

The Impact of Institutional Quality on Foreign Direct Investment in Burkina Faso

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Abstract

This study examined the impact of institutional quality on the attraction of foreign direct investment in Burkina Faso over the period 1985-2005.

Different analyzes on variables allowed use of error correction modeling (VECM). The results reveal a long-term relationship between foreign direct investment (FDI), corruption, external conflicts and socio-economic conditions. They show that corruption and external conflicts are determinants of the attractiveness of FDI in the country.

Therefore, there is a need to develop appropriate policies such as strengthening judicial governance and improving existing anti-corruption strategies in Burkina Faso. The country must also be involved in the appropriate way of resolution of external conflicts that keep potential investors away, especially in the West African sub region.

Keywords: Institutional quality - Foreign direct investment - VECM - Burkina Faso.

1. Introduction

Foreign direct investment is a source of funding for a given economy. For developing countries such as Burkina Faso, it is an external windfall able to feed economic circuits with corollaries of advantages (technological, capital accumulation, etc.) it can generate for the country.

Given the importance of such mechanism, a number of studies have examined the determinants of the viability of this approach for the socio-economic development of a given territory.

The various readings highlight the role of institutional quality in attracting FDI because credible institutions are important safeguards upstream of the massive inflow of foreign investment needed to achieve economic prosperity, North D. (1990). This requires the quality of administrative, judicial and regulatory governance.

Many institutions have been implementing instruments for measuring the quality of institutions in different countries for a number of years. These data should provide potential investors, an insight into institutional practices in countries, where they are some interest. But also, these tools are, for the probable beneficiary countries, indicators to be improved, in order to attract as much as possible foreign direct investment.

Generally, six indicators are used by the World Bank methodology to rank the different countries (Daniel K., Aart K. (2010)¹). Other entities such as the Political risk service (Prs) publish a series of twelve index that take into account the issues of corruption, the existence of the rule of law, ethnic, internal, external conflicts, etc.

The analyze of FDI data, as a percentage of GDP in Burkina Faso, shows a weakness in the country's ability to attract foreign investment (less than 1% of FDI attract on average between 1985-2015). Thus, the previous analysis raises the question of links between quality of institutions and low FDI rate in the country.

Then, this study aims to test the impact of the quality of institutions in the mobilization of foreign direct investment in Burkina Faso.

2. Data

The data driven our study are representing by ten(10) series cover the period 1985 to 2005. FDI represents the foreign direct investment net inflows in % of GDP. Data are get from the Unctad database.

The institutional quality data comes from ICRG international country risk guide presented by the PRS political risk service group contains twelve (12) components which are GS: Government stability, SC: Socioeconomic conditions, IP: Investment profile, IC: Internal conflict, EC: External conflict, CO: Corruption, MP: Military in politics, RP: Religion in politics, LO: Low and order, ET: Ethnic tensions, DA: Democratic accountability and BQ: Bureaucracy quality.

3. Econometric model

3.1 Unit roots test

Before of econometric model application, unit root test is a condition to avoid wrong regressions. Two tests are used to evaluate the order of integration of variables. They are Augmented Dickey fuller (ADF) and Phillips Perron (PP) tests. Only variables which satisfied both tests are eligible for the model.

¹ For details of methodology

Table 1: ADF Unit root test

<i>Augmented Dickey Fuller (ADF unit root test)</i>						
	Level			First difference		
	Intercept	Trend and Intercept	None	Intercept	Trend and Intercept	None
<i>FDI</i>	-3.540482*	-4.773799*	-0.701694	-3.995268*	-3.825466*	-7.680022*
	-3.020686	-3.658446	-1.960171	-3.081002	-3.759743	-1.960171
<i>GS</i>	-0.982282	-2.652969	0.344524	-3.184588*	-3.096266	-3.197793*
	-3.020686	-3.710482	-1.959071	-3.029970	-3.673616	-1.960171
<i>SC</i>	-0.833208	-1.468088	-0.381995	-3.200929*	-3.719497*	-3.286335*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>IP</i>	-0.528072	-3.992960*	2.170209	-5.513219*	-5.317012*	-4.230749*
	-3.040391	-3.673616	-1.961409	-3.040391	-3.690814	-1.961409
<i>IC</i>	-2.034615	-1.708191	-0.509421	-2.695325	-2.944969	-2.770797*
	-3.029970	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>EC</i>	-1.600788	-1.889242	-0.518311	-4.285168*	-4.255047*	-4.412776*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>CO</i>	-0.802933	-1.981299	-1.894047	-3.998762*	-3.901918*	-3.585686*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>MP</i>	-1.485042	-4.076754*	0.103602	-3.518904*	-3.769157*	-3.149184*
	-3.029970	-3.710482	-1.959071	-3.065585	-3.733200	-1.960171
<i>LO</i>	-1.306696	-1.023710	0.289826	-3.382814*	-3.404325	-3.445626*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>DA</i>	-1.118719	-2.217967	0.326369	-4.578344*	-4.489406*	-4.454588*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>BQ</i>	-14.69937*	-9.025240*	-1.872077	-2.097618	-4.612800*	-3.162278*
	-3.065585	-3.733200	-1.961409	-3.065585	-3.733200	-1.966270

Note: * means statistically significant at 5% level of significance

(Test critical values at 5% level of significance in parenthesis).

