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Pakistan fails to attract efficiency seeking Foreign Direct Investment?

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Abstract

This study assesses as to how much Foreign Direct Investment (FDI) inflows to Pakistan can be explained through efficiency indicators such as wages in the manufacturing sector, output per worker, the level of human capital and labour force supply. Findings from the analysis using data from the manufacturing sector for the period between 1981 and 2017 show that labour market variables have no significant role in explaining FDI inflows to Pakistan. All the variables, including output to labour cost (OLC) ratio, the level of human capital and the supply and efficiency of the labour force have been statistically insignificant in this regard. Both the lower level of human capital and the weak supply and poor efficiency of the labour force have a significantly negative impact on FDI inflow, but the inclusion of political economy factors renders labour market forces ineffective in explaining FDI inflows. Dictatorial regimes attract 52% to 63% higher FDI inflows compared to democratic ones when all other factors are equal. We, therefore, conclude that Pakistan has not been able to attract efficiency seeking FDI and that it has mainly accumulated non-effeicency seeking FDI. Future research on the subject must i) explore the scope of efficiency seeking FDI inflows for other sectors of the economy, ii) highlight policy drivers and variables which can help attract efficiency seeking FDI, and iii) identify policies that can help explore this potential.

JEL Classification: J24, P33, E24

Keywords: FDI; Labour Market; Labour Productivity, Human Capital; Investment; Pakistan

Contents

1. Introduction

The importance of Foreign Direct Investment (FDI) has increased over the last decade. It is now considered the main source of economic activity. Developing countries started attracting capital inflows in the early 1990s (Calvo, Leiderman & Reinhart 1996). After the global financial crisis 2007-08, these countries became even more attractive for FDI (Duttagupta *et al.* 2011). The size of FDI, however, does not determine its impact on the recipient economy. It is the nature and the quality of FDI which explains whether it is a boon or a bane. Its positive impacts depend on whether it results in increasing and improving knowledge development, employment and management skills and technology transfers (Alfaro *et al.* 2010; Krifa-Schneider and Matei 2010; Busse and Groizard 2008; Johnson 2006).

Increasingly, the role of human resources in economic competitiveness – as defined by the flexibility of labour market as well as the size and skills of the labour force – is critical in improving economic processes in any country (Scharle 2003; Barro, Caselli & Lee 2013). Labour market competitiveness is also critical in attracting FDI (Hale 2016). High labour cost deters FDI inflows (Friedman *et al.* 1992, 1996; Coughlin *et al.* 1991). It is in this context that the role of labour market indicators in attracting FDI denotes the nature of FDI inflows.

If FDI flows into a country because of its labour market competitiveness then it is efficiency seeking FDI. Arguably, FDI inflows to Pakistan have accrued mainly due to strategic decisions by the other countries. Studying these inflows entirely in the context of purely economic factors may lead to inaccurate estimates and conclusions.

Efficiency seeking FDI requires the recipient country to meet certain pre-conditions. It is primarily driven by labour productivity; "productivity is not the everything but in the long run it is lmost everything" (Krugman 1994), output to labour cost ratio and the supply of skilled labour in the recipient country. It flows into the countries that offer an enabling environment to investing firms to better compete internationally.

While efficiency seeking FDI is difficult to attract, it is strongly associated with technology transfers, boosts in research and development, improvement in export diversification and upgradation of economic processes in the host country. It is also critical in the promotion of growth of technology-intensive industries.

Pakistan has historically lacked the economic factors that attract efficiency seeking FDI, including the ability to meet product standards at lower production costs, supply semi-skilled and skilled labour, ensure ease of doing business, offer easy cross-border movement and provide efficient, consistent and price-competitive energy and communication infrastructure. It is in this context that we have data on labour market indicators to show that Pakistan has been denied the efficiency seeking FDI — mostly if not entirely.

