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The Impact of Electricity Crisis on FDI in Pakistan

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Abstract

The main intention of this paper is to check the impact of electricity crisis on foreign direct investment inflow in Pakistan. Secondary data from world development indicator and energy book with a sample of 13 years from 2001 to 2013 is taken. Unit root analysis for making data stationary and OLS method are employed in Eviews to determine the impact of electricity crisis on FDI inflow in Pakistan. Results indicate that there is a negative and significant relationship between electricity crisis and FDI inflow in Pakistan. This paper also shows that due to electricity shortfall foreign investors are discourage and ultimately there is decline in FDI inflow in Pakistan after 2005.

Keywords: Electricity shortfall; Foreign direct investment; Pakistan.

Introduction

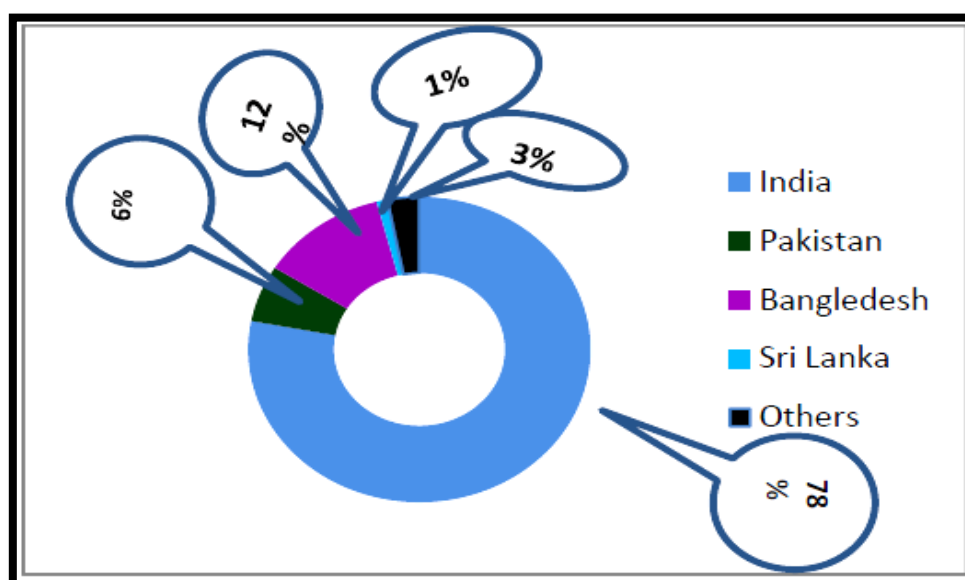
Foreign Direct Investment

Foreign Direct Investment is thought to be an imperative source to develop physical capital, make employment opportunities, create gainful limit, improve skills of managers and local labor through exchange of technology, and incorporation with rest of the world. Foreign Direct

Investment (FDI) is the investment Mostly remote organizations employ neighborhood staff of host nation made by multinational business endeavors in remote and give a huge scope of livelihood opportunities for nations to control resources and production activities (Lodhi, Siddiqui, and Habiba, 2013).

At one time the vitality of FDI has been ignored in the economies yet in nineties and twenties it got impressive due consideration. Presently it is conceded as a significant issue helping towards economy of host economy particularly in developing nations (Bashir, Mansha, Zulfiqar, & Riaz, 2014). Pakistan requires more attractive FDI if Pakistan to outcompete alternating areas where investment are more. Particularly within the south Asian countries which show the Foreign direct investment drifts in following figure.

Figure 1: FDI Inflow in South Asian Countries



Source: Fiscal Review 2012, Business Recorder

With an increment of 12 percent, Pakistan got some \$1.6 billion Foreign Direct Investment (FDI) during the last monetary year 2014. "For the last few years FDI was on decrease due to a few household and outside issues, electricity crisis, antagonistic peace circumstance. Foreign investors have put some \$1.631 billion FDI in Pakistan during the FY14 as contrasted with \$1.456 billion in Fy13, delineating an increment of \$175 million. FDI inflows, during the last monetary year, remained at \$2.641 billion while FDI outflow of \$1 billion. Month-on-Month premise, FDI has posted a surge of 47 percent during a month ago of FY14. FDI remained at \$189 million in June 2014 as against \$128.3 million in June 13, demonstrating an increment of 60 million (Zuberi, 2014).

