Determinants of FDI inflows to Pakistan (1970-2002)

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Abstract

This paper summarises the findings of causality and long-term relationship between Foreign Direct Investment (FDI), economic growth and other socio-political determinants. Although a considerable literature gives the evidence of relationship between FDI and economic growth. There is a need for a detailed examination of socio-political determinants of FDI. The paper considers economic growth, exchange rate, and level of interest rates, unemployment, and political instability as determinants of the level of FDI inflows for Pakistan over the period 1970 to 2002. Almost all variables are found to have the theoretically expected signs with two-way causality relationship. The present study also estimates an error correction model by ordinary least squares, based on cointegrating VAR (2).

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Introduction

Post eighties and prior to nineties, the global flows of FDI in general and the developing countries in particular has been noted as the official flow of capital (Pushpa-2003). Despite the liberalization of economy, it did not show greater impact on the inflows of FDI to the host countries. The figures show a considerable drop in the flow of capital from 50% to 18% (World Bank-2002). The configuration of capital flows has changed post Asian crises and now FDI has become a dominant part of private capital flow to emerging viz a viz developing countries (World Bank-2002) This paper is primarily concerned with the impact of recent economic and political events (post nineties), and the likely course of future events in the global economy, on the FDI inflows to Pakistan.

Although there is extensive past research on the analysis of factors affecting FDI flows, country risk rating has attracted only partial treatment (Cho-1998). Country risk is a multi-dimensional concept that incorporates political, commercial and economic factors. Singh and Jun (1995) empirically analyzed various factors including political risk, business conditions, and macroeconomic variables that have influenced FDI to developing countries. Using a pooled model of developing countries, they showed that political risk and business-operating conditions have been

important determinants of FDI for countries that have historically attracted high FDI. For countries with relatively low FDI, a key determinant was the degree of sociopolitical instability, proxied by work hours lost in industrial disputes. They also observed that a country's orientation toward exports is the strongest variable for explaining why a country attracts FDI.

The paper is in four parts: A review of previous studies on the determinant of FDI is followed by a discussion on the effects of economic and political factors on the FDI inflows to Pakistan for 1970-2002. The third part consists of methodological techniques, data and empirical results. This is also followed by a summary of main conclusions.

The expected contribution of the paper to the existing literature can be explained in the following manner. Most of the studies in the case of Pakistan have tested the relationship of economic development and FDI in the scenario of GDP growth, exports etc. This paper aims to capture a different concept with the determinants of FDI inflow to Pakistan using the Granger non-causality technique for the analysis of causality relationships. To analyze the long-term relationship between economic and political determinants of FDI, an ARDL Cointegration Analysis and Error Correction Representation technique is applied.

ABBREVIATIONS

ADF: Augmented Dickey-Fuller	
ARDL:	IR: Interest Rate
BOI: Board of Investment	OE: Openness of Economy
ECM: Error Correction Model	PRI: Political Risk Index
Ex R: Exchange Rate	UE r: Unemployment Rate
FDI: Foreign Direct Investment	UK: United Kingdom
FPI: Foreign Portfolio Investment	UNCTD: United Nations Commerce & Trade Division
GDP: Gross Domestic Product	US: United States of America
IFS: International Financial Stat	WB: World Bank
IMF: International Monetary Fund	WTO: World Trade Organisation

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Review of Empirical Studies

There is an extensive and controversial literature on the economic and socio-political determinants of FDI which has presented a variety of results with positive / negative correlation between FDI and the determinants in the host country (Singh et al-1995).[1] The aim of international investors in gaining higher returns along with the security of the assets, leads them to look into macroeconomic determinants. These determinants have been tested and analysed by a number of economists after the steep increase of FDI flows in the World in general and towards developing countries in particular post 1990's. Economists have studied the affect of economic and social indicators by using different analytical approaches, e.g. econometric analysis, surveys etc. Most of the previous studies have analysed quite a number of macro economic factors e.g. GDP, Exchange rate, Exports, Imports, Trade Balance, Balance of payments, Openness of Economy, Interest rates etc (Erdal-2002). A few studies have thoroughly analysed the affects of Socio-political factors on FDI inflows / outflows (Singh-1995). So it is required to study in depth the major macro economic factors viz viz, socio-political factors, the government micro and macro policies in reference to foreign capital inflows (FDI & FPI) and trade.

