

ORIGINAL CONTRIBUTION

The Dynamics of International Trade, Capital Flow, and Economic Growth in Developing Economies

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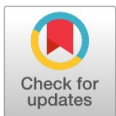
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Abstract— This research aimed to explore the dynamics of international trade, capital flows and Gross domestic product developing economies from January 1, 2013 to Dec 31, 2022. Bivariate and Multivariate Cointegration, Granger Causality, and Vector Error Correction Model (VECM) tests were considered for results calculation. The methodology explored the short/long run and cause and effect relation among variables. International trade and Capital flow integrated financially with international investment of GDP. GDP was showing the growth of investment with capital flow to provide more opportunities for investors. Capital flow and international trade regarding cointegration effect, GDP exposed the relation with these. The Bivariate Co integration of GDP with capital flow and international trade exist. A short run dynamic of capital flow with GDP and GDP with International trade exists. It is implicated that return's behavior regarding investment could be a best for economic upswing and to choose the policies about macroeconomics, financial markets and to choose the best flight for assisting escalation investment process growth, portfolio investment during financial globalization. Moreover, business culture improvements will attract government to regard the multinational and national investors in case of early competition, and economic growth long run.

Index Terms— Economic growth, Cointegration, Capital flows, International trade

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Introduction

International Capital Flow referred to transfer of the right to use of monetary capital among countries (Li, 2018). International Capital Flow are located on continues process and be an essential for financial stability outcomes for massive extend to push through various international factors (Abarca, 2021). The tendency in international factors can have the implications towards liquidity and risk perceptions amongst the international economic situation. The economic situation leads to the volatility in exchange rates dynamics. The growth patterns are the secured haven of currency due appreciation of exchange rate. The stable in currency rate and capital movements for investment in a country. The flow of capital from richer to poorer countries appraised in terms of financing of investment in a country. The non-industrial countries, especially the organization of emerging marketplace economies, have grown to be greater in worldwide financial markets (Prasad et al., 2006).

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The economists and policymakers have become great support of capital-flow management to deal with the poor outcomes of huge and unstable Capital Flow. The stated motive of those current adjustments includes: exchange rate appreciation, portfolio inflows, providing more monetary policy independence, decreasing inflation, decreasing volatility, and decreasing particular measures of economic health (Forbes et al., 2015). The Foreign direct investment as capital flow has performance-oriented implications to excel trade at international level to make profit and growth -orientated economies. The growth in economies is a source of capital flow and international trade. This may be a mutual advantage with inside the global movement of capital (Aziz, 2022; Ghazali, 2010).

The capital flow of funds of the world would be a great source for investors to introduce more new financial products and economies of scale. This has an important aspect in increasing capital resources in developing countries (Khan et al., 2011; Khan et al., 2019). The capital flow as foreign direct investment is ever popular as a tool for economic growth to strength the most positive aspects of implementing FDI to increase in overall productivity, greater employment opportunities, greater export outflows and the exchange of technological progress between investor and receiver (Khan et al., 2012; Khalid et al., 2023). The dynamics of international trade and investment supplied a positive signal to the investors and growth of economies. The era of post financial crisis of 2008 to 2009 which explored the reforms regarding financial affect strategy and monetary reforms in Pakistan. Furthermore, process of transition attributes, the reforms are undergone in economy of Pakistan that bears deregulation in macroeconomies and stable adoption of monetary policies regarding to increase the savings and investments. The short and long run relation was explored and because the VECM and Cointegration test are more powerful to capture the said relation respectively.

The work distinguishes the responses regarding to capture the short run and long run reactions in economy of Pakistan. Then it will boost initial and rapid upturn in early years. To find out the short run relation, the Pakistani economy expose slowly in subsequent years. The idea suggests that either the study explored trade off during time or otherwise? Moreover, the next phase of the country is how to move towards rapid upturn of economy of Pakistan. In this context, clearly stated that either the developing economies will follow the pattern regarding to gain in long run in Pakistan or not? It is a question mark for the economy a debateable phenomenon. The literature explored little regarding to follow financial globalization.

