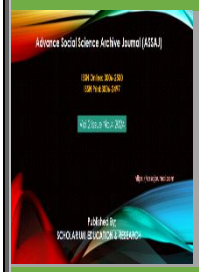

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THE IMPACT OF FOREIGN CAPITAL INFLOW ON ECONOMIC GROWTH IN PAKISTAN: A TIME SERIES ANALYSIS

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ABSTRACT
This research analyses how economic growth (Real gross domestic product) responds to the symmetric as well as asymmetric inflow of foreign capital (Foreign Direct Investment and Official Development Assistance) in Pakistan. For this purpose, data has been selected for the FY 1980-81 to 2021-22 and the data sources are World Bank Development Indicators (WDI) and the various issues of Economic survey of Pakistan. The net inflow of FDI and ODA received is deemed as the foreign capital inflows. The results revealed the existence of cointegration between the foreign capital inflows and real gross domestic product in Pakistan. Moreover, comparing component wise symmetric impact of FDI is positive and growth inducing however, while the impact of ODA is contrary to the FDI. The asymmetrical impact reveals that as compared to the inflows of foreign capital any reduction in foreign capital effect the economy more adversely. In this scenario government and policy makers of Pakistan should adopt Investors friendly policies to fascinate more investors as compared to depend on ODA.
Keywords: Economic Growth, Foreign Capital Inflow, Foreign Direct Investment

1. Introduction

The role of Capital and capital formation is very significant in the economy. The key factors that foster the process of capital formation in any country are economic, political, and institutional. Particularly, in capital deficit economies, the importance and influence of foreign financial resources are manifold in the growth process. It promotes and strengthens the financial system, modern technologies, employment opportunities, borrowing costs both for the government and corporate (Edwards, 2007). For economic growth the necessary components along with foreign capital inflows are investment on physical infrastructure and on human development, increase in saving rate, trade intensity and macroeconomic constancy (Ejigu, 2015). The foreign

capital inflows comprise of various forms including FDI, Foreign portfolio investment and ODA. The various modes through which foreign capital (FDI) can impact the economic growth includes transfer of new technological know-how, development of human resources, incorporation into new global economy, augmented war in the host country, the expansion and reformation of firms, effort in operation of economic policies and growth in capital for investment (Mahembe & Odhiambo, 2014).

Along with FDI, foreign portfolio investment (FPI) is another mode of investment in a foreign economy. In FPI the investors acquire some monetary assets or security/bonds in another country but unable to get the direct ownership of company's assets therefore it is liquidity depends on the volatility of the financial market (Tsaurai, 2017). To finance the economies both FDI and FPI are imperative sources. The foreign portfolio investment can leads to economic prosperity through capital market development for instance by improving financial institutions and its institutional regulations, by enhancing the confidence of financial investors, by taking suitable measures to corporate controls, and by resource mobilization which is necessary for economic growth (Errunza, 2001), while the ODA is provided to developing countries by the member countries of OECD-DAC in the form of concessional loan or official aid spending. It can be provided bilaterally from countries or multilaterally through financial agencies such as World Bank, regional development banks or through united nation organizations (Joseph, 2014).

In the context of Pakistan, the foreign capital inflow (FCI) has an important role to attain economic development. Pakistan has to depend on FCI due to the deficiency of capital including both human and physical and instability of political and macroeconomic indicators (Mohey-ud-din, 2012). Moreover, it is important for the developing countries like Pakistan to overcome the major economic gaps which are caused by low level of saving and investment, net export gap and lack of technological know-how are less to required level (Waheed et al., 2006). Over the years Pakistan is receiving foreign capital, in the form of FDI, worker's transfer of funds and foreign aid. Similarly, Portfolio investment will support the capital structure by improving the managerial encouragements and organization's value. Rise in FPI can consequently improve the Pakistan economy as it can lead to improved job opportunities, commercial sector development, rise in per capita income, GDP growth, exchange rate balance, and balance of payment enhancement etc. (Chaudhry et al., 2018).