NB: RP and ET are the same score in the period 1985-2005, the unit root test can't be test.

Source: Our construction on eviews 8

The Impact of Institutional Quality on Foreign Direct Investment in Burkina Faso

Table 2: PP unit root test

	<i>Level</i>			<i>First difference</i>		
	Intercept	Trend and Intercept	None	Intercept	Trend and Intercept	None
<i>FDI</i>	-3.512040*	-4.774291*	-1.697064	-17.86432*	-17.88914*	-11.64207*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>GS</i>	-1.101681	-1.510576	0.231341	-3.063197*	-2.953926	-3.127416*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>SC</i>	-1.018088	-1.366670	-0.390028	-3.169988*	-3.843427*	-3.258788*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>IP</i>	-0.509093	-2.147499	2.285149	-4.384490*	-4.136792*	-3.038033*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>IC</i>	-1.487167	-1.735481	-0.542805	-2.641282	-2.814433	-2.717778*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>EC</i>	-1.727599	-2.092705	-0.515530	-4.267780*	-4.234377*	-4.387188*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>CO</i>	-0.792553	-1.981299	-1.948547	-3.991635*	-3.886102*	-3.585686*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>MP</i>	-1.175759	-1.841217	-0.063926	-3.066383*	-3.115533	-3.149184*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>LO</i>	-1.450734	-1.358896	0.206091	-3.375489*	-3.396165	-3.438138*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>DA</i>	-1.072286	-2.211546	0.419706	-4.606160*	-4.511630*	-4.461920*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171
<i>BQ</i>	-1.669982	-0.997075	-1.965470	-2.429160	-2.527532	-2.360847*
	-3.020686	-3.658446	-1.959071	-3.029970	-3.673616	-1.960171

Note: * means statistically significant at 5% level of significance

(Test critical values at 5% level of significance in parenthesis).

NB: RP and ET are the same score in the period 1985-2005, the unit root test can't be test.

Source: Our construction on eviews 8

The Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests shows that we cannot reject the null hypothesis of a unit root for FDI, SC, IP, EC, CO and DA. The values of ADF and PP are greater than their respective critical t-value at 5% level of significance. So these variables are not stationary at their levels. But after differencing them at one time, the null hypothesis of existence a unit root was rejected at the 5% level of significance for both tests, and then we conclude that these variables are stationary at their first differences².

So these variables are integrated of the order one I (1). There are eligible to test the long run cointegration analysis between them. However, it is appropriate to analyze the eventual links between them and so, choose the necessary variables for the model.

3.2 Choose of eligible series

In the remainder of analysis, a correlation table allowed us to detect strong links between some of the twelve indices constituting the quality of the institutions. Thus, among the variables eligible to test cointegration, three of them are strongly correlated. There is a significative value of -0.9193 between CO and DA, -0.95 between CO and IP and 0.88 between IP and DA.

Corruption is retained as the eligible variable to test cointegration with the other integrated variables of order 1. This index is a rigorous measure of corruption in the system. Moreover, a corrupt system of governance implies weak democratic accountability and unattractive investment profile. This leads us to choose this variable that sums up the two other and avoids problems of autocorrelation.

3.3 Trace and max eigenvalue tests

➤ Trace test

According to trace test, 1 cointegrating equation at the level of 5% were accepted. The trace statistic value 25.40 associated is less than the critical value 29.79 at the 5% significance level. This indicated that it exists a long-run relationship between FDI, CO, EC and SC.

➤ Max eigenvalue

Max eigenvalue test conduct to the same result of trace test. 1 cointegrating equation at the level of 5% were detected indicated a long-run relationship between four series. The value associated to the max eigen value 13.85 is less than 21.13 the critical value at the 5% level of significance.

Table 3: Trace test of cointegration

	Eigenvalue	Trace Statistic	0.05 critical value	P value
None	0.813729	57.33337	47.85613	0.0050
At most 1	0.517774	25.40291	29.79707	0.1475
At most 2	0.374035	11.54539	15.49471	0.1801
At most 3	0.129939	2.644647	3.841466	0.1039

² The MP index is I(1) for ADF test and not for PP test. So it failed to be integrate in the model.