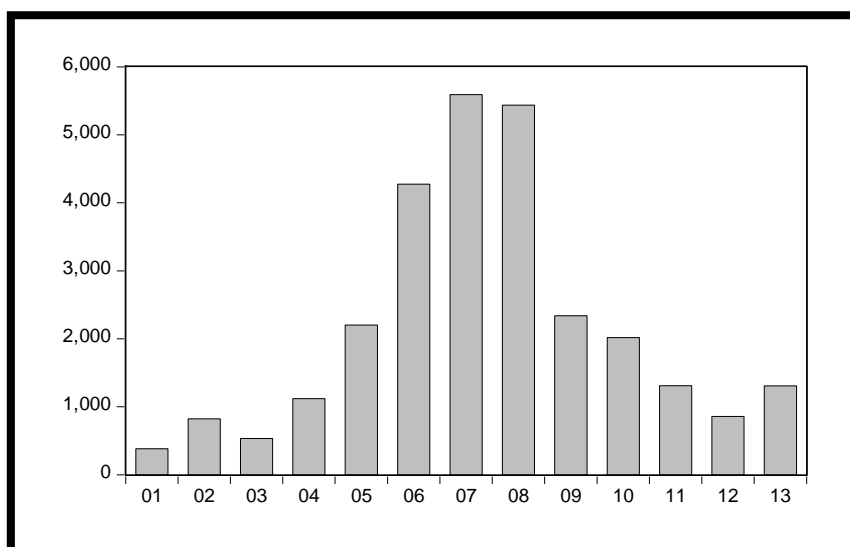
Table 1: FDI inflow in Pakistan

Year	FDI Inflow (million US\$)
2001	383
2002	823
2003	534
2004	1118
2005	2201
2006	4273
2007	5590
2008	5438
2009	2338

2010	2018
2011	1309
2012	859
2013	1307

Source: World Development Indicator

Fig 2: FDI inflow in Pakistan (million US\$)



The above figure shows the foreign direct investment inflow in Pakistan from 2001 to 2013. There was maximum FDI inflow in 2007 and 2008 after that due to electricity crisis the FDI has declining trend.

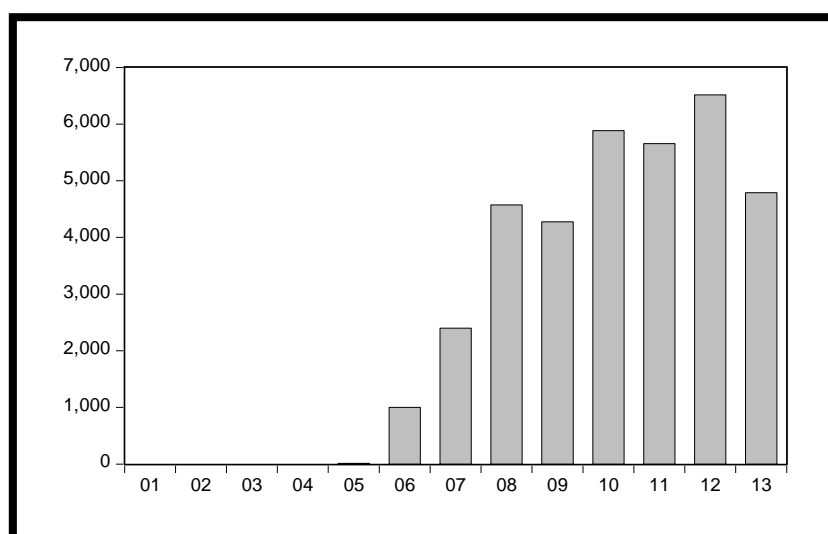
Electricity Crisis

Pakistan's current energy crises have been a red signal for foreign investors. The demand for energy specifically electricity is increasing and supply is less. The industries have to put their production on hold or some of them are using their own resources to produce electricity. Not everyone has this option. These conditions causes thousands of people to lose their jobs and have impacted on labor market and manufacturing organizations. This is an alarming situation for investors who are willing to invest in Pakistan (Khalid, Ullah, & Shah, 2012).