Some modes of capital which is received from overseas in term of worker's remittances, external debt and FDI hinder the long run growth (Ali, 2014). Likewise, in another study the findings reveals that ODA's role is greater than that of FDI, which indicates that our economy is showing the risk of extra reliance on foreign aid which is not a reliable source as it might cause to destabilize the economy at any time (Shah et al,. 2012). In

a comparative study the results depict that total aid including foreign and bilateral aid received from United States and United Kingdom does not lead to economic growth while the multilateral aid received from Japan significantly improves the growth rate (Sultana, 2019). FDI and foreign aid doesn't have contrary impact on economic growth because FDI and Export are helpful to boost up the economy on the other hand foreign aid hinders the economic growth and it exerts insignificant effect on the economy (Khan & Ahmad, 2007). Similarly the contribution of ODA in the economy also vary, it depends upon the time frame, the effect of ODA is more progressive and influential in long run as compare to the short run period and the reason behind it is in the long run ODA is utilized to finance the investment for a long growth period Edwards, (2007) and (Ejigu, 2015). The direct and indirect Capital inflows comprise various forms of capital. As our country is mainly a labor intensive economy and is not doing as much progress in capital intensively, therefore it has to rely on the foreign inflows that are coming from other developed to developing countries (Raza et al., 2011). For centuries the topic of foreign aid, economic growth and development has remained controversial as for some researchers are in support of foreign capital for economic growth while the opponents believe that too much reliance on capital received from other nations makes the economies weaker.

The theoretical and empirical studies related to the influence of foreign aid on the economic growth of Pakistan have revealed sundry conclusion as few research found negative relationship between foreign aid and economic growth, hence this study has tried to dig out the study gaps by analyzing the time series data by constructing an index of foreign capital inflows like FDI and ODA than checked its influence on real GDP of Pakistan. Secondly all the past empirical studies used the traditional regression model to assess the nature of relationship between foreign capital and the economic growth and analyzed the linear functional form, but this study has tried to cover up the methodological gap as well, by analyzing both the symmetric and asymmetric influence of foreign capital on the economic growth during the past forty years from 1980 to 2021-22, in Pakistan. Lastly, the current research has contributed to existing literature by developing a new comprehensive index for foreign capital (FDI & ODA).

2. Literature Review

2.1 Theoretical studies

This section comprises of literature about the notion of economic growth and the factors which effect on it. Sahoo & Sethi, (2017) studied the economic growth model proposed by Roy F. Harrod and Evsey Domar, where they considered capital as the vital factor for both economic growth and development. This model explains that growth dependency associated with the number of labor and capital like greater the

investment will automatically results to increase the capital, which help to improve the growth rate. The study of Awad, (2021) found that foreign capital including foreign assistance and loans, net exports, transfer funds and FDI are the useful apparatuses to attain foreign capital and to shape up the reserves in the sub-Saharan countries. Yet, the determination of foreign capital inflows and its positive and negative effect in the development process of developing countries remains a cynical issue. Likewise, Sahoo & Sethi, (2017) found that with the emergence of economic and global incorporation, the significance of foreign capital is increasing in the development process of developing countries. For instance, India is indispensable as present-day trend of monetary globalization, and its outcome has been based on the hypothesis that greater the foreign capital inflows will lead to the economic growth of that recipient country.

Nthangu & Bokana, (2022) and Murshed & Khanaum, (2014) identified the contextual differences on impact of foreign capital and found that sub-Sahara countries are the major recipient of foreign aid but still show the poorest economic condition. The underlying reason for this disparity is the absence of proper mechanism to manage the aid programs, inefficient disbursement strategies and corruption of officials. The governments in these countries utilize foreign aid to help the budget constraints which ultimately leads to enhance the government consumption.

Wang et al., (2021) described the FDI is reflected as a vital part of economic growth and the financial globalization procedure because FDI can take along the much-needed foreign capital, innovative technology and better managerial skills into the country. Shittu et al., (2020) explained the importance of FDI for the technology-deficient country as FDI includes the transfer of technology but FDI also has multifaceted effect through increasing the job opportunities, capital formation, enhancing the economic productivity, and can help to improve management skills.

Thapa et al., (2020) differentiated the modes of foreign aid repayment, the hard loans are the type of loan which must be refunded in the imported currency, while the soft loans are refund in the home-based (recipient country's) currency. The World Bank offers hard loans. For Aziz & Anwar, (2019) foreign portfolio investment (FPI) is a mode of investment that includes the acquisition of bonds, stocks or currency are the market devices which can be used for limited time period in a foreign country. It is favorable for the short-term investors due to the opportunity of exchange rate and profitable interest rate therefore it provides an ample opportunity to attain higher return in foreign market.