Previously this has been agreed unanimously that FDI has strong relationship with the traditional economic indicators including trade of the host country with rest of the world (Tadesse et al –2002). [2]

Socio-political determinants including political instability, business environment, law and order situation, ethnic violations, corruption, and infrastructure have been found significant determinants for the inflows of FDI in many countries (Mody-1992).[3] Of course political risk is not only the main determinant of FDI but still a strong correlation has been found between political risk and FDI (Hong et al –1999). In categorizing the political as a composite risk, Roots (1972) concluded that, three major types[4] of risk have a strong causal relationship with FDI flows.[5]

Country risk as a composite risk has also been negatively correlated to the investment decision and the expected returns on investments (Meldrum-2000).

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[1] Also See Busse-2003, Oleksiv-2000, Venkataramany-2002,
[2] Also see Branstetter-1999, Drabek et al –2001, Fontagné et al – 1997, Khan et al-1999, Saggi-1998, WIR-1996.
[3] Also see Cho-1998, Erdal et al-2002, Jun et al-1996, Reed-2000, Singh-1995,
[4] A: transfer risk related to trade, B: operational risk related to the business operations and profitability on investment in the recipient country and finally C: ownership risk closely related to property rights of the investor
[5] Also see Asiedu et al – 2001, Glass et al – 2001, Singh et al –1995.

GDP of a host country indicates the economic strength of the country. A profit rational investor will always seek investment in a country, which has an acceptable growth rate (Khan et al-1999). The strength of economy in reference to the GDP growth rate also indicates stable economic health of the country.

While looking into stable financial health, the exchange rate of the country plays a key role in financial and economic stability. An investor will not like to invest in a country with an unstable exchange rate. The volatility of exchange rate has been found highly negatively correlated to the FDI inflows of the country (Lucas-1993). Exchange rates may affect FDI through several channels. The exchange rate directly affects labour cost, which in turn, alongwith exchange rate has been found a statistically significant determinant of FDI in flows to recipient countries (Oyama et al – 1998).[6]

Labour cost being a controversial issue, and agreed internationally that the low wages of labour are unfair but still most of the international firms allow practice low wages in developing countries in order to compete in the world markets (Cho-1998). Economically active labour force in general and skilled labour force in particular has been found a major determinant of FDI inflows to a country. But still the low cost labour affects the FDI inflows positively. Profit seeking international firms like to invest in a country, which is highly populated. The reason behind the high growth of FDI inflows to China and India is low cost labour forces (Erdal-2002).

It has also been found that export-oriented countries take most of the share from global FDI flows. Various studies have found that the reason for FDI flows to China results to its exports and openness (Gordon-2002). Overall, a higher degree of openness is expected to be associated with a higher level of inward FDI activity as well as outward FDI. The exports plus imports level of a country is proposed as an approximation of its openness (Kyrkilis et al-2003).

Despite a number of analyses on the relationship between FDI, GDP and trade and the discussions on other economic, locational, and socio-economic determinants of FDI flows to host country, little attention has been paid to a very important and major determinant of FDI inward / outward flows. The political risk (PR) as determinant of FDI globally in general and developing countries in particular holds a strong position in how investment decisions are made. PR also includes a few other risks of the host

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[6] Oyama, T. et al – 1998, "Determinants of FDI flows to East Asian countries, A linkage between FDI & Trade"- working paper-98/11 Research and Statistics Department, Bank of Japan.

country like economic risk, regime legitimacy, ethnic violence, law & order religious militancy, political agitations, strikes and natural disasters like floods or earthquakes risk. These risks in total classified as PR **exert** negative impact on international investor's decisions to go abroad and invest in a country like Pakistan with turmoil of high risks (singh-1995). Many investors have paid heavily for overlooking the host country turmoil political situational instability (Khan et al- 1999). Roots & Ahmed-1979 also concluded the change of government as a political risk which has negative affect on FDI flows. Singh -1995 has concluded that the change of government is different from the overall political instability. The former have been found insignificant for the flows of FDI to the country but yet the later ones have dual effects on the international investors decisions (Singh-1995)[7].