Table 2: Electricity Shortfall in Pakistan

Year	Electricity Shortfall (mw)
2001	0
2002	0
2003	0
2004	0
2005	13.329
2006	1000
2007	2400
2008	4574
2009	4274
2010	5885
2011	5656
2012	6517
2013	4790

Fig 3: Electricity Crisis in Pakistan (Shortfall mw)



The above figure shows the electricity crisis (shortfall) in Pakistan from 2001 to 2013. The electricity crisis started from the year 2006 and there was maximum shortfall in 2012. The shortfall badly effect the FDI inflow in Pakistan which has been shown in figure 3.

Literature review

Lodhi, Siddiqui, and Habiba (2013), also by using ADRL approach, investigated the factors influencing FDI in Pakistan. They found that Gross capital formation, Electricity production and FDI inflows are positively correlated in long run. They also concluded that industrial value addition and FDI inflows are positively correlated in short run.

According to Lizondo (1991) for developing nations better choice is to depend on FDI instead of Bank loans and bonds. They can be among developed countries by getting FDI (In 1997 in China FDI was 15 percent of domestic investment, 41 percent of total exports, 19 percent of industrial output, 13 percent of tax revenue and 18 million employment Pakistan needs FDI as it's a capital-deficit country.

Between major FDI receiving countries of Asian region rate of return for FDI is higher for Pakistan. According to UNCTAD 2003 the normal rate of return of world is 5.5, developing nations 4.2, China 5.8 and of Pakistan 7.0. Instead of this fact in 2004-05 Pakistan just has had be able to get FDI of US\$632.5 which was less than China, Malaysia, Korea and India. (Khan and Nawaz, 2010).

The most recent quarterly report of the State Bank of Pakistan, distributed in June 2012, says that foreign direct investment (FDI) in Pakistan saw a 36% decrease from US\$840 million in 2011 to US\$532 million in 2012. The decline in FDI is due to global economic crisis, electricity crisis, flood and security situation in Pakistan (Chandran, 2012).

Foreign Direct Investment (FDI) in Pakistan remained at \$ 853.5 million during July-April 2012-13 as against \$ 658.2 million last year, posting an increment of 29.7 percent. Oil & Gas Exploration remained the real area for remote investor. Pakistan will without a doubt attract FDI with the determination of energy shortage and change in the lawfulness circumstance. The Board of Investment (BOI) under the Prime Minister's Secretariat has sanction new investment strategy for investors. Specifically, endeavors are additionally going ahead to support the setting up of foods grown from the ground handling commercial ventures and more fare transforming zones in the nation, so that managed high financial development through exports may be accomplished and arrangement of investment opportunities may be created (SBP, 2013).

The essential anxiety for foreigners, particularly for Japanese financial investors in Pakistan are the security concerns, energy stipulations and non-accessibility of infrastructure, said Japan Embassy Economic and Development Counselor Naoaki Kamoshida during discussion with

journalists. Foreign direct investment (FDI) is generally hampered because of these concerns (Kakakhel, 2014).

The reasons of declining FDI in Pakistan is because of terrible arranging and government approaches. The low rate of GDP, political flimsiness, more awful lawfulness circumstance and energy shortfall are the real reasons for low FDI. The declining security issue has frightened off financial investors. FDI can't be energized in a compounding lawfulness circumstance. The circumstances won't enhance until the legislature cures the security and energy crisis. It's tricky to bait venture unless and until financial specialists are given lucrative motivating forces for leaning toward Pakistan over different nations (Arslan, 2010).

Material and methodology

The current study explores the impact of electricity crisis on foreign direct investment (FDI) inflow. FDI is taken as dependent variable which is measured in million US\$ in Pakistan while electricity crisis is taken as independent variable in this study. Electricity crisis is measured by taking yearly shortfall of electricity in megawatt. To remove the trend in data natural logarithm of FDI and electricity crisis is taken for better results. Time series data from 2001 to 2013 is taken from the world development indicator and energy book. Eviews 6 is used to analyze the data. unit root test for stationary of data and ordinary least square method is used to check the impact of electricity crisis on FDI.