Antonio & Garcia, (2017) and Thapa et al., (2020) reviewed the studies on foreign aid and found that the aid supporters are likely to stress on the consequences of foreign aid because foreign aid argues is an essential part in the economic development and it is the driving force for economic growth and development, while the opponents focus on the incentives which is somehow positive in few fields but mostly it is found inefficient so instead of leading to economic development foreign aid causes poverty and lowers the rate economic growth. They termed it "Dutch disease" because due to dependency on foreign aid creates many issues like corruption and restrictions on exports in poor countries like African countries.

Hussain et al., (2016) presented the sunny side of the inflow of foreign capital as it helps to attain the millennium development goals like economic empowerment and economic development. Likewise Evans, (2002) concluded from his study that there are huge benefits of both FDI and foreign portfolio investment and these two can simultaneously lift the economy up. Therefore, there should be no discrimination in one type of investment on the other. But the recognition of the differences between these two types of investment is necessary for policy formation.

2.2 Empirical studies

Aziz & Anwar, (2019) found that variables like trade openness, real gross domestic product and market capitalization can promote FPI and can be significantly affected, while inflation rate have negative and significant relationship with FPI. Albulescu, (2015) tested the effect of the FDI and FPI on the economy using a panel context through GMM approach. The study considers equity and investment funds as instruments which amends the endogeneity issues between growth and investment. Some variables were chosen as control variables like exchange rate, unemployment, interest rate, inflation, and Literacy and energy consumption. The result also depict that the encouragement programs should be concerned with investments. Similarly, the study of Agbloyor et al., (2014) results revealed that the impact of private capital flows depends upon the domestic financial market situation, like in countries having strong financial market may support the foreign capital as it promotes economic growth because as compared to the countries which possess week financial market. In the same way Ali, (2014) study found that in Pakistan foreign capital is unable to produce a productive effect on the economy for a long-term period while in the short term there is evidence of unidirectional interconnection of FDI, education (literacy) debt services and inflation to growth while bidirectional causality found between remittances and growth. Javid, (2016) study revealed that in Pakistan FDI can induce economic growth in every period whether it is in long run or in short run remaining

variables like inflation and population also shows important effect on GDP in the long run while gross capital formation and trade have no significant impact on economic growth of Pakistan.

Raza et al., (2011) studied the time series data to explore the effect on the economy due to the inflows of foreign capital; he selected the data of 25 years from 1985 to 2010, through regression analysis. It concluded that FDI, foreign portfolio investment and remittances can induce constructive and important effect on economic growth. On the other hand, foreign aids have shown significant but negative relation with economic growth. Therefore, these findings recommend that we need to improve our domestic resources instead of relying on foreign aid.

Sabra & Eltalla, (2016) tried to find the association of foreign aid, foreign stock, domestic savings and economic growth in few selected Muslim states for the years 1977-2013 by using simultaneous equation model and dynamic panel data analysis techniques. They found an undesirable association among these variables. This negative association may be linked with the presence of Dutch disease or poor economic policies. Besides this foreign aid shows crowd out the domestic savings instead of supplementing it, few selected variables like international business openness and domestic investment have shown positive and significant impact on the growth of the economy.

Durham, (2004) studied the effect of FDI and Foreign Equity Portfolio Investment (EFPI) on the economy of 80 different states for the period from 1979-1998. The study found that FDI and EFPI have not shown direct and absolute influence on economic growth. But few evidences depict the role of FDI and EFPI depends upon absorptive capacity of countries which are associated with the development of financial institution. In addition to that, the results of extreme bound analysis estimates are robust as compared to empirical studies on growth.

Ali, Najabat and Hussain, (2011) found that FDI as a driving force in the prevailing global economic integration; to analyze this statement in context of Pakistan a time series study was conducted for the period 1991-2015 by using Regression analysis and Correlation measurement to assess the data. The outcomes show a positive impact of FDI on economic growth. Therefore, the government should take measures to attract foreign investors by developing the domestic markets.