Going beyond economic factors, we offer an explanation of FDI inflows to Pakistan that is different from the explanations found in existing literature. The existing literature, indeed, does not differentiate between efficiency seeking FDI and other FDI types and assumes that all FDI inflows are efficiency seeking, which can be explained through economic factors. This study, therefore, makes a significant contribution to the study of FDI inflows to Pakistan.

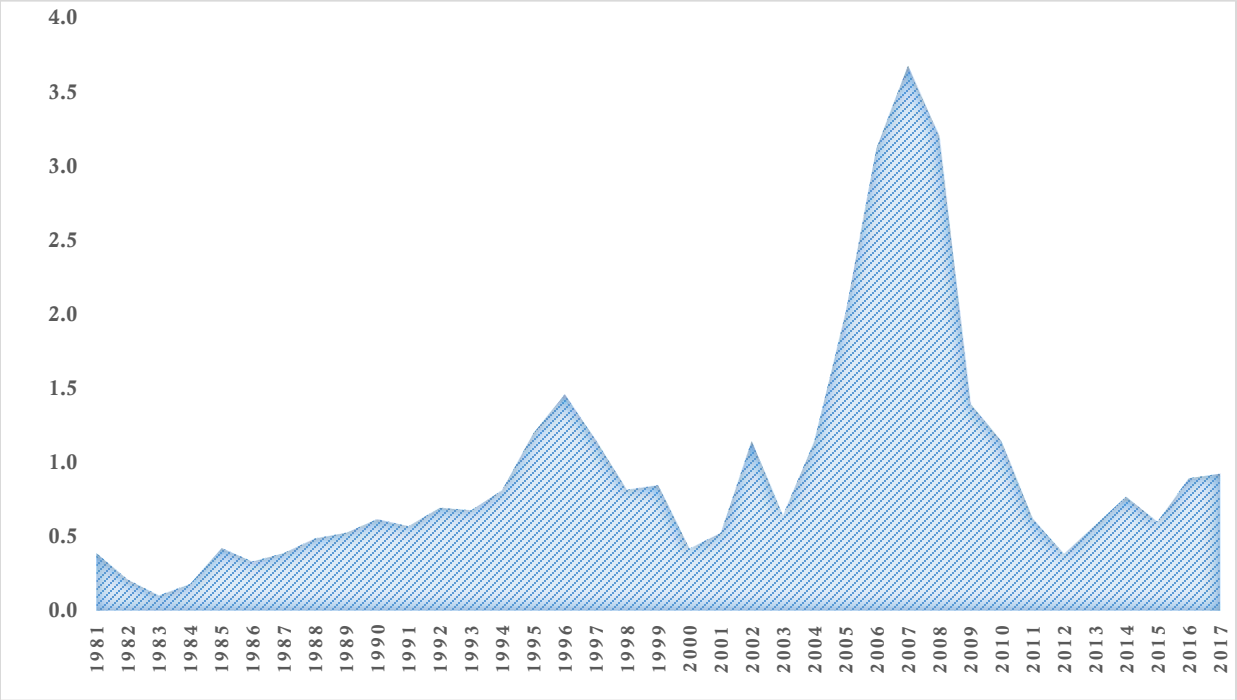
The factors like lower and/or insignificant coefficients between efficiency indicators - per unit labour costs, human capital, etc. and FDI inflow mean that FDI is not resulting from economic

efficiency. The findings of the study are duly controlled for macroeconomic indicators as trade openness, real effective exchange rate and the growth rate of Gross Domestic Product (GDP). We also assess the role of democratic and dictatorial regimes in attracting FDI inflows to conclude that dictatorial regimes have a significantly positive impact on FDI inflows to Pakistan with higher inflows in dictatorial regimes.

2. FDI inflows to Pakistan

Figure 1 shows a rise in FDI inflows to Pakistan between 2001 and 2007, followed by a steep drop till 2012. During the former period, Pakistan was ruled by a 'dictatorial regime' while the latter corresponds with a democratic government led by Pakistan People's Party Parliamentarians (PPPP). After 2012, FDI has remained steady though it has been on the lower side, having dropped to the pre-1999 level. Distribution of FDI inflows over time, therefore, suggests that dictatorial regimes attract more FDI inflows when seen in absolute size.