Methodology and Data

The significant increase in FDI flows to developing countries in general and Pakistan in particular over the last decade (1990-2000) is due to the liberalization of the economy. The flow of FDI also contributes in technology development vis a vis industrial development of the host country. That is the main reason that the developing, along with developed, countries in the world have done much in liberalizing the economy to attract foreign investors. The increase in FDI in South Asian countries did not reach a substantial level as other Asian countries despite the liberalization policies of governments. Pakistan has lower shares in FDI as compared to rest of Asian countries. Even then the host countries will have to focus their attention on whether this source of financing enhances overall economic growth. A regression was run for the last 33 years (1970-2002) to look into what factors could affect the inflow of FDI to Pakistan keeping in view the previous studies as analyzed in the previous section of the paper. Different explanatory variables have been used to analyze their attributes in affecting the inflows of FDI to a host country, which include profitability, exchange rate, GDP and trade (Dunning-2001).[8]

In a country like Pakistan, foreign investors will prefer a higher rate of return on their investment as a premium of their risk-taking in the unstable political environment of the country, but along with this, investors will be looking forward to the financial institutions to charge lower taxes. For such analysis, we will be using interest rates as an explanatory variable also (Venkataramany-2002).

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[7] Also see Kobrin-1981,

[8] For further details see Caves (1971), Gray (1982), Helpman (1985), & Deniels (1994) etc.

Looking into the stationarity and non-stationarity of the macro-economic time series data from 1970-2002, we will make a further analysis of two way causality and long-term relationship of the determinants and FDI inflows. The following basic model will be used to test the hypothesis of causality and long-term relationships and explore the effect of the independent variables GDPN, Openness of Economy, Exchange Rate Stability, Interest rate,, and the most important determinant of Political Risk Index of the host country, etc.

FDI = f (Y, X/M, ExR, OE, UEr, DR, PRI)

GDPN as (Gross Domestic Product Nominal Growth), Ex R as (Exchange Rate Instability), OE as (Openness of Economy), DR (Discount Rate, and PRI as (Political Risk Index).

In this paper, we have concentrated on the preparation of properties of time series data before the estimation of **FDI** and **GDPN, GDPR, PRI, ExR, DR, OE** explanatory variables in the scenario of political situation and economic growth of Pakistan. The estimation procedure has been adopted in the sequence.

The lack of consensus and the robustness is due to the lack of data for the world in general and Pakistan in particular, which depends upon the country level. Most of the studies have found it difficult to find data for developing countries.

Empirical Analysis:

This section presents empirical results on the relationship of foreign direct investment (**FDI**) inflows and **GDPN, PRI, ExR, IR, OE** of Pakistan. As our focus is on Pakistan in particular, we undertake a time-series analysis of data from Pakistan for the previous 33 years (1970-2002).

Indexed values for all variables have been used to carry out empirical analysis. Prior to testing for non-causality, it is necessary to establish the order of integration present. To this end, an Augmented Dickey-Fuller test (ADF) was carried out on the time series in levels and differenced forms. We carried out the tests on time series of **FDI, GDPN, PRI, ExR, DR, and OE** for Pakistan for the period 1970-2003. If we accept the null hypothesis that a time series is non-stationary (has at least one unit root), we then re-apply the procedures after transforming the series into first differenced form (see Table 1). If the null hypothesis of nonstationarity (when the time series is expressed in first differenced form) can be rejected, we then may establish the result that the time series is integrated of order one, I (1). The results are presented in Table 1 & 2.

1: Non stationarity / Stationarity

The results of unit root test in levels and differences are presented in Table -1 & 2. The critical values of ADF can be computed using the algorithm of Mackinnon (1991). To critical values with constant and time trend and with constant but no time trend at 5% significant level has been reported by Microfit 4.0 as –3.5796 & -2.9750 respectively.

Table-1   Unit Root Tests (I(0))

	LIFDI	LIGDPN	LIExR	LOE	LIMMIR	LIUE rate	LPRI
τ_{c+t}	-3.5428(0)	-2.5792(0)	-2.0680(3)	-2.3443(0)	-1.4946(0)	-3.0953(0)	-3.6813*(0)
	-2.9352(1)	-2.3972 (1)	-1.7341(4)	-2.8024(1)	-2.1036 (1)	-3.4082(1)	-3.5970*(1)

τ_{c+t}: The data is with constant and time trend, critical values at 5% significance level are reported by   Microfit 4.0 = -3.5796.