It is focused that the wake of recent financial turmoil, the excessive capital flow regarding developed to developing countries created thrust in financial markets and expose much attention for stakeholders. The economies have been distorted across the borders before the sample period and created bubbles in assets markets. Because of this, the developed economies-imposed restrictions on leading to developed and developing economies regarding to capture the risk on capital flows. Numerous studies have been focused in this context but much focus attract regarding its determinants, on and individual analysis i.e., (Lamsiraroj & Ulubasoglu, 2015; Khan, Akhter, & Bhutta, 2020; Khan, Hussain, & Akash, 2023). The study elucidated the lucriveness of trade, capital flight, and economic upturn in Pakistan between January 1, 2013 to December 30, 2022.

The remainder sections of the research are to explored as section 2 explores literature review, while in section 3 elucidate the methodology, section 4 based on analysis, and finally 5th section explored the concluding remarks of the study. The theoretically and imperially impressions are explored further through literature review.

Literature Review

Ghazali et al. (2010) documented that the World Bank and IMF influence the growth rate of GDP of Pakistan and intervene the short term and medium-term economic management. According to the capital theories capital is also affected by domestic investments. There are two methods of investment such as public investment and human infrastructure. The better infrastructure has more benefits. They study concluded that the local investment will outpace the foreign direct investment. Chughtai et al. (2015) submitted that productive capabilities may be enhanced due to increase in economic culture.

A country's improvements may be measured through human development index, Total factor productivity, and Gross domestic product rate. Li (2018); Muhktar and Bilquees (2019) explored the link between economic development and international capital flow. The economic development may be improved by international capital. Edwards (2007) and Awan and Sadia Mukhtar (2019) examined the capital mobility and its essential features on emerging and transitional economies. The restriction on worldwide economic integration reduces the speculation. Reinhart et al. (2020) examined the world-wide life cycle of capital flows. Particularly the study focused on measurement issues of net versus gross capital flows. Ding et al. (2019), and Khan et al., 2021 examined the changing style of the world trade and capital flow. It's a better option for interaction among trade and financial globalization. The study discovered the relationships and shocks among the agents. To observe the linkage between Capital flow and financial boom is debatable issue from last few decades (Khan, Amir, & Bilal, 2023; Setyowati & Hakim, 2022). The impact of Foreign Direct investment is examined for seventy nations. The study concluded that the Capital flow has a terrible effect on financial boom. Abbas et al. (2011) explored the relational facts regarding Capital flow, CPI's and GDP of SAARC nations. The finding explored that the relation is highly significant with capital flow whereas negative with GDP and CPI. Farkas (2012) documented research to find out the impact of Capital Flow on GDP. The regression technique was applied in the study. The study revealed the results that there is a strong relation among GDP and Capital Flows.

Hameed and Bashir (2012) observed the impact of capital flow on GDP of WANA Nations (West Asia and North Asia) by using econometric technique. The study concluded that the Capital flows affect the economic growth. Further they explored that this impact may vary in the line of region and over time. They also observed that the capital flow is stricken by domestic funding and openness to trade of worldwide. Zeeshan and Attique (2012) explored the linkages of capital flow and GDP in Pakistan. The results of the study reveal that imports substitution and exports-oriented economies are different. Here the Capital Flow spillover effect is higher within side. Moudatson (2001) documented research to explore inflows regarding capital and economic upswing. This study was conducted in fourteen European Union countries. The same study was conducted by Khan, Bashir, and Amir (2023).

The results explored that level of development and economic growth has a significant impact on investment decisions of multinational companies. As a result of these decisions the international and local trades are affected. Chakraborty and Basu (2001) explored the relation between Capital flow and growth in India. The Capital flow is being affected by trade liberalization in short run. Jorshan Shan (2002) examined Capital flow behavior in China by applying Value at risk approach. A two-way relationship was found between capital flow and growth. The capital flow has larger effect on Chinese economy. Liu, et al. (2002) submitted research regarding to explore economic upswing, Capital flow, and exports. The results concluded that there is a casual relationship found among them but the weak relationship among imports and GDP. Athukorala (2003) examined the flow regarding capital, and GDP upturn. He explored positive sign regarding country's GDP upturn. But in case of Sri Lanka, it shows no effect due to bad governance and some other factors. Marwah and Tavakoli (2004) explored that Foreign Capital and imports have strong effect on growth. Henrik and John (2005) concluded in their study that bi directional causality among Capital flow and GDP was found by using heterogeneous panel data.