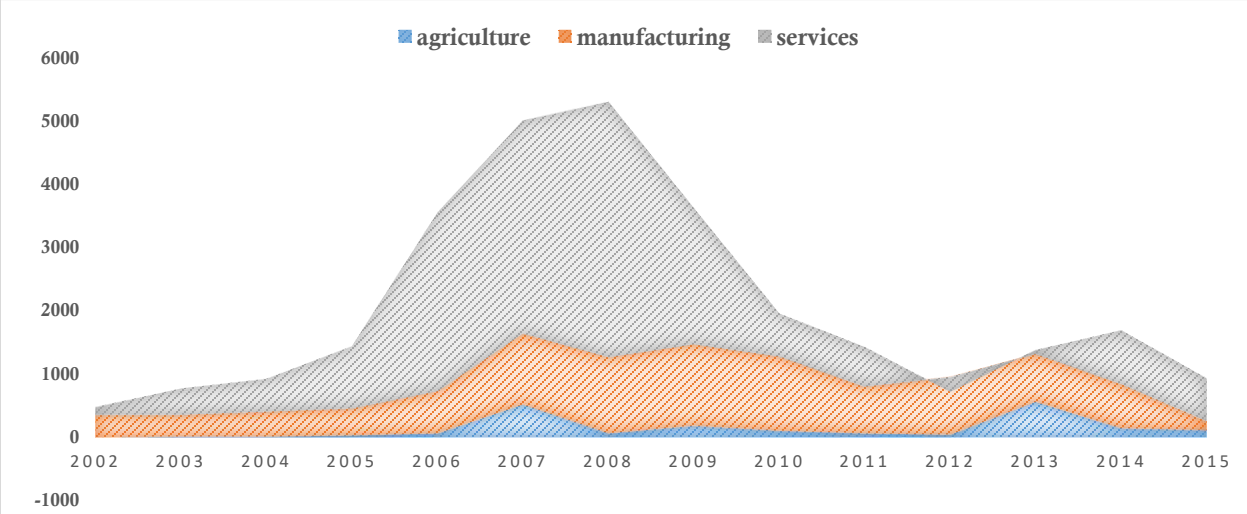
Figure 1- FDI Inflows to Pakistan (1981-2017)



The data above shows that democratic regimes, on average, have attracted lower FDI compared to the dictatorial one. Average FDI has been around US$ 1500 million during the dictatorship and US$ 1000 million under democratic governments. This explains why the use of a political regime dummy variable is important to capture the effect of this political factor.

Figure 2 shows the sectoral distribution of FDI. It shows that the agriculture sector has received the lowest inflows while the services sector has attracted the highest of them. A steep rise in FDI inflows to the services sector during 2005 and 2008 is mainly because of the opening of the telecom sector to private sector investment.

Figure 2- FDI Inflows to Pakistan by Major Sectors



2.1. IPPs Peak Period (1994-1998)

In 1994, the government devised a Private Power Policy that included many generous incentives for private firms interested in the installation of power plants in Pakistan. It was the first time that the government pro-actively sought large-scale investment in the power sector. The policy offered a highly lucrative tariff of 6.5 cents/Kilo-Watt-hour to Independent Power Producers (IPPs). It was based on a "cost-plus" method in determining electricity prices. IPPs were also allowed to use whatever fuel and technology they liked (Ali and Beg 2007).

The response to the policy was overwhelming. Many domestic and foreign investors – private companies from the United States, Europe, Japan, and various Arab states as well as multilateral lending agencies like the World Bank, Asian Development Bank and international bank consortia – lapped up the highly attractive tariff and other concessions being offered.

The policy resulted in a high number of candidates – much beyond expectation – wishing to invest in Pakistan. Subsequently, the government issued letters of support to projects, which were expected to generate more than 9,000 megawatts of electricity (World Bank 2001).