Table 4: Max eigen value test of cointegration

	Eigenvalue	Trace Statistic	0.05 critical value	P value
None	0.813729	31.93045	27.58434	0.0129
At most 1	0.517774	13.85752	21.13162	0.3768
At most 2	0.374035	8.900747	14.26460	0.2945
At most 3	0.129939	2.644647	3.841466	0.1039

➤ **Cointegrating equation**

The cointegrating equation is given by:

$$\text{FDI} = -0.073486 \cdot \text{EC} + 0.109756 \cdot \text{SC} - 0.313742 \cdot \text{CO}$$

As we can see, external conflict (EC) and corruption (CO) have negative impact on FDI inflows when there is positive impact of socio economics conditions (SC) on FDI.

3.4 Vector error correction model

The LR, FPE, AIC, SC and HQ criteria selection of lag indicates the optimal lag to 1. The error correction model is given by the table below.

Table 5: Estimation of VEC model

	DFDI	DEC	DSC	DCO
CointEq1	-1.369663	-0.814212	0.025414	0.074163
	(0.23525)	(1.08582)	(0.72841)	(0.36528)
	[-5.822224]	[-0.74986]	[0.03489]	[0.20303]
DFDI (-1)	0.024202	0.426805	-0.178520	-0.096510
	(0.163660)	(0.75512)	(0.50656)	(0.25403)
	[0.14794]	[0.56522]	[-0.35242]	[-0.37992]
DEC (-1)	0.086626	0.091033	0.019349	0.080149
	(0.05014)	(0.23141)	(0.15524)	(0.07785)
	[1.72784]	[0.39339]	[0.12464]	[1.02957]
DSC (-1)	-0.064071	-0.016441	0.279387	0.166337
	(0.08960)	(0.41358)	(0.27745)	(0.13913)
	[-0.71505]	[-0.03975]	[1.00700]	[1.19553]
DCO (-1)	0.808934	-0.589396	-0.053133	-0.015769
	(0.19840)	(0.91574)	(0.61431)	(0.30806)
	[4.07733]	[-0.64363]	[-0.08649]	[-0.05119]
C	0.110122	-0.035893	-0.020404	-0.098467
	(0.04731)	(0.21836)	(0.14648)	(0.07346)
	[2.32774]	[-0.16438]	[-0.13929]	[-1.34045]
R-squared	0.815950	0.149784	0.076080	0.516493
Adj. R-squared	0.745162	-0.177223	-0.279274	-0.167933
Sum sq. resids	0.451128	9.610926	4.325134	1.087680
S.E. equation	0.186285	0.859827	0.576804	0.289254
F-statistic	11.52659	0.458045	0.214097	0.482370
Log likelihood	8.574384	-20.48522	-12.89987	0.213892
Akaike AIC	-0.270988	2.787918	1.989460	0.609064
Schwarz SC	0.027256	3.086161	2.287704	0.907308
Meandependent	0.024871	0.032895	-0.026316	-0.105263
S.D. dependent	0.369016	0.792468	0.509972	0.267652
Determinantresid covariance (dof adj.)		0.000417		
Determinantresid covariance		9.15E-05		
Log likelihood		-19.49534		
Akaike information criterion		4.999509		
Schwarz criterion		6.391314		

3.5 The long-run causality

The OLS (ordinary least squares) method were used to discuss about the significance of the model. As we expected, the error correction term C (1) which is -1.36 is negative and significant at the level of 5% because of -5.82 statistic which is low than 0.23. Then there is a long-run relationship between the four

variables. So it exists an impact in long-term between the inflows investment, corruption, external conflict and socio economics conditions.

Table 6: Estimation of long term relation

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-1.369663	0.235247	-5.822236	0.0001
C(2)	0.024202	0.163599	0.147937	0.8847
C(3)	0.086626	0.050135	1.727843	0.1077
C(4)	-0.064071	0.089604	-0.715046	0.4872
C(5)	0.808934	0.198398	4.077330	0.0013
C(6)	0.110122	0.047309	2.327736	0.0367
R-squared	0.815950	Meandependent var		0.024871
Adj. R-squared	0.745162	S.D. dependent var		0.369016
S.E. of regression	0.186285	Akaike info criterion		-0.270988
Sumsquaredresid	0.451128	Schwarz criterion		0.027256
Log likelihood	8.574384	Hannan-Quinn criter.		-0.220513
F-statistic	11.52659	Durbin-Watson stat		1.929448
Prob(F-statistic)	0.000208			

3.6 The short run causality

The wald test were conducted to determine the significance of coefficients.

