ORIGINAL ARTICLE

THE EFFECT OF FOREIGN DIRECT INVESTMENT (FDI) ON THE BALANCE OF PAYMENTS IN IRAN

Shima Shahrabi Farahani[1], Shahrzad Motevasel[2], Sarah Hajmousavi[2]
1- M.A in Economic Sciences, Islamic Azad University, Central Tehran Branch, Tehran, Iran
2- M.A in Economic Development and Planning, Islamic Azad University, Central Tehran Branch, Tehran, Iran

ABSTRACT: Attract foreign investment, with two attributes: "Every day the technology and systems for industry" and "to finance capital And even borrowing from the capital and its impact on economic development, economic growth and employment and business development of the country "is very important. For this purpose data from the years 1979-2010 in the form of seemingly unrelated regression (SUR) and Eviews software used. The results show that the amount of foreign investment of 2 ways: Capital Account indirectly and Balance of payments directly to the level of 0.25 and 0.35 are positive and significant impact on growth.
KEYWORDS: foreign direct investment, balance of payments, current account, capital account, the seemingly unrelated regression (SUR).

INTRODUCTION

Attract foreign investment, with two attributes: "Every day the technology and systems for industry" and "Financing for capital Even borrowing from the capital and its impact on economic development, economic growth and employment and business development of the country "It is of great importance (Dunn Robert, 1996).

Practical experience of foreign investment in China, India and other developing countries in the process of putting And as developing countries or countries that obstacles have been developed in house developed countries Evidence for the claim that Foreign investment can have a positive effect on the economic environment Many host countries to remove barriers and to pave the way towards a developed economy (Barro, 1999).

The purpose of this study was to investigate the effects of foreign direct investment foreign direct investment on the balance of payments is therefore Statistical Society of Iran; Iran is years 1979-2009. This study aims to answer these questions:

1- Does foreign direct investment lead to an improvement in Iran the current account?
2- Does foreign direct investment lead to an improvement in Iran the capital account?

In this regard, the following hypotheses will be examined:

1- Foreign direct investment (FDI) has significant positive effect on capital accounts in Iran.

2- Foreign direct investment (FDI) has significant and positive effect on the balance of payments accounts in Iran.

THEORETICAL BASIS

In economic theory Exports affected by variables such as exchange rate, the domestic price level, price level and income of destination countries are the target markets. So that the increase in the exchange rate, price level target markets and income destination countries is expected to rise exports itself. It should also be noted that this type of result can only be effective export Industrial exports so that more of the above variables are affected by rising exports of raw materials and goods that are not of high technology (Blomstrr et al., 2000).

Imports in the theory of economic variables such as exchange rates, the national income, the level of domestic prices and world prices of commodities takes effect. Obviously, the level of development of countries in different economic sectors can be generated automatically and the extent of the impact of the above variables on imports to be effective. An increase in national income in developing countries could lead to imports of final goods and consumer But in developed countries and can produce high-tech products can lead to an increase in production inputs or capital goods are Which contributed to the growth of domestic production will lead to

The capital account of the possible impact of domestic and foreign interest rates and the economic theory of increasing domestic interest rates relative to foreign interest rates can have a

positive effect on the capital account and the capital to the improve upon them. Obviously, other variables, some of which cannot be controlled by the government on capital account and current account can have effect. Prevailing economic environment and the manufacturing sectors the political environment of the host country and looking and thinking that there is on the one hand and investment and capital Level of capital security and also the security of their investments are some of the variables that can affect the country's balance of payments (Borensztein *et al.,* 1988; Grossman and Helpman, 1991).

2.1. Expressions researched
2.1.1. Foreign direct investment (FDI)
According to UNCTAD, foreign direct investment is Investment involving a long-term relationship reflecting ongoing control and benefit of natural or legal person residing in a country (foreign direct investment in the parent company) is a company located outside the home country investor. Foreign investment in comprehensive book form Palgriv assets (including stocks, bonds, etc.) is defined by investing outside their home country. In the event that the assets will include physical equipment manufacturing foreign direct investment is considered.