The 1994 Private Power Policy secured foreign investment of US$ 3 billion while the overall foreign investment in 1990-99 amounted to US$ 5 billion in (World Bank 2001, p. 5). A relatively high FDI was received by the energy and power sector (around 35.58 per cent) in the 1990s, almost all of it accruing during the peak years of 1994-1998.

The FDI inflows in power and energy sector also considerably contributed to economic growth, which started experiencing an upward trend in 1994 and continued to do so till 1998 when Pakistan faced international economic sanctions for conducting nuclear tests. These sanctions, coupled with a decline in investments in energy and power sectors, led to a steep decrease in both FDI inflows and economic growth.

2.2. Cellular Companies Peak Period (2004-2010)

During 2004-2010, the telecom sector was the largest recipient of FDI in Pakistan. Privatization of the state-owned Pakistan Telecom Company Limited (PTCL), liberalization of the sector to allow many private firms to operate, and the consequent competition among them led to an expansion of telecommunication infrastructure across the country (Inam 2006, Imtiaz and Khan 2014). Mobile Cellular Policy, announced in January 2004 by the Ministry of Information Technology, subsequently played a major role in the cellular boom. The policy aimed to:

- Promote efficient and effective use of radio paradigm;
- Increase options for the clientele of cellular mobile services at affordable and competitive prices;
- Facilitate private investment in mobile phone sector;
- Recognize the obligations and rights of mobile cellular operators;
- Provide for reasonable competition among mobile phone operators; and
- Provide a well-defined and effective regulatory regime aligned with global best practices.

In 2004, several foreign companies, including United Arab Emirates-based Warid Telecom and Norway-based Telenor, started their operations in Pakistan. Telenor acquired its mobile cellular license for US$290 million while Warid did so also by paying the same amount of money. Millicom International Cellular (MIC) reached an agreement to sell its 88.66% share in Paktel, a Pakistani cellular carrier, to China Mobile for a cash payment of US$ 460 million. China Mobile later also bought the residual 11.4% shares of Paktel for US$ 17.3 million. It then invested US$ 704 million during 2006 - 07 to expand its network (Yusuf 2013).

Likewise, Singtel, a Singapore-based company, bought 30% shares of Warid Telecom for around US$758 million. Local operators, like Mobilink, were also able to access funds from global capital markets, completing a US$250 million bond offering in late 2006. Overall, the telecom sector secured more than US$1.8 billion in FDI during 2005-06 and emerged as Pakistan's largest recipient of foreign investment inflows, with its share exceeding 54% in total FDI inflows into Pakistan in those years.

During 2006-07 too, the telecom sector was the single largest recipient of FDI. It received approximately 35% of the total FDI inflows to Pakistan. FDI in the telecom sector in these years was 17 percentage points higher than that of the financial sector and 25 percentage points higher than the one in the oil and gas sector. Textile and information technology sectors received far less FDI in that period each getting only 1.2% of Pakistan's total FDI inflows. In nutshell, the mobile phone sector alone received an investment of US$ 6 billion during 2004-2010. Only Telenor, and Mobilink, that invested $761 million and $591 million respectively accounted for 52% of all FDI inflows to Pakistan in 2007 (Hashim *et al.* 2006; Latief and Lefen 2019).

3. Material Methods

3.1. Data Description

We use time-series data for 37 years (1981-2017). Data on FDI (Percentage of GDP), Trade Openness (TO)(Percentage of GDP), Real Effective Exchange Rate (REER) (Base is 2010) and

GDP growth (GDP Gr) (Growth in GDP at constant price 2010) is gathered from the open data set maintained by World Development Indicators (Online open data set). Labour Force (LF) (work force in manufacturing sector in millions) data is taken from various issues of the Pakistan Economic Survey (Ministry of Finance) , the manufacturing sector's wage (in US dollar) data is obtained from the Statistical Year Books of the United Nations and the data on Human Capital Index (HCI) is extracted from the Penn World Table 9.0.