The study explored that there is long term impact of Capital flow on GDP growth as well as capital flow has this effect through knowledge transfer adoption of new technologies. Yuko and Chia (2006) conducted the study and revealed the results that Capital flow alone is not remedy of economic development. For economic development the host country should consider the infrastructure investment. Khan et al. (2012) elucidated flow regarding capital and found positive sign regarding economic upturn in host countries. The key components include money, technology management market access. Su and Nguyen (2020) documented a study to examine the relationship among flow regarding foreign financial, economic upswing, and human capital in countries of Africa. The study took 38 African countries and data for period from 2002 to 2017. The GMM estimator and Fixed panel quintile regression was used in their study to find the results. They explored that flows regarding foreign financial are in fact differently in relation regarding to human capital, and further in contact with economic upturn. Baquero and Santolino (2022) conducted a study to explore the investment flows effect through domestic savings. Cross sectional method and vector auto regression models were used to analyze and test. Markets, and generated flow of capital in liberalized environment is not enough, and considerable. Kohler (2022) examined the flow regarding capital, and dynamics of economics uneven geographically. Coherent balance sheet accounting was used to observe the three theoretical claims. He explored that asset market for FDI flows separating flows regarding net, and bank focus to gross portfolio (Amir, Bilal, and Khan, 2023). Akash et al. (2011) explored relation regarding to returns of stock, and macroeconomic variables. They took data for a period from 1999 to 2008 and applied Co-integration and Granger causality test for this examination. The study found the lead lag unidirectional relationship of macroeconomic variables with stock return.

Hamid et al. (2011) documented research on behavior regarding to market's value, social performance regarding corporate, and financial subsequently. They took 166 list companies Karachi stock exchange of Pakistan. The interactive equation structural model has been applied in this study. The study concluded that corporate social performance has no impact on financial performance. Hussain et al. (2011) explored Day of the week effect and stock returns of Karachi Stock exchange of Pakistan. The Data was taken from 2006 to 2010 and regression analysis were performed and found Tuesday effect. Akash et al. (2018) elaborated markets regarding to expose dynamics research for America, Asia, and Europe. They took data of markets from 2006 to 2018 and applied co integration and granger causality test for observation. The relationships of different markets found in the study. Akash, Ghafoor, and Ahmed (2020) explored a study on testing the purchasing power parity and exchange rate behavior. The data from 2001 to 2018 was taken and co integration analysis was conducted in this study. The study concluded that there is an equilibrium between China and Pakistan and Iran and Turkey. Akash, Ghafoor, and Saddique (2020) conducted a study to explore capital structure regarding related firms, attributes regarding industry, and conditions regarding macroeconomies. Data regarding Pakistan stock exchange of Pakistan was taken from 2012 to 2017 and applied seemingly unrelated regression model for test. The study concluded that financial market's innovation significantly exposed cost, and distress regarding financial streams. Khuram, Hamid, and Akash (2019) documented research to explore transmission disparities, integration regarding to hit financial and market efficiency. The data of D-8 developing economies were taken from 2011 to 2016 and applied Unit root test, co integration, granger causality, VECM and impulse response tests. The study found there is mix evidence of market efficiency of D-8 developing economies.

Data and Methodology

The Data is taken from January 1, 2013 to Dec 31, 2022 for Pakistan. Returns explored as under.

$$RE_t = Ln\left(\frac{EP_t}{EP_{t-1}}\right) \tag{1}$$

RE_t is the return and “t” being the period, EP_t is the ending price of current year and EP_{t-1} is the ending price at last year. The stationarity of data series is observed through ADF (Augmented Dickey Fuller -1981) and PP (Philip Perron test-1988) are applied to test a unit root of the series.

$$x_t = px_{t-1} + \varepsilon_t \tag{2}$$

Where x_t a dependent variable, t time length period, p is coefficient and ε_t is the error term. To test the unit root three regressions equations are tested. If constant and trend are not present then equation as follows:

$$\Delta x_t = \delta x_{t-1} + \varepsilon_t \tag{3}$$

Constant is explored as α then equation is as follows.

$$\Delta x_t = \alpha + \delta x_{t-1} + \varepsilon(t) \tag{4}$$

The trend regarding constant is exposed as following.

$$\Delta x_t = \alpha + \beta F + \delta x_{t-1} + \varepsilon_t \tag{5}$$

To expose long run relation, the Johanson and Juselius (1990) where α_0 is constant, β_1 is coefficient of Y_t and ε_t is error term.