Similarly Tsaurai, (2017) researched to assess the situation of economic expansion in the presence of foreign portfolio investment in 14 different countries from Asia and

Europe, which he thought as emerging markets and used Generalized method of Moment (GMM) technique. From this study it is found that foreign portfolio equity investment has progressive relation with economic expansion, and it seems logical as in the study 'Bonds' which are considered as a stable form of foreign portfolio investment is excluded, and the emphasis was only on the portfolio equity investment which is considered as the volatile part of the foreign portfolio investment.

2.3 In the context of Pakistan

Hussain et al., (2016) found that to manage strong economic policies and its useful implementation is required to attain positive effect of foreign capital inflow on economic progress which leads to reduction in the rate of inflation and open opportunities for FDI and trade openness. Pakistan receives inflows through uneven and unpredictable sources therefore to ensure economic growth through foreign inflows more focus is needed to improve the sources like portfolio investment and export. In the same way Raza et al., (2011) analyzed various literatures to review the effectiveness of economic growth of Pakistan and they found that foreign portfolio investment, FDI and transfer payments have positive and vital effect to lift the country's economy up whereas foreign aid shows significant but negative effect on economic growth.

Likewise, Awan & Moeen-ud-din, (2015) highlighted the lapse in the economic policies regarding foreign aid, he concluded that a major portion of the foreign aid is spend on non-developmental expenditure instead of development expenditure that's why Pakistan's economy is unable to expand even in the availability of foreign aid. Yousfani et al., (2019) suggests that FDI may do well because it leads to higher consumption and more investment in the short term while in the long term the consequences may be other way round. Likewise, Pakistan witnessed low growth rate during the period of 2001-2016 due to many macroeconomic factors that causes lower rate of FDI inflow to Pakistan. The empirical findings of Sultana, (2019) anticipated that in Pakistan the bilateral aid as not supportive to economic growth while multilateral aid meaningfully leads to economic growth. It could be due to two major reasons the bilateral aid is mainly utilize to cut the liabilities and donations to the country on the charitable basis, while the multilateral aid is used to expand economic and social infrastructure. Javid, (2016) studied the importance of political stability and worth of institutions in the recipient country to attract the multinational companies for investment and found that FDI is directly associated with political stability, presence of religious and ethnic harmony and self-governing accountability which is rarely observed in Pakistan. Therefore, we received not as much FDI as compared to the neighboring countries.

3. **Research Methodology**

The current research explores the economic growth in Pakistan with respect to foreign capital inflows from the FY 1980 - 2021. The nature of the selected data is secondary and has collected from World Bank Data Index and Economic survey of Pakistan. The measuring unit of all variables is US$ and an index has been constructed to check the symmetric and asymmetric effect of FDI and ODA on economic growth rate (GDP, per capita).

Table 1 Description of variables

Variables	**Description of indicators**
$\ln Y_t$	The indicator for the economic growth (Real GDP per capita)
$\ln Sk_t$	The indicator measures the share of resources devoted to capital stock development. (Gross capital formation as percentage of GDP)
$\ln Sh_t$	An indicator measures the share of resources devoted to human capital stock development. (Spending on education as a fraction of GDP)
$\ln FC_t$	Index measuring the size of foreign capital inflows, expressed as percentage of GDP. We are using two indicators to construct this index. First, is the FDI net inflow, presented as the percentage of GDP $\ln \ln (FDI_t)$ and second is net ODA ODA_t) received as percentage of Gross National Income (GNI).
$\ln (n + 0.05)_t$	The population growth rate and 0.05 percent depreciation of capital stock, to measure the share of investment required to keep up the existing per capita capital stock.

Note: All the data are collected from WDI and Pakistan Economic surveys

3.1 **Econometric Tools**

3.**2 Unit root test**

The Augmented Dickey fuller test and Phillip – Perron tests were also conducted to test the presence of stationarity in the selected data. It is a reliable tool to statistically assess the stationary of the data series.