We have also constructed a regime dummy to assess the role of political regimes on FDI inflows. The dummy value of the dictatorial regime is taken as one and for democratic regime as zero. Output labour cost (OLC), which denotes the ratio of labour output to labour cost, is constructed by using data from the manufacturing sector.

A higher Human Capital Index and other positive labour market indicators, which have a significant and positive coefficient for output labour cost, would denote that FDI inflows to Pakistan have been largely efficiency seeking. A lower Human Capital Index and not do positive labour market indicators would mean that FDI attracted by Pakistan has been anything but efficiency seeking.

In order to make the findings of the study comparable to the existing literature, we have also assessed our analytical model by replacing output labour cost with the manufacturing sector's labour cost which has been used by many other studies (Bayraktar Saglam and Sayek Boke 2017), (Lai and Sarkar 2011), (Bellak, Leibrecht and Riedl 2008). Also, rather than separately assessing the impact of the supply of labour force and the level of human capital on FDI inflows, we have looked at their joint effect to capture the quality of the labour force.

Overall, we have used the following model to examine the role of labour market in attracting FDI:

Foreign Direct Investment = f (Labour Force, Output to Labour Cost ratio, GDP Growth, Trade Openness, Real Effective Exchange Rate, Human Capital Index, human capital*labour force, Regime Dummy)

3.2 . Variables Description

Previous studies mainly used two labour market efficiency indicators: average product of labour and average labour cost. Boghean and State (2015) used the average product of labour as an efficiency indicator and found a strong association with FDI inflows. Many studies use only labour cost suggesting that higher labour cost discourages FDI inflows[Saglam and Boke (2017), Lai and Sarkar (2011)].

Both these variables have some problem. Labour cost, per se, does not capture efficiency. Highly skilled workers will have higher productivity and thus will receive higher wages than the less skilled – and consequently less efficient -- ones. Labour cost, therefore, needs to be adjusted for corresponding productivity. The same holds true for the average product of labour which also needs to be adjusted for the corresponding cost. Finally, even real wages, generally used in literature, may not be a good proxy for labour costs as high wage does not necasriliry mean higher labour cots (Axarloglou 2004).

We, therefore, use the output to labour cost (OLC) ratio as an indicator of labour market efficiency. It is the ratio of manufacturing sector output and manufacturing sector labour cost (or the ratio of average product of labour and wages).

$$OLC = \frac{Output\ of\ Manufacturing\ Sector}{Wages\ of\ Manufacturing\ Sec * Labour\ Force\ of\ Manufacturing\ Sector}$$

The expected sign of OLC is positive because more output against less cost should bring FDI into an economy. The expected sign for unemployment and Labour Force supply should also be positive because both these indicate the availability of labour though unemployment on its own does not mean that its higher level is a boon because it might affect FDI negatively if it increases too much (Strat *et al.* 2015). GDP growth and trade openness are also expected to have positive signs because these boost an economy [Mohiuddin (2011), Dar (2016) and Khan & Khan (2011)].

A negative sign is expected for inflation as it indicates the stability (or instability) of an economy. Higher inflation certainly means instability though the real effective exchange rate should also be considered before arriving at this conclusion. The real effective exchange rate is a very important variable as far as cross-border trade is concerned because it measures the international competitiveness (Mackton *et al.* 2018).

4. Results and Discussion

4.1. Empirical Estimations

The results of correlation matrix, descriptive statistics, and unit root tests are provided in tables 1, 2 and 3 respectively.

Table 1: Correlation Matrix

	FDI	*OLC*	*TO*	*REER*	*GDP Gr*	*HCI*	*L.F*
FDI	1						
OLC	0.244	1					
TO	0.113	0.086	1				
REER	-0.470	-0.578	0.084	1			
GDP Gr	-0.146	-0.475	-0.009	0.505	1		
HC	0.536	0.194	-0.493	-0.695	-0.318	1	
L.F	0.379	0.034	-0.566	-0.606	-0.339	0.951	1

Table 1 shows that output labour cost (OLC) is positively linked to FDI inflows with a lower correlation coefficient (0.244). A positive correlation is also observed between trade openness (TO) and FDI inflows. Human capital (HC) and labour force (LF) show a positive correlation with FDI inflows but a higher real effective exchange rate (REER) discourages FDI inflows (having a correlation coefficient of -0.470).