$$x_t = \alpha_0 + \beta_1 Y_t + \varepsilon_t \tag{6}$$

The equation regarding cointegration λ_{trace} Statistics is used as follows.

$$\lambda_{trace} = -Q \sum_{i=r+1}^{jLn} (1 - \lambda_t) \tag{7}$$

The equation regarding co integration, Max Eigen Value of $\lambda_{Maximum}$ statistics is used as follows.

$$\lambda_{Max} = QLn(1 - \lambda_t) \tag{8}$$

Bivariate Autoregressive (Pair wise) process explored on particular sample. The particular equation is derived as to determine the effect in long run.

$$\alpha_0 + \sum_{i=1}^j QY_{t-1} + \chi_i Y_{t-1} + \varepsilon_t \tag{9}$$

$$K_t = b_0 + \sum_{i=1}^n L_{it-1} + \sum_{i=1}^{n_t} Y_{t-1} + \varepsilon_t \tag{10}$$

Where Y_1 and Y_2 follows the assumptions regarding two series that is cointegrated and Δ is explored at first difference. Integration of series will lead error correction model. The equation is as under.

$$\Delta y_{2t} = b_0 + \delta_2 (y_{1t-1} - Ly_{2t-1}) \sum_{i=1}^n b_{1i} \Delta y_{1t-i} + \sum_{i=1}^n b_{2i} \Delta y_{2t-i} + \varepsilon_{2t} \tag{11}$$

To find out the relationship between y_1 and y_2 , the term $y_{1t-1} - Ly_{2t-1}$ is a term of an error correction term.

Empirical Results

ADF (Augmented Dickey Fuller) and PP (Philip Perron Test) are the test of stationarity. Table I, the results explored that GDP, CF, and IT were found stationary among series.

Table I
ADF and PP Test

Equity Markets	Augmented Dickey Fuller Test at Level of 5%	Philip - Perron Test at Level	
Gross Domestic Product (GDP)	-52.7864	-54.6543	
Capital Flow (FDI)	-57.5083	-59.5897	
International Trade (IT)	-62.3214	-65.2134	
	Critical Values		
Probabilities	1%	5%	10%
ADF at Level	-4.03096	-3.44228	-3.14721
PP at Level	-4.03096	-3.44228	-3.14721

Table II explored the results regarding co integration test of Trace statistics of economic factors. A Cointegration explored as the return's series found the trace statistics values > critical values.

Table II
Johanson Multivariate Cointegration (Trace Statistics)

Economy Variables	Hypothesis No. of CE(s)	Eigen Value	Trace Statistic	At 5% Critical Value	Critical Remarks
CAPITAL FLOW WITH INTERNATIONAL TRADE AND GROSS DOMESTIC PRODUCT					
Gross Domestic Product (GDP)	None	0.2467	5410.6543	NA	In this there exist 3
Capital Flow (FDI)	At most 1 *	0.1895	3462.3323	197.3709	Co-Integration Vector at Critical
International Trade (IT)	At most 2 *	0.1941	4134.2143	125.6154	level of 5%.

Significance level regarding 5% expose separate domain that trace statistics > critical value, and Asian markets having relation regarding cointegrated vector for GDP. Table II. explored same the equity market's regarding European. Vector regarding to explore cointegration, 8 exposed. Factors regarding economic relation, cointegration explored preceding regarding to cause, and effect for economic factors. Investor's decisions regarding risk elucidated diversification, and positive signal in America, and Europe markets and explored integration with GDP.

Table III
Johanson Multivariate Cointegration (Maximum Eigen Value)

Economy Variables	Hypothesis No. of CE(s)	Eigen Value	Max. Eigen Value Statistics.	5% Critical Value	Critical Remarks
CAPITAL FLOW WITH INTERNATIONAL TRADE AND GROSS DOMESTIC PRODUCT					
Gross Domestic Product (GDP)	None	0.2467	875.5329	NA	3 Co-Integration Vector
Capital Flow (FDI)	At most 1 *	0.1895	783.5218	58.4335	explored at Critical
International Trade (IT)	At most 2 *	0.1941	498.0677	46.2314	level of 5%.

Table III explored suggestions to investors upon maximum eigen value > critical value at 5%, 10 co integrated vectors observed that leading them that decisions regarding diversification, and activities are implicated and enhanced for investors. CF, and IT explored cointegration with GDP in long run, and European's markets regarding the results of Bivariate test.