On the basis of above literature the following hypothesis is developed.

Ho: There is no relationship between electricity crisis and foreign direct investment in Pakistan

H1: There is a relationship between electricity crisis and foreign direct investment in Pakistan

Research Model

$$FDI = \beta_0 + \beta_1 SF + \mu$$

$$LFDI = C + \beta_1 LSF + \mu$$

Where,

LFDI = Log of Foreign direct investment

β_0 = Intercept

β_1 = Effect of independent variable (shortfall)

LSF = Log of shortfall

μ = Error term

Results and Discussion

Unit root test

Before applying OLS method first make the data stationary because non stationary data cause spurious results. Augmented dickey fuller unit root test is used to check whether the data is stationary or not.

Ho: LFDI has a unit root problem

H2: LFDI is stationary

Ho: LSF has a unit root problem

H3: LSF is stationary

Table 3: Unit root results of LFDI

LFDI Exogenous: Constant Lag Length: 2 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.127102	0.0128
Test critical values:	1% level	-4.297073
	5% level	-3.212696
	10% level	-2.747676
*MacKinnon (1996) one-sided p-values.		

* indicate significance at the 5 % levels

Table 4: Unit root results of LSF

LSF Exogenous: Constant Lag Length: 2 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.250580	0.0063
Test critical values:	1% level	-4.297073
	5% level	-3.212696
	10% level	-2.747676
*MacKinnon (1996) one-sided p-values.		

* indicate significance at the 1 % levels

Table 5: Unit root decision

Variables	I(0) (means At level)	Decision
Foreign Direct Investment Inflow	0.0128	I(0)
Electricity Shortfall	0.0063	I(0)

Above tables 3 and 4 shows augmented Dickey-Fuller unit root results of LFDI and LSF. LFDI is significant at .05 level of significant while LFS is significant at .01 level of significant. So both null hypothesis are rejected. Both variables are significant at level so we don't need to go for 1st and 2nd difference in Dickey-Fuller unit root.

Ordinary Least Square method and testing Hypothesis

Table 6: OLS results

Dependent Variable: FDI Method: Least Squares Date: 11/12/14 Time: 23:41 Sample: 2001 2013 Included observations: 13				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.679061	0.329436	20.27424	0.0000
LSF	0.129566	0.050425	2.569478	0.0261
R-squared	0.375079	Mean dependent var		7.363233
Adjusted R-squared	0.318268	S.D. dependent var		0.847084
S.E. of regression	0.699412	Akaike info criterion		2.263486
Sum squared resid	5.380956	Schwarz criterion		2.350401
Log likelihood	-12.71266	Hannan-Quinn criter.		2.245621
F-statistic	6.602218	Durbin-Watson stat		0.521025
Prob(F-statistic)	0.026075			

* indicate significance at the 5 % levels

Above table shows the OLS results. P value is .02 which is significant $.02 < .05$. so our null hypothesis is rejected and research hypothesis “there is a relationship between electricity crisis and FDI” is accepted. The value of β_1 (beta coefficient) is .12 which means that there is 12 % impact of electricity shortfall on FDI. The strength of beta is very low in this study because there are some other relevant variables are missed which we have not taken in our model.

R² shows the goodness of model fit. Value of R² is .37 which means that there is 37 % variations in FDI due to independent variable Shortfall. Our model is not good enough because due to small number of observations. The value of Durbin Watson is .52 which means that there is negative autocorrelation exist in our model.

Conclusion

This paper has attempted to investigate the impact of electricity crisis on FDI inflow in Pakistan. Unit root test and OLS method are employed on time series data. The findings revealed that there is negative and significant relationship between electricity crisis and FDI inflow in Pakistan. The declining trend of FDI shows that Government of Pakistan is unable to control the severe load shedding now a days which dropped the confidence of foreign investors to invest in Pakistan. Foreign direct investment is being hampered due to these concerns like security concerns, energy constraints and non-availability of proper infrastructure facilities.

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