3.3 Zivot-Andrew Test for Structural Break

(Waheed et al., 2006) and (Harvie et al., 2006) identified the conventional unit root test like ADF or PP test may overlooked the chance of structural break as these test supposed the break time in the time series data is an exogenous phenomenon. Therefore, Zivot-Andrew structural break test is applied to assess the break time in the selected time series data. Zivot and Andrews proposed a structural break model in three different conditions:

Situation 1: when change/structural break is allowed at the level of the series.

$$\triangle yt = \mathrm{K} + \alpha yt - 1 + \beta t + \gamma \mathrm{D}Ut + \sum_{j=1}^{K} dj \triangle yt - j + \mathcal{E}t$$

Situation 2: when change/structural break is allowed at the slope of the trend function,

$$\triangle yt = \text{K} + \alpha yt - 1 + \beta t + \theta DUt + \sum_{j=1}^{K} dj \triangle yt - j + \text{Ɛ}t$$

Situation 3: when change/ structural break appears both at the slope of trend and level of the series simultaneously.

$$\triangle yt = \text{K} + \alpha yt - 1 + \beta t + \theta DUt + \gamma DTt \sum_{j=1}^{K} dj \triangle yt - j + \text{Ɛ}t$$

For this study we are following situation 3, to assess the changes in level and slop of the trend function simultaneously.

3.4 Econometric model for Non-linear ARDL/Bound testing cointegration technique

To explore the linear and non-linear relationship between the variables, the Non-linear autoregressive distributed lag model (NARDL) and Auto distributed Lag (ARDL) model has been adopted. Rocher, (2017) also preferred the NARDL model because it allows for displaying asymmetric nonlinearity and cointegration among the causal variables at the same time in one equation and through this method we can also estimate cointegration by adopting Engle-Granger and Johansen cointegration methods. In contrast to the ordinary least square method, time series analysis doesn't assume causality, but it allowed the data or variables to adopt the causality chain. This is the major advantage of time series method over the standard regression analysis (Akhter & Masih, 2019). Shin et al., (2012) proposed the NARDL model to find the asymmetries among the independent and dependent variables. By following him here, the NARDL model has been used to know the impact of partial positive and negative sum decomposition of FDI and ODA on real GDP, in both short and long run.

3.5 Generic Model

The proposed generic model for the study is,

$\triangle$yt= $^{\Phi}yt - 1 + \theta^{+}x_{t-1}.\ x^{+}{}_{t-1} + \theta x^{-}{}_{t-1} + Z_{t-1}^{n} + \sum_{j=1}^{p=1} r_j \Delta y_{x-j}\, r_j + \sum_{j=0}^{q-1} \emptyset^{+} \Delta x_{t-j}^{+} + \emptyset_j^{-} \Delta x^{-} + \varepsilon_t$ (eq1)

Here, yt is real GDP per capita (log value), $x^{+}\ and\ x^{-}$ is index of foreign capital i.e LIFC+ and LIFC-, while Z represents all other variables of model.

3.6 Empirical model

$\Delta lrgdpc = \theta o + \rho lrgdpc - 1 + \theta_1^{+} ligc - pos_{-1} + \theta_2^{-} lyc - neg_{-1} + \theta_3 Z1_{-1} + \theta_4 Z2_{-1} + \theta_5 Z3_{-1} + \theta_6 Z4 + \theta_7 Z5 + \theta_8 Z6 + \varphi_1^{+} \Delta lisc^{+} + \varphi_2^{-} \Delta lisc^{-} + \varphi_3 \Delta lngdel + \varphi_4 \Delta Z_1 + \varphi_5 \Delta Z_2 + \varphi_6 \Delta Z_3 + \varphi_7 \Delta Z_4 + \varphi_8 \Delta Z_5 + \varphi_9 \Delta Z_6 + \varphi_{10} \Delta Z_7$ (eq2)

In eq2, Z includes a set of variables which is derived from MWR growth model and the control variables. These are Z1= ggcf, Z2=lnedu, Z3=lngdel, Z4=leer, Z5= ldcps, Z6=lgvex

3.7 Principal component analysis (PCA)

Principal Component Analysis (PCA) is a broadly used technique due to its simple idea i.e. reduction of the dimensionality of a dataset without destroying 'variability' or the statistical data as much as possible. Therefore, the current study has used PCA for Index formation **as proposed by** Jollife & Cadima, (2016) and Todorov et al., (2018)

4. Data Analysis and Results

This part of the research comprises data analysis including pre-estimation diagnostic tests, econometric techniques, and post estimation diagnostics tests.