The lag length is given in parenthesis

Using these values, and according to the results in Table-1, the rejection of the null hypothesis of unit root is shown by single asterik (*) at 95 percent level of significance. Schwarz Bayesian Criterion (SBC) has been used for the selection of the lower order because of 33 observations in consideration[9]. Also only the constant and trend results have been used for analysis as the data series under consideration are time trended.

Table-2   Unit Root Tests (I(1))

	DIFDI	DIGDPN	DIEx R	DOE	DIMMIR	DIUE rate	DPRI
τ_{c}	-7.8785*(0)	-3.9771*(0)	-8.3703*(0)	-4.1039*(0)	-3.7143*(0)	-5.4269*(0)	-6.0057*(0)
	-8.0652*(1)	-3.1262*(1)	-5.9338*(1)	-4.4702*(1)	-2.5815 (1)	-5.4053*(1)	-7.3821*(4)

τ_{c} = The data is with constant and no time trend, critical values at 5% significance level are reported by Microfit 4.0 = -2.9750.

The lag length is given in parenthesis.

2: ARDL, Co integration and ECM Estimation Results:

The ADF tests of the key variables in the system: **GDPN, EXR,OE,DR,UErate, PRI** and **FDI** indicated that these variables were non-stationary in their levels but stationary in their first differences. **GDPN, EXR,OE,DR,UErate, PRI,** and **FDI** are at the current market prices. The error-correction cointegration analysis (ARDL) has been undertaken for the period as a whole (1970-2002). The results have been presented in Table 3-8.

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[9] SBC usually selects the lower lag order in small sample case.

Table-3

Pakistan: ARDL Cointegration Analysis, Error Correction Representation, 1970-2002

Dependent Variable: Foreign Direct Investment (ΔLIFDI)

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
ΔLIFDI1	.15772	.031553	4.9986[.000]
ΔIGDPN	2.6864	.99966	2.6873[.013]
Δconstant	.037637	.091.38	.41347[.683]
ecm(-1)	-1.22262	.079568	-15.4113[.000]
ARDL (2,0) selected based on Schwarz Bayesian Criterion			
ΔLIFDI = LIFDI-LIFDI (-1)			
ΔLIFDI1 = LIFDI (-1)-LIFDI (-2)			
ΔLIGDPN = LIGDPN-LIGDPN (-1)			
ΔConstant = Constant-Constant (-1)			
ecm = DIFDI -2.1907*DIGDPN -.030693*Constant			
R-Squared = .95946; R-Bar Squared = .95439; F-stat. = 189.3193 [.000]			

Table-4

Pakistan: ARDL Cointegration Analysis, Error Correction Representation, 1970-2002

Dependent Variable: Foreign Direct Investment (ΔLIFDI)

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
ΔLIFDI1	-.30892	.056655	-5.4526[.000]
ΔLIFDI2	-.27052	.054603	-4.9544[.000]
ΔLIFDI3	-.091805	.041180	-2.2294[.036]
ΔLExR	.23331	.15479	1.5073[.145]
Δconstant	1.1980	.59625	2.0093[.056]
ecm(-1)	-.47055	.053934	-8.7246[.000]
ARDL (4,0) selected based on Schwarz Bayesian Criterion			
ΔLIFDI = LIFDI-LFIDI(-1)			
ΔLIFDI = LIFDI(-1)-LIFDI(-2)			
ΔLIFDI = LIFDI(-2)-LIFDI(-3)			
ΔLIFDI = LIFDI(-3)-LIFDI(-4)			
ΔLIExR = LIExR-LIExR (-1)			
ΔConstant = Constant-Constant (-1)			
ecm = LIFDI -.49582*LIExR -2.5460*Constant			
R-Squared = .94636; R-Bar Squared = .93471; F-stat. = 81.1647 [.000]			

Table-5

Pakistan: ARDL Cointegration Analysis, Error Correction Representation, 1970-2002