Higher economic growth, however, negatively correlates with FDI inflow. This sounds strange, but is consistent with the findings of many studies, including but not limited to, Buchanan et al. (2012), Jensen (2003), and Wint and Williams (2002), all of which have documented a negative impact of economic growth on FDI inflows in developing countries

Table 2: Summary Statistics

	FDI	OLC	TO	REER	GDP Gr	HC	L.F
Mean	0.9454	2849693	33.45	123.60	4.75	1.56	42120000
Median	0.6770	2688689	33.69	112.70	4.84	1.52	39930000
Standard Deviation	0.8198	770129.2	3.27	36.047	1.92	0.20	12319062
Skewness	2.1430	0.8268	-0.68	1.7161	-0.10	-0.006	0.356541
Minimum	0.1026	1543293	25.30	93.432	1.01	1.276	25650000
Maximum	3.668323	5046639	38.90	226.34	7.92	1.799	63050000

Table 2. presents the data description in the form of central tendency and measures of variability. Measures are given for the 37 years values. Further these measures confirmed that there is no big data spread and also no outlyers in the data.

4.2. Unit Root Test

Results for unit root, Augmented Dickey-Fuller (ADF) and Philip-Perron (PP), tests are reported in Table 3. T-values are given in the table for the identification of non-stationary time series variables and the conclusion is given in the last column. Variables are considered significant at 10% level of significance. Smaller a, b and c indicate the rejection of null hypothesis at 1%, 5%, and 10% significance level respectively. All the variables, except GDP growth, are stationary at first difference. This leads us to choose the Autoregressive Distributed Lag Model (ARDL) to estimate the impact of labour market characteristics on FDI inflows.

Table 3: Result of the Unit Root Test

		THE ADF TEST		THE PP TEST		CONCLUSION
VARIABLES		**Intercept**	**Trend and Intercept**	**Intercept**	**Trend and Intercept**	
FDI	Level	-2.883[c]	-3.0122	-1.8280	-1.8218	I(1)
	1st Difference	-3.986[a]	-3.950[b]	-3.958[a]	-3.913[b]	
GDP GR	Level	-3.606[a]	-3.615[b]	-3.576[a]	-3.613[b]	I(0)
L.F	Level	1.5536	-1.9102	1.2167	-1.9240	I(1)
	1st Difference	-5.403[a]	-5.831[a]	-5.618[a]	-5.957[a]	

OLC	Level	-2.898[c]	-2.6919	-2.898[c]	-2.5634	I(1)
	1st Difference	-7.888[a]	-8.082[a]	-8.697[a]	-22.38[a]	
REER	Level	-4.722[a]	-1.8580	-4.338[a]	-3.315[c]	I(1)
	1st Difference	-3.608[a]	-4.589[a]	-3.570[b]	-5.007[a]	
TO	Level	-1.6416	-2.4164	-1.6806	-2.4552	I(1)
	1st Difference	-8.022[a]	-8.341[a]	-7.942[a]	-8.321[a]	

Notes: ADF and PP denote the Augmented Dickey-Fuller and Phillips-Perron tests respectively. a, b and c indicate the rejection of the null hypotheses at the 1%, 5%, and 10% significance levels respectively; Estimation period: 1981-2017.

4.3 ARDL Estimates

We have adopted a sensitivity analysis approach for a reason. Estimation of the model, including controls, would not let us identify the individual impact of labour market efficiency indicators on FDI inflows so we have estimated different models with alternative specifications. The results are given in Table 4. Significance levels of 1%, 5%, and 10% are denoted by a, b and c respectively. The long-run coefficients of the following four models are also presented in Annex-1.