Table IV
Bivariate Cointegration

Economy Variables	Hypothesis	Eigen Value	Trace Statistics	At 5% Critical Value	Critical Remarks
GDP -CF	None * At most 1 *	0.1659 0.1351	1234.2537 675.5491	17.5632 4.3416	Co-integration Exist.
GDP -IT	None * At most 1 *	0.2375 0.1392	1543.0768 5212.9104	14.3190 5.2718	Co-integration Exist.

The results explored those decisions regarding lag length supports GDP in short run relation at 2 instead of 1. This argument exposed the facts that lag length 2 regarding IT, and lag length 1 regarding CF leading short run relation with GDP that is the roots for economic upturn.

Table V
Granger Causality

Null Hypothesis	F-Statistics	Prob
CF does not Granger Cause GDP	3.98765	0.04412
GDP does not Granger Cause CF	2.76589	0.03701
I.TRADE does not Granger Cause GDP	6.09829	0.01948
GDP does not Granger Cause IT	2.73567	0.02759
I.TRADE does not Granger Cause FDI	4.89765	0.02891
CF does not Granger Cause IT	3.05217	0.04893

The granger causality is used to analyse the lead lag relationship of variables. This is conducted in pair from 1st pair is FDI and GDP, 2nd pair is Trade and GDP and 3rd pair is Trade and FDI. Table V explored the economic factor short run relation with GDP. Lag length 2 for CF, and lag length 1 for GDP explored that GDP deserves for short run relation. Table V further explored the IT, and CF results regarding GDP in terms of VECM. Results elucidated that lag length 2, and 1 regarding IT, and CF exposed short run relation of GDP respectively.

Table VI
Vector Error Correction Model of GDP with CF and IT

Error Correction:	D(GDP)	D(CF)	D(IT)
CointEq1	[-0.76543]	[-0.30471]	[18.4219]
D(GDP(-1))	[-0.854324]	[-2.03480]	[-22.5432]
D(GDP(-2))	[0.876342]	[-2.08675]	[-12.8654]
D(CF(-1))	[-0.52613]	[-2.07843]	[-26.7543]
D(CF(-2))	[0.08765]	[-2.07490]	[-14.6789]
D(IT(-1))	[-1.28543]	[-0.64765]	[4.90619]
D(IT(-2))	[-0.52178]	[2.29456]	[1.90543]

It is documented that lag 2, and 1 both exploring lead lag relation of CF with GDP in short run. Lag 2, and lag 1 defines GDP, and CF results that these have short run relation, following lag length. So, decisions regarding diversification for activities of trade explored signals for investors to follow the lag relation, and improve the economic upturn, policies limited in economic factor regions. As a matter of facts, the results explored that the short run relation capturing the factors of economies like as the results matched with Khan, Akhter, and Bhutta, 2020. In Pakistani context, the policy makers would make the best portfolio diversifications strategies to boost the trend of investment and internationally.

Conclusion

In this research of economic growth perspective of developing economies, is risky as concern to other economies. As a matter of fact, as traditional rational in financial economics is more, high risk, high returns or otherwise, is explored the matches. The Capital flow is highly risky in developing economies as compared to developed economies due to positive return and growth in investment. The facts explored that dynamic relation regarding economic factor in developing economies following short/long run relation. Risk explored decisions for investors regarding to diversify, economic road map, investment, trade, and it follow positive signals. The capital flows and international trade is utilized for financial economic integration at international level. The value creating dynamics of financial economic globalization will lead the high growth to make a high link of international economies because of high implication at global level. The economic globalization across the borders due to financial economic integration related to international capital trade flows to enhance the Foreign Direct Investments (FDI). The capital and trade flows are used to enhance in growth contributions. The GDP as proxy of growth contributions to capital flows investments at global level.

Implication, Limitation and Future Directions

It is implicated that the favorability in taxes, tariffs, labour cost and control over capital flows because of financial economic integration concerned to turn down the exchange rate. The depreciation in rate of currency may lead to improve the international trade and investment growth transmission. Moreover, the international capital flows are seeming to be a growth relevance process. However, GDP as growth this being support to space to the investment of investors to better perform. The global effect is a key concern of every investor while they involved in national and international trade. The policy makers, regulators and key stakeholders in other countries of the world will follow this study to explore the macroeconomic growth related to economic conditions in future.

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