Dependent Variable: FDI (ΔLIFDI) with OE

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
ΔLIFDI1	-.31709	.050504	-6.2785[.000]
ΔLIFDI2	-.27061	.051162	-5.2892[.000]
ΔLIFDI3	-.089021	.039676	-2.2437[.035]
ΔLOE	1.8624	.96690	1.9262[.067]
ΔConstant	-6.1748	4.2803	-1.4426[.163]
ecm(-1)	-.45125	.042966	-10.5024[.000]
ARDL (4,0) selected based on Schwarz Bayesian Criterion ΔLIFDI = LIFDI-LFIDI(-1) ΔLIFDI = LIFDI(-1)-LIFDI(-2) ΔLIFDI = LIFDI(-2)-LIFDI(-3) ΔLIFDI = LIFDI(-3)-LIFDI(-4) ΔLOE = LOE-LOE (-1) Δ Constant = Constant-Constant (-1) ecm = LIFDI -4.1273 *LOE 13.6840*Constant R-Squared = .94925; R-Bar Squared = .93822; F-stat. = 86.0454 [.000]			

Table-6

Pakistan: ARDL Cointegration Analysis, Error Correction Representation, 1970-2002

Dependent Variable: Foreign Direct Investment (ΔLFDI)

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
ΔLIFDI1	-.30172	.047065	-6.4108[.000]
ΔLIFDI2	-.27898	.045119	-6.1831[.000]
ΔLIFDI3	-.096974	.035428	-2.7372[.012]
ΔLIDR	1.3027	.45885	2.8391[.009]
ΔConstant	-3.8286	2.0806	-1.8402[.000]
ecm(-1)	-.49581		-10.8452[.000]
ARDL (4,0) selected based on Schwarz Bayesian Criterion ΔLIFDI = LIFDI-LFIDI(-1) ΔLIFDI = LIFDI(-1)-LIFDI(-2) ΔLIFDI = LIFDI(-2)-LIFDI(-3) ΔLIFDI = LIFDI(-3)-LIFDI(-4) ΔLIDR = LIDR-LIDR (-1) ΔConstant = Constant-Constant (-1) ecm = LIFDI -2.6275*LIDR + 7.7220*Constant R-Squared = .95636; R-Bar Squared = .94687 F-stat. = 100.8084 [.000]			

Table-7

Pakistan: ARDL Cointegration Analysis, Error Correction Representation, 1970-2002

Dependent Variable: Foreign Direct Investment (ΔLFDI)

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
ΔLIFDI1	-.30455	.066391	-4.5873[.000]
ΔLIFDI2	-.27472	.057897	-4.7449[.000]
ΔLIFDI3	-097655	.041839	-2.3340[.029]
ΔLIUER	.53210	.47862	1.1117[.278]
ΔConstant	.045310	1.8233	.024850[.980]
ecm(-1)	-.48596	.075039	-6.4760[.000]
ARDL (4,0) selected based on Schwarz Bayesian Criterion ΔLIFDI = LIFDI-LFIDI(-1) ΔLIFDI = LIFDI(-1)-LIFDI(-2) ΔLIFDI = LIFDI(-2)-LIFDI(-3) ΔLIFDI = LIFDI(-3)-LIFDI(-4) ΔLIUER = LIUER-LIUER (-1) ΔConstant = Constant-Constant (-1) ecm = LIFDI -.30748*LIUER -9.1383*Constant R-Squared = .94407; R-Bar Squared = .93191; F-stat. = 77.6488 [.000]			

Table-8

Pakistan: ARDL Cointegration Analysis, Error Correction Representation, 1970-2002

Dependent Variable: Foreign Direct Investment (ΔLIFDI)

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
ΔLIFDI1	-.41807	.049159	-8.5045[.000]
ΔLIFDI2	-.26642	.036629	-7.2737[.000]
ΔLPRI	5.1599	1.2598	4.0957[.000]
Δconstant	-18.1079	4.9445	-3.6622[.000]
ecm(-1)	-.31163	.048062	-6.4840[.000]
ARDL (3,0) selected based on Schwarz Bayesian Criterion ΔLIFDI = LIFDI-LIFDI (-1) ΔLIFDI1 = LIFDI (-1)-LIFDI (-2) ΔLIFDI2 = LIFDI (-2)-LIFDI (-3) ΔLPRI = LPRI-LPRI (-1) ΔConstant = Constant-Constant (-1) ecm = LFDI -16.5576*LPRI + 58.1063*Constant R-Squared = .95375; R-Bar Squared = .94604; F-stat. = 123.7301 [.000]			