We start with the individual impact of OLC ratio (model-1). In model 2, we include other indicators of labour market efficiency and real effective exchange rate (REER). Most importantly, we incorporate the interaction term of human capital and labour (HC*LF) to capture the quality of labour force. Model 3 adds regime dummy to explain FDI inflows to Pakistan. The dummy variable is used for democratic and dictatorial regimes. Bounds test and long-run coefficients are presented in Annex-1.

Table 4: Results of ARDL

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Output/Labour Cost (OLC)	-0.0000002	-0.0000001		0.0000015
GDP growth		0.0945[a]		0.1097[a]
Labour Force (L.F)		0.000001[a]		0.000032
Human Capital (HCI)		7.328		7.1072
HC*L.F		-0.000004[a]		0.0000017
Real effective exchange rate (REER)		0.0101[b]		0.00432
Trade openness		0.0492[c]		0.01684
Labour cost				
Political regime Dummy			0.5273[a]	0.6348[a]
Coint Equation	-0.4360[a]	-0.6229[a]	-0.2416[a]	-0.2823[a]

Note: a, b, and c indicate the rejection of the null hypotheses at the 1%, 5%, and 10% significance levels respectively;

Comparing model 1 and model 3, one can clearly note that regime dummy enters significantly at a 1% level and carries a positive sign while output labour cost enters insignificantly. Model 3 also suggests that FDI inflows in dictatorial regimes, on average, are 52% higher compared to those under democratic governments. Omission variable bias may lead to erroneous conclusions so we have estimated full specification in model 2 which shows that output labour cost variable remains insignificant and while human capital has a larger positive coefficient, it is still insignificant statistically.

Most importantly, the interaction term (HC*LF) is significant statistically and carries a negative sign, suggesting that lower human capital level significantly weakens the labour market efficiency effect on FDI inflow. This may explain the insignificance of human capital and output labour cost variables. Traditional drivers of growth - GDP growth, trade openness and REER - enter significantly and carry positive signs.

Model 4 provides estimates when we incorporate regime dummy in model 2. Regime dummy enters significantly, with a large coefficient (0.6348). Keep all else equal, dictatorial regimes attract approximately 63% higher FDI inflows compared to the democratic ones. Output labour cost, which denotes labour market efficiency, is still insignificant in this model. In other words, labour market efficiency does not explain FDI inflows to Pakistan. The inclusion of regime dummy, in fact, renders all labour market-related indicators are statistically insignificant. One plausible explanation of this can be that FDI inflow into Pakistan is not efficiency-based; it is instead dependent on the nature of regimes in the country.

5. Conclusion and Policy Recommendations

Efficiency seeking FDI is dependent on several aspects of the labour market in the recipient country. Pakistan has mostly lacked those aspects, therefore, has not been able to attract efficiency seeking FDI. This accumulation has been significantly higher in dictatorial regimes than under democratic governments. Changes in FDI inflows to Pakistan over time, therefore, are insensitive to labour market characteristics.

The findings of this study lead to the following policy implications.

- Pakistan needs to target efficiency seeking FDI.
- FDI policy must clearly outline that its objective and strategy is to attract efficiency seeking FDI.

- Pakistan needs to improve the skills level of its labour force as poor human capital limits efficiency seeking FDI inflows. Industry level analysis of leading sectors with higher demand for efficiency and marginal value addition must be identified and targeted policies to direct FDI to these sectors must be put in place. Priority must be given to the manufacturing sector as FDI inflows to this sector enhance productivity. Light manufacturing may be a good sub-sector to start with.
- A mapping of investors, countries, regions, consortiums that have the potential to make efficiency seeking FDI in Pakistan must be carried out and targeted policies should be adopted to facilitate these potential investors.