4.1 Pre-estimation Diagnostics tests

The Unit root tests are the preliminary tests to be carried out at the outset of any time-series analysis. Therefore, we performed ADF unit root test and PP Unit tests and Zivot-Andrew structural breaks.

4.2 Summary of the Unit Root Tests

Table 2 Consolidated Summary of Unit-Root tests

Variables	ADF-Test	PP-test	SB-year
$ln\ Y_t$	I(1)	I(1)	1997***
$ln\ Sk_t$	I(1)	I(1)	2010**
$ln\ Sh_t$	I(0)	I(0)	2000**
$ln\ FC_t$	I(0)	I(0)	2005**
$ln\ ODA_t$	I(0)	I(0)	2001**
$ln\ FDI_t$	I(0)	I(0)	2009**
$ln\ Gexp_t$	I(1)	I(1)	2005***
$ln\ DCp_t$	I(1)	I(0)	2003**
$ln\ Goer_t$	I(0)	I(0)	2001**
$ln\ Reer_t$	I(0)	I(0)	2002
$ln\ (n+0.05)_t$	I(0)	I(0)	2006***

Table 2 depicts the consolidated summary of the results obtained from the unit root tests which are ADF, PP and SB years. The result represents the mix order of integration of the variable including $ln\ Sh_t$, $ln\ FC_t$, $ln\ ODA_t$, $ln\ FDI_t$, $ln\ Goer_t$, $ln\ Reer_t$ are stationary at level while few variables like $ln\ Y_t$, $ln\ Sk_t$ and $ln\ Gexp_t$ are stationary at first difference and their order of integration is I(1). The result indicates that the Autoregressive Distributed Lag model (ARDL) can be applied here to further explore the model. As the required condition to run ARDL is, all the variables must be having a mix order of integration either at I (0) or I(1) and any variable mustn't be on I(2)

4.3 Post-estimation Diagnostics tests

This section comprises of post-diagnostic test which is further distributed in four models.

1. To measure the effect of foreign capital and other independent variables on real GDP through autoregressive distributed lag model

$lnY_{t-1} = \alpha_0 + \alpha_1 lnY_{t-1} + \alpha_2 \ ln\, Sk_{\ t-1} + \alpha_3\, ln\ Sh_{\ t-1} + \alpha_4\, ln\, FC_{\ t-1} + \alpha_5 lnDG_{t-1} + \varepsilon_{t-1}$ ..... (Model 1)

2. To measure the positive and negative impact of FC on real GDP through NARDL model.

$lnY_{t-1} = \alpha_0 + \alpha_1 lnY_{t-1} + \alpha_2 \ ln\, Sk_{\ t-1} + \alpha_3\, ln\, Sh_{\ t-1} + \alpha_4\, ln\, FC^{+}_{\ t-1} + \alpha_4\, ln\ FC^{-}_{\ t-1} \alpha_5 lnDG_{t-1} + \varepsilon_{t-1}$ ..... (Model 2)

3. To measure the impact of ODA and FDI with other independent variables on real GDP through autoregressive distributed lag model

$lnY_{t-1} = \alpha_0 + \alpha_1 lnY_{t-1} + \alpha_2 \ ln\, Sk_{\ t-1} + \alpha_3\, ln\ Sh_{\ t-1} + \alpha_4\, ln\, FDI_{\ t-1} + \alpha_5\ ln\, ODA_{t-1} + \alpha_6 lnDG_{t-1} + \varepsilon_{t-1}$ ..... (Model 3)

4. To measure the positive and negative impact of ODA and FDI on real GDP through NARDL model.

$\ln Y_{t-1} = \alpha_0 + \alpha_1 \ln Y_{t-1} + \alpha_2 \ \ln Sk_{\,t-1} + \alpha_3\, \ln\ Sh_{\,t-1} + \alpha_4\, \ln FDI^{+}_{\,t-1} + \alpha_5\ \ln ODA^{+}_{t-1} + \alpha_4\, \ln\ FDI^{-}_{\,t-1} + \alpha_5\, \ln\ ODA^{-}_{t-1} + \alpha_6 \ln DG_{t-1} + \varepsilon_{t-1}$ ..... (Model 4)

