Check Analysis showed that the variables of gross capital formation and human capital formation indicated a high multicollinearity indicating high predictability of variables. The variables of import, export, inflation, FDI, and GDP growth showed the value of VIF less than 5, indicating a mid to acceptable level of multicollinearity. The variables of gross capital and human capital value of (1/VIF) at 0.091 and 0.097 showed a value less than 0.1, indicating problems in the variables. In the analysis of the dataset, the mean VIF value of 4.40 is shown to be below the higher rates indicating the dataset is safe in nature.

4.3 Regression

Figure 9: Regression Analysis

Source	SS	df	MS	Number of obs	=	144
Model	265.695006	10	26.5695006	F(10, 133)	=	1.81
Residual	1949.83536	133	14.6604162	Prob > F	=	0.0642
Total	2215.53036	143	15.4932193	R-squared	=	0.1199
				Adj R-squared	=	0.0538
				Root MSE	=	3.8289

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
GDPgrowth						
GDPpercapitalog	-.697955	.4639289	-1.50	0.135	-1.615588	.2196784
ExportsUSBillion	.0001242	.0091346	0.01	0.989	-.0179437	.0181922
ImportsUSBillion	-.0018662	.0058987	-0.32	0.752	-.0135335	.0098011
GDPUSBillion	-.000302	.0011857	-0.25	0.799	-.0026474	.0020433
HerfindahlHirschmanIndex	-1.332129	1.251136	-1.06	0.289	-3.806828	1.142569
Exportdiversificationindex	.152074	.1206767	1.26	0.210	-.0866199	.3907678
FDI	-.5072563	.4487838	-1.13	0.260	-1.394933	.3804206
Inflation	.3514294	.2196004	1.60	0.112	-.0829316	.7857905
HumanCapital	.1771062	.1814835	1.75	0.083	-.0236243	.3778367
GrossCapitalFormation	-.1625536	.0771855	-2.11	0.037	-.3152235	-.0098837
_cons	-4.269273	11.59855	-0.37	0.713	-27.21076	18.67221

(Source: STATA)

The above-mentioned Figure showed the Regression Analysis that there is a 12 percent variation in the GDP growth at an R^2 value of 0.1199 and the adjusted R^2 value of 0.0538, indicating a limited level of explanatory power. The examination of the individual coefficient has shown that the GDP per capita (log) has a negative but insignificant relationship at -0.698 and a P value of 0.13. Thus, indicating that the richer economy has slowed to grow more slowly, and is consistent with Convergence Theory. The exports and imports are shown to have an insignificant impact, showing that the trade value is not sufficiently indicative in the promotion of trade in developing economies. The export diversification index is shown to have a positive correlation at a value of 0.351 and p value of 0.112, with very limited significance. Indicating the inflation has a positive but insignificant effect, where moderate inflation might result in growth. The gross capital formation showed a significant impact at a value of -0.163 and p value of 0.037. The counterintuitive result might show inefficiency in the allocation of investment for the growth of the economy and trade in developing countries.

5. Discussion of Findings

The Descriptive Statistics, Correlation Matrix, and Regression Analysis provide a nuanced picture of the determinants of GDP growth across developing economies between 2017 and 2025. However, the overall findings reveal a moderate average growth of around 3.6%. In addition, the significant variation in trade flows leads to uneven diversification. However, the test of regression effectively showcases that only 12% of the variance within GDP growth, which suggests that traditional structural and institutional factors can influence this result.

5.1 Comparison with Previous Studies

The result shows that the export diversification index has a positive but statistically significant effect on GDP growth. This result is effectively aligned with the study of Sarin et al., (2022), who effectively argue that diversification can support resilience; however, its impact on growth was dependent on complementary policies. In addition, Mora & Olabisi (2023) also highlighted that the trend cost can limit the benefits of diversification, which is primarily explained by showcasing the weak statistically significant value here. Moreover, Shi et al., (2023) explain that the diversification has strong environmental trade-offs within China, which indicates that the impact of diversification is visible, but it might be context-specific. The negative coefficient regarding gross capital formation effectively contradicts the Theory of Conventional Growth, which suggests that investment can lead to extension. The statistical tests have also reflected the inefficiencies within the capital allocation, measurement of issues, and corruption was effectively aligned with the research by Botta et al., (2023). The researcher sufficiently highlighted that financial allocation without development in productivity can limit the fiscal space. The positive but weak effect of human capital relates to Ferraz et al., (2021), who effectively associate economic difficulties and skills with sustainable growth. The overall results make it easier to understand that education and skills incorporation can boost the productivity of a country.

5.2 Theoretical Implications

Classical Growth Theory effectively predicts that capital accumulation and diversification need to enhance a country's growth. The findings that gained from the statistical tests it has been clear that it effectively contradicts this statement because the investment and diversification show negative association. However, this statement also supports Nguyen & Schinckus (2023) research who argues that diversification cannot guarantee resilience unless economies can absorb global shocks. Moreover, the negative association between growth supports Convergence Theory and GDP per capita effectively aligns with the research conducted by Asongu et al., (2021) regarding the Sub-Saharan African context.

5.3 Implications in Developing Economics

For the developing economies, the various key economic lessons are integrated comprehensively, as mentioned below:

The diversification of exports requires complementary reforms: In developing economies, the expansion of manufacturing is highly important for making the export or trade expansion meaningful. In the absence of industrial upgrades, there might be a rise in diversification indices, but the growth will remain limited.

The efficiency of investment is more crucial than the volumes: The negative coefficient in react of the gross capital development indicated that the simple increasing of investment is not sufficient. The policy must ensure that the movement

of capital in the economy is towards productive avenues. This is shown by fulfilling the opinion of Iskenderoglu (2023), where the competition is shown to be a diversification of outcomes.