- The literature on modelling drivers of FDI inflows must consider the nature of FDI coming to Pakistan. Research on the subject needs to extend its scope beyond economic fundamentals. It must also assess the role of other variables, including macroeconomic and political risks, tax structure, composition and outcome of research and development expenditure, legal barriers to FDI (Bellak, Leibrecht, and Riedl 2008), and more specifically, the share of low-skilled hours in total labour hours, unit labour costs and compliance with international production standards at industry level.

We conclude that modelling FDI exclusively on economic fundamentals may produce erroneous estimates, wrong conclusions and policy prescriptions that may not be relevant.

We, however, have studied only the macro-level impact of labour market related indicators. Future research on the issue must i) explore the scope of efficiency seeking FDI inflows, ii) highlight policy drivers and variables which can help attract efficiency seeking FDI, and iii) identify policies that can help explore this potential.

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Annexure

Model-1

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OLC	0.000000	0.000000	1.319020	0.1971
C	-0.436062	1.120534	-0.389155	0.6999

Model-2

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OLC	0.000000	0.000000	0.995598	0.3313
GDP_GR	0.520960	0.159039	3.275678	0.0038
LF	0.000001	0.000000	3.166012	0.0049
HC	36.694953	8.732538	4.202095	0.0004
HC*LF	-0.000001	0.000000	-3.513823	0.0022
REER	0.016306	0.008724	1.869059	0.0763
TO	0.079090	0.047736	1.656832	0.1132
C	-62.248026	15.457226	-4.027115	0.0007

Model-3

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D01	0.688361	0.635699	1.082840	0.2878
C	0.684602	0.401825	1.703732	0.0991

Model-4

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OLC	0.000001	0.000001	1.591682	0.1289
GDP_GR	1.503083	0.615643	2.441486	0.0252

LF	0.000001	0.000001	1.183089	0.2522
HC	25.175020	16.591574	1.517338	0.1465
HC*LF	-0.000001	0.000001	-1.223128	0.2371
REER	0.015327	0.017876	0.857398	0.4025
TO	0.209219	0.136640	1.531169	0.1431
D01	-0.289138	0.972513	-0.297310	0.7696
C	-63.579783	37.280242	-1.705455	0.1053

Model-5

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP_GR	0.202223	0.121194	1.668594	0.1100
LF	0.000001	0.000000	2.674631	0.0142
HC	37.365771	7.045731	5.303321	0.0000
HC*LF	-0.000001	0.000000	-3.744080	0.0012
REER	0.008018	0.006904	1.161313	0.2585
TO	0.104539	0.047281	2.211029	0.0383
LC	0.000226	0.000091	2.484289	0.0215
D01	0.328228	0.284555	1.153480	0.2617
C	-55.674200	12.502014	-4.453219	0.0002

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. | . |	. | . |	1	-0.047	-0.047	0.0839	0.772
. | . |	. | . |	2	-0.060	-0.062	0.2236	0.894
. | . |	.*| . |	3	-0.062	-0.069	0.3814	0.944
.*| . |	.*| . |	4	-0.116	-0.128	0.9453	0.918
.*| . |	**| . |	5	-0.205	-0.233	2.7529	0.738
. | . |	. | . |	6	0.036	-0.021	2.8093	0.832
. | . |	.*| . |	7	-0.019	-0.076	2.8256	0.901
.*| . |	.*| . |	8	-0.123	-0.198	3.5520	0.895
.*| . |	**| . |	9	-0.099	-0.223	4.0451	0.908
. | . |	.*| . |	10	0.037	-0.112	4.1178	0.942
. |*. |	. | . |	11	0.080	-0.021	4.4651	0.954
. |*. |	. | . |	12	0.133	0.027	5.4667	0.941
. |*. |	. | . |	13	0.155	0.065	6.8829	0.908
. | . |	. | . |	14	0.023	0.005	6.9165	0.938
. | . |	. | . |	15	-0.016	0.038	6.9329	0.959
.*| . |	. | . |	16	-0.082	-0.024	7.3900	0.965

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	9.526605	7

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.03	3.13
5%	2.32	3.5
2.5%	2.6	3.84
1%	2.96	4.26