Table 3 Results

Model 1		Model 11		Model 1111		Model 4	
LNY (-1)	0.764166 (0.0000)	LNY (-1)	0.646867 (0.0000)	LNY (-1)	0.742464 (0.0000)	LNY (-1)	0.537718 (0.0000)
LNSK	0.108848 (0.0440)	LNSK	0.104940 (0.0145)	LNSK	0.045200 (0.3146)	LNSK	0.095372 (0.0517)
LNSK (-1)	-0.081079 (0.1991)	LNSH	0.021661 (0.1511)	LNSH	0.024410 (0.1238)	LNSH	0.010047 (0.5195)
LNSH	0.012831 (0.4793)	LNFC_POS	0.112297 (0.3010)	LNODA	-0.01231 (0.1308)	LNODA_POS	-0.016975 (0.1481)
LNSH (-1)	0.016314 (0.3499)	LNFC_NEG	-0.187696 (0.0203)	LNFDI	-0.00247 (0.6292)	LNODA_NEG	-0.012803 (0.1054)
LNFC	0.013313 (0.8970)	LNDG	-0.240562 (0.0252)	LNDG	-0.28998 (0.0007)	LNFDI_POS	0.019817 (0.0167)
LNFC (-1)	-0.131111 (0.1753)	SBD	-0.024243 (0.1253)	C	3.168325 (0.0008)	LNFDI_NEG	-0.011337 (0.0657)
LNDG	-0.052568 (0.8120)	C	4.006221 (0.0001)			LNDG	-0.276112 (0.0103)
LNDG (-1)	-0.239252 (0.1979)					SBD	-0.028149 (0.0718)
R-square	0.995482		0.995713		0.994754		0.996295
Durbin-Watson statistics	1.916796		1.996038		1.696311		1.934180
Prob(F-statistic)	0.00000		0.000000		0.000000		0.000000

The second column of Table 3 shows the estimated values obtained from ARDL model 1. The dependent variable in the given model is lny while the lnsk lnsh lnfc lndg are independent variables. The sign of the coefficients of the lnsk, lnsh, lnfc and lndg on lny is positive which indicates the positive influence, but the lag values of these variables have negative impact on the lny, except the lag value lnsh. However, the value of R-square 0.995, which tells the 99% changes in lny is due to the independent variables while the remaining 1% variation may be some other or external variables.

The fourth column of Table 3 represents estimated values in short run relation of log of foreign capital LNFC both positive and negative effect on economic growth LNY, the coefficient of LNFC_POS is 0.112 which means that 1% increase in foreign capital can increase 11% increases in LNY and its probability value is 0.301 which is

insignificant contrary to this LNFC_NEG IS -0.188 which indicates the1% decrease in foreign capital can reduce economic growth by 18% and its probability value is 0.023 which is also significant, it means that the reduction in foreign capital can more influence the economic growth as compare to the inflow of foreign capital. Other indicator like the value of R-square is 99% which exhibit the 99% changes in LNY (real GDP per capita) are due to the independent variables like LNSK, LNSH and LNFC.

The six column of table 3 reflect the results of ARDL model in which the dependent variable is LNY, and independent variables are LNSK, LNSH, LNODA, LNFDI and LNDG. In this model the coefficient values of LNODA and LNFDI both show negative impact on LNY but their prob values are 0.130 and 0.629 respectively which is greater than 0.05, the significant level, so this relation is insignificant. While the R-square value, which is 0.994, reveals that the variation in LNY is caused by the difference in LNODA, LNFDI and other independent variables.

Similarly, the eight column of table 3 shows the results of NARDL in which asymmetric (positive and negative) impact of LNODA and LNFDI on LNY have been analyzed. The coefficient of positive LNODA has a very negligible negative impact on LNY like 1% increase in ODA can reduce 1.6% of economic growth but the probability value is insignificant with a value of 0.148 in this situation. Similarly, the coefficient of negative LNODA also exhibits a negative relation to LNY, 1% decrease in ODA also reduces the growth of economy by 1.2% but the prob value is 0.105 it is insignificant for this variable. While the positive LNFDI has a positive effect on LNY with 1% increase in LNFDI can increase 1.9% of LNY and the probability value is 0.0167 which is significant. While the negative LNODA has negative impact on LNY like 1% decrease in LNODA also reduces economic growth by 1.1% and the probability value is 0.0657 which is greater than 0.05 it shows insignificance of the variables. The R-square value is 0.996, which means that the 99% change in LNY is due to a change in independent variables. Lastly, the prob value of F-Statistics of the given models have shown evidence of the significance of the models and the value of DW has shown the absence of autocorrelation for all models.