➤ External conflict

According to the short term causality results, the pvalue associated to C(3) coefficient for external conflict (EC) which is 0.084047 show that it is significant at the 10% level. We can consider that external conflict explains FDI inflows in short term.

➤ Socio economics conditions

As we seen before for the EC serie, the pvalue associated to C(4) coefficient for socio economics conditions which is 0.4746 is greater than 0.05. So we cannot reject the null hypothesis that C(4)=0. In short term, the socio economics conditions don't explain the FDI inflows for the country.

➤ Corruption

For the corruption coefficient C(5), we found that the p value associated is less than 0.05. We reject the null hypothesis C(5)=0. So that we conclude of significance of this coefficient at the level of 5% to explain FDI inflows in short term impact between these two variables.

So in short run causality tests, two variables have impact on FDI inflows which are External conflict (EC) and corruption (CO).

3.7 Diagnostics results

• Normality test

According to Jarque-Bera normality test, the residuals are normally distributed because the associated probability (0.646996) is greater than 0.05, so that we cannot reject the null hypothesis of normality of residuals.

Table 7: Normality test

Jarque-Bera	0.870831
Probability	0.646996

- **Serial correlation LM test**

According to this test, the pvalue associated is 0.9952 which is greater than 0.05. We cannot rejected the null hypothesis of no serial correlation between series.

Table 8: Breusch-Godfrey Serial Correlation LM Test

F-statistic	2.32E-05	Prob. F(1, 12)	0.9962
Obs*R-squared	3.63E-05	Prob. Chi-Square(1)	0.9952

- **Heteroskedascity test**

The Breusch Pagan Godfrey test indicates homoskedascity of residuals at 5% level. The probability associated to the test is 0.9893 which is greater than 0.05.

Also the Arch test indicates the same result of homoskedascicity at 5% level. The associated probability is 0.9472 which is greater than 0.05.

Table 9: Heteroskedasticity Test Breusch-Pagan-Godfrey

F-statistic	0.776337	Prob. F(8, 10)	0.6330
Obs*R-squared	7.279342	Prob. Chi-Square(8)	0.5068
Scaledexplained SS	1.725469	Prob. Chi-Square(8)	0.9883

3.8 Impulse response

In response to a unit external conflict shock, the inflows FDI decrease for the first 4 years to -0.10. After that it raise slowly between the fourth and sixth year. It got stabilized after the sixth year to -0.8.

In response to a unit of socio economics shock, the FDI inflows increase in the three years to attain 0.14. It decreases between the third and the fourth year at the level 0.05. It increases slowly to reach 0.06 at year 6 before stabilized at this value.

In response to corruption shock, the foreign direct investment inflows raise to 0.1 between year 1 and year 2. After that, it decreases considerably to -0.15 at year 3. It smoothly increases in year 4 to -0.05 and stabilized at this value for the rest of time.

3.9 Variance decomposition

In the first year, the forecast error variance in FDI is totally explained by its own innovations.

But in the second year, even if the forecast error variance is explained by its own innovations at 76.18%, the innovations in FDI is also due to corruption for 22.42% and only less than 1% for socioeconomics conditions and external conflict.

For the third year to the fifth year, the variance decomposition of FDI shows that the innovation in FDI is more explained by the pair corruption (34.95%) and socioeconomics conditions (20.93%) than its own shocks.

After the sixth year to the period 10, consider as the long run term, in addition of the two variables shocks (corruption and socio economics conditions), the results shows that the variance decomposition in FDI is also explained by external conflict for near 26% in mean for that period.

These results show the major role of corruption, socio economics conditions and external conflict for their explanation in forecast error variance of FDI more than innovations in FDI. While corruption and socio economics conditions have a real role in short run term, the external conflict role become more important in long term.

Conclusion

The objective of this study was to analyze the impact of institutional quality on the attractiveness of FDI in Burkina Faso. Based on data from various sources over the period 1985-2005, an vector error-correction model yielded two major results. First, there is a long-term relationship between foreign direct investment, socio-economic conditions, external conflicts and corruption. Socio-economic conditions have a positive impact on FDI while corruption and external conflicts have expected negative impact on FDI. However, the second result is unexpected. It shows that in the short term, external conflicts and corruption have a significant positive impact on FDI respectively of 10% and 5% level of significance.

It is therefore necessary for the country to take appropriate measures to strengthen the fight against corruption in all sectors of economy and strengthen the independence of justice, all of which will help to build investors' confidence.

It is also imperative for the country to participate in securing the sub regional space by engaging in its capacity emerging or latent conflicts solve in particular neighboring countries, especially those with which it shares a common border.

There is also an improvement in the living conditions of the population in order to increase a significant number of people in economics middle class and to reduce poverty. All these measures will work to improve investor confidence and enable the country to benefit more from FDI flows.

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