3: Causality Estimation Results

We begin employing Granger's causality test to analyse the inter relationship between

GDPN, FDI. We have conducted bivariate between every pair of variable using two

variables. The methods used are specified with an hypothesis of H_0 = No Causality between **FDI** and **GDPN** as below:

i) Granger Causality Analysis

The results of bivariate analysis are presented in table-7. The choice of lag length is based on Akaike Information Criteria (AIC), and Schwartz Criteria (SC). Our Results show two way causality between **GDPN, EXR,OE,DR,UErate, PRI**.. In other words the no causality hypothesis can be rejected at the 5% level of significance (table-9).

Table-9: Granger Causality Results

Variable	Direction of Causality	Chi-square Statistics	Chi-square (Probabilities)	Result
GDPN (Y) **FDI (I)**	Y ⟶ I	20.2210*(2)	[.000]	Reject H_0
	I ⟶ Y	10.9132*(2)	[.004]	Reject H_0
Ex R (Y) **FDI (I)**	Y ⟶ I	23.0827* (5)	[.000]	Reject H_0
	I ⟶ Y	15.5643* (5)	[.005]	Reject H_0
O E (Y) **FDI (I)**	Y ⟶ I	17.9906* (2)	[.000]	Reject H_0
	I ⟶ Y	5.2618*(2)	[.072]	Reject H_0
ID R (Y) **FDI (I)**	Y ⟶ I	6.5456*(2) 18.2662*(3)	[.038] [.000]	Reject H_0
	I ⟶ Y	17.8034(2) 16.9568(3)	[.000] [.001]	Reject H_0
U E r (Y) **FDI (I)**	Y ⟶ I	5.8883(2)	[.053]	Reject H_0
	I ⟶ Y	3.9699 (1)	[.046]	Reject H_0
PRI (Y) **FDI (I)**	Y ⟶ I	13.8613*(1)	[.005]	Reject H_0
	I ⟶ Y	31.9056* (3)	[.000]	Reject H_0

The hypothesis of bi-directional Non-causality for **GDPN** and **FDI** can be rejected at 10% & 5% significant level, which suggest that there is a mutual causal relationship between GDPN growth and FDI. This result is in line with the findings of Moudatsou (2001), who report a bi-directional causality between FDI and Growth.[10] The lags are shown in parenthesis in the 1st column.

Conclusion

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[10] Moudatsou, A.-2001 " FDI and Economic Growth : An evidence from 14 EU countries"

This has been a brief examination of the results of a study into the determinants of FDI flows into Pakistan over the period 1970 to 2002. In this paper, we have examined the effect of three major macro economic and socio political determinants on FDI inflows to Pakistan. The approach is important because developing countries in general and Pakistan in particular have a fragile economic condition alongwith an unstable political environment since 1972.

The ECM model reveals some salient features of the short-run determinants of FDI in Pakistan. In common with previous studies, the hypothesis that the level of FDI is influenced by exchange rate, the degree of openness of the economy and unemployment rate as well as political risk index, is supported.. This study has been a macro one and has not looked at such factors as regional and industry variations in FDI into Pakistan.

Further the positive results of test of cointegration and the causality relationship between FDI, macro economic and socio political factors of Pakistan is two-way causality. The results support the theoretical contention and give strong support to the hypothesis that FDI inflows to Pakistanis dependent on the major macro economic factors alongwith the most important socio political determinant known as PRI of the country like Pakistan with such changing political environment internally and externally in the region.

In sum, our econometric estimates of the net FDI flow model for Pakistan suggest that there exists a long run relationship between FDI, and **GDPN, EXR, OE, DR, UErate, PRI**. The causality relationship between FDI and **UE rate** can be concluded as the capturing of the lower labor cast market by the international investors. This could be the subject of further studies.

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