Table 4: Diagnostic Tests Results

A: Breusch-Godfrey Serial Correlation LM Test

	Model 1	Model 2	Model 3	Model 4
Obs*R-squared	0.863590	2.500430	0.237092	0.115431
Prob. Chi-Square (2)	0.6493	0.2864	0.8882	0.9439
				B: Heteroscedasticity Test: Breusch-Pagan-Godfrey
Obs*R-squared	7.387453	13.11599	10.83527	7.583464
Chi-Square (4)	0.2865	0.0793	0.5431	0.5766
				C: Histogram- Normality Test
Jarque-Bera	0.771	0.396	0.244	0.312
Probability	0.680	0.820	0.884	0.855
				D: Ramsey Reset Test
t-statistic	0.1671	0.1800	0.0894	0.7415
F-statistic	0.1671	0.1800	0.0894	0.7415

Various diagnostic tests have been used to detect the econometric problems of all models. The results from table 4 have shown that absence of serial correlation and heteroscedasticity. In addition, the model 1-4 are free from specification errors and data is normally distributed**.** The results of stability test like Ramsey Reset test and CUSUM and CUSUM square are also significant.

Table 5represents the long-term cointegration of variables at different significant level. The error correction term (ECT) describes the speed of adjustment with which the cointegrating variables return to the long-run association following any short-run distortion which is less than 1 and significant in all the four models.

Table 5 Long run estimates: A summary

	Model 1	Model 2	Model 3	Model 4
LNFC	-0.480			
LNFC_POS		0.318		
LNFC_NEG		-0.532***		
LNODA			**-0.046***	
LNODA_POS				-0.037
LNODA_NEG				-0.028*
LNFDI			**-0.009**	
LNFDI_POS				0.043***
LNFDI_NEG				-0.025*
ECT	-0.237***	-0.353***	-0.272***	-0.462**

Note: significance level at 1% ***, at 5% ** and at 10% *

Conclusions and Recommendations

This study aimed to contribute to literature by analyzing the symmetric as well asymmetric impact of foreign capital on economic growth and such analysis has not yet conducted for the Pakistan's economy. For this purpose, initially an index was formed using principal component analysis (PCA). The results revealed a long-run association and role of these capital inflows in Pakistan. Increase in foreign capital can increase the economic growth of the country but the data shows asymmetric relation too. Compared to the increase in foreign capital, ODA, and FDI, the decrease in foreign capital, ODA, and FDI can badly affect the growth rate, as the negative value of FCI

reduced the level of GDP per capita. The reason behind this may be that due to the shortage of domestic saving we rely heavily on foreign investment to achieve macroeconomic stability. Same reason was identified by World Bank (Haver analytics) as they said Pakistan is receiving minimum amount of foreign capital in the form of FDI and Developmental Aid. Many factors are responsible for weaknesses to attract public and private investments. The hurdles in public investment are structural weakness in revenue mobilization due to shortage of skillful human capital, transport, energy and digitization in the economy. While for private sector investment the unfavorable investment climate due to instability in macroeconomic indicator, lack of infrastructure and less domestic savings are major reasons. For FDI to be valuable for the economy the incentives are to assure the readiness of the suitable local market for manufacturing, better human source, development of import replacement industry and producing units.

These findings help to contribute to policy making as the government can take measures to attract foreign investors by developing the domestic markets because FDI shows positive impact on economic growth. But unfortunately, in case of Pakistan these features are rarely seen. Therefore, we received not as much FDI as compared to the neighboring countries. Sometimes the lapse in the economic policies regarding foreign aid, a major portion of the foreign aid is spent on non-development expenditure instead of development expenditure that's why these aids are unable to produce any significant effect on economic growth of Pakistan. Therefore, strong economic policies and their proper implementation is the dire need of the hour to utilize the foreign capital in the best interest of the country or we should improve our domestic resources at national level instead of foreign aid to get economic prosperity.

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