Human capital development is important: The marginal significance indicates that human capital is a huge, promising driver for the developing countries' economies. This showed to be in support of the viewpoint of Sharma & Aditya (2023), indicating that ICT and skill development are complementary in the growth of trading patterns in a growing economy.

Importance of Macroeconomic stability: The impact of inflation is shown to be positive but insignificant, indicating that the moderate inflation in developing economies is highly effective in accompanying growth. However, developing economies must take care that excess volatility does not take place because this might reduce the stability of foreign trade and stability in geopolitical areas.

6. CONCLUSION AND POLICY IMPLICATIONS

6.1 Conclusion

Answering Key Findings

The study is focused on analyzing and examining the role of trade openness and diversification of exports regarding the development of long-term economic growth in developing and emerging economies. The main objective of the research is to be two-sided regarding the openness of external trade positively contributing to economic growth and second, whether diversification of exports is effective in establishing resilience and sustainability of growth. The application of panel econometrics techniques for the analysis of data has helped in providing a nuanced insight regarding the complex relationship between trade diversification and development.

The analysis of statistical test such as the descriptive has shown that developing economies are experiencing a moderate level of heterogeneous growth in respective countries. The flow of trade is shown to be widely varying, indicted through the difference in economy and effective integration of global markets. In addition to this, the developing economies export diversification indices have showed moderate level of concentration where a large portion of such countries are dependent narrow range of commodities. The position of the heterogeneity showed the importance of analyzing openness and diversification in trade rather than the policy of isolation.

The analysis of correlation indicted that the larger economies are shown to be more diversified as compared to smaller developing economies, and are shown to be more efficiently integrated in the global economy. However, the variation in the GDP growth has pointed out the importance of structural and institutional growth for effective growth in trade and diversification of economies. The trade openness is directly related to the improved income level of the population in developing economies. However, the factor did not indicate efficient growth in GDP, which signifies that the commodity-dependent developing economy proved to be highly vulnerable to external shocks.

The gross capital formation in the developing countries implied negative position in the statistical research, which pointed out that the inefficiencies in the allocation of investment indicated the need for stronger institutional framework for the effective flow of capital in the productive sectors. In addition to this, human capital in the developing economy indicated a significantly positive effect. This showed the need for developing economies to consider the factors of education and development of skills for ensuring long term productivity and competitiveness.

Research Objectives Implications

The study concluded with respect to the research objective that trade openness in developing countries is not an important factor in the long-run growth. The benefits of trade openness are enjoyed by a developing economy in the presence of factors such as efficient investment, export diversification, development of human capital, and stability in macroeconomic level. In all the factors, the diversification of export is imperative due to critical transmission channels and economic ability in absorbing shock and sustaining growth. Thus, the coordinated application of the factors indicates the requirement for resilience and stability development.

6.2 Policy Implications

Trade Liberalization Policy

The analysis of the study indicated that the developing economies are required to follow the policy of “gradual and sequential form of liberalization” which will help in balancing trade openness with domestic capacity building. The sequential implementation of liberalization will help in attracting foreign investment and allow the integration of developing economies in global value chain. However, there is a point of caution regarding the fact that liberalization is required to be supported by institutional reforms for the mitigation of risk and volatility (cepr.org, 2025). Thus, it is emphasized that the policy of liberalization in the global fragmented position is required to prioritize factors such as resilience and digital transition for inclusive growth.

Export Diversification Strategies

The diversification of exports is shown to be highly important for the developing countries for the reduction of price shocks and external fluctuations. The developing countries are required to expand beyond the primary market and diversify into commodities such as services, manufacturing, and knowledge-based sectors. As per the opinion of Delechat et al., (2024), diversification of business by developing economies in technologically sophisticated industries are shown to improve resilience of productivity and GDP. However, global exports are facing issues such as trade restrictions and discriminatory trade measures, specifically since 2020 to date, about 18000 new discriminatory trade measures have been introduced (unctad.org, 2026). Thus, the export diversification by developing economies must focus on structural transformation to ensure that the movement is towards the value chain rather than the expansion of low value export.

Industrial and Trade Policy Coordination

A coordinated approach between industrial and trade policy is highly important for reaping the benefits of diversification and openness. The industrial upgrading, infrastructure establishment, and development of human capital is required to be aligned with trade strategies for sustainable growth (Ranasinghe et al., 2025). This is the coordinated policy that is highly effective in developing economies for effective capital flow and reduces the inefficiencies and level of corruption.

6.3 Limitations and Future Research

Constraints Faced in Data

The study has generated valuable insight; however, there are several limitations which are required to be addressed. The first limitation is of data constraints, here the analysis is mainly focused on secondary data from various international sources such as UNCTAD, World Bank, IMF, which are highly reliable but in many situations miss the nuanced country-specific information and contribution of informal sectors. The other issues faced were the short time period between 2017 and 2025, which resulted in reducing the ability to observe a deeper structural transformation, which took place over a larger period of time.

Scope for Country-specific Analysis

The other issue was the restriction of the panel to 16 developing countries, which was highly effective in providing a useful and comparative insight, but the major issue was obscuring country-specific dynamics. In this respect, each developing economy has different variety of institutional structures, endowments of resources, and policy environments which impact trade openness and diversification of trade. In this respect, future research can adopt some country-specific or regional-based comparison among developing countries for a more evidence-based approach.

Possible Non-linear and Threshold Model

The econometric framework involved the implication of the policy of a non-linear approach which in many areas was unable to capture various non-linear dynamics in trade and diversification. In a situation, such as the benefits of openness might not materialize beyond a point of institutional policy or diversification. Thus, future studies can focus on non-linear or threshold forms of transition regression or quantile regression for identification of the topic for a comprehensive form for identification of openness and diversification which will be important in influencing the growth.

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