2.1.2. Balance of payments accounts
All receipts of foreign currency and all foreign currency payments are recorded in an account with the Central Bank, which is called the balance of payments accounts. This account is composed of two main current account and capital account.

2.1.3. Capital Account
Physical capital inflows into the country or leaving the country are recorded in the capital account. In this study, the net outflow of capital from the country's capital account as a means of improving looks and reducing its capital account and the increase means the deterioration of the account is.

2.1.4. Current account
Currency receipts from the country's output of goods and services (exports of goods and services) as well as payment of goods and services from abroad (imports of goods and services) is recorded in an account under the current account.

2.2. Background Research
Walsh and Yu, (2010) in the study of foreign direct investment represent an organizational approach and has been a part of. This study uses

a database that FDI flows to the initial investment, which divides the second and third the analysis of macroeconomic factors such as the development of organization and quality in a sample of emerging economies and developed economies deals. While FDI flows in the primary sector shows little dependence on any of these variables are investments in secondary and tertiary sectors in different ways affect the income levels of countries and rate the transactions are Development indicators such as enrollment trends and financial education classes, and factors such as legal dependence and labor market flexibility . Finally, we arrived at the finding that the effect of these factors often varies between advanced economies and emerging economies.

Acaulay Egbo, (2005) the study focuses on foreign direct investment and economic performance in Nigeria. This study deals with FDI and the Nigerian Economy It also discusses how this issue affects FDI on economic growth in Nigeria. This study suggests that there is a need for policies and programs that macroeconomic variables in the economy to promote FDI.

Furceri and Borelli, (2008) Foreign Direct Investment in research and instability in neighboring countries, EMU has been trading rates. This paper describes the evolution of the exchange rate volatility in the EMU are internal FDI in neighboring countries. In examining this question, an experimental model that considers the definite major macroeconomic FDI, The results as to the effect of exchange rate volatility on FDI mainly depends on the degree of freedom of a country. In fact, when exchange rate volatility has a positive effect or no effect on the relatively closed economies, at the same time a high level of openness has a negative effect on the economy.

Kimberly, (2002) in research institutes and foreign investment (FDI) in Malaysia: Empirical evidence using ARDL model is discussed. This paper tries to discuss the role of institutions on the inflow of foreign direct investment (FDI) in a small open economy, Malaysia to investigate. Using limit test (Model ARDL), empirical findings show that there is a strong relationship between FDI and institutional variables. In particular, several organizational variables as government stability, bureaucracy, corruption key role in affecting the rate of FDI inflow to play. Thus, the FDI -friendly policies to attract foreign investors to provide and maintain the quality of local organizations in the development of the Malaysian economy will be beneficial.

Kazembe and Namizing, (2007) Research on the Effect of FDI on the development of policy changes in Malawi is discussed. This article

examines some of the factors that investors it pays to invest in a single country, the study focuses on the issue Why FDI has not increased over the years in Malawi And the reason why it pays to invest in their country of Malawi does not? FDI work for development should be defined in order to pay their proportion of FDI on development goals.

THE MODELS

In this study, the method of seemingly unrelated regression (SUR) is used. For simultaneous estimation of seemingly unrelated equations used are as follows: Variable are during the years 1979-2010.

$LOG(X) = C(2) LOG(Pp) + C(3) LOG(R) + U$
$LOG(M) = C(6) LOG(PD) + C(7) LOG(RR) + C(8) LOG(Y) + u$

$LOG(K) = C(11) + C(12) LOG(RR) + C(13) LOG(R) + C(14) LOG(FDI) + u$
$(BOP) = C(15) + C(16) LOG(RR) + C(17) LOG(R) + c(18) FDI + u$

X= value of exports, M= value of imports, K= amount of capital account,

Bop= the amount of the balance of payments accounts,

Pp= domestic price level to the foreign price level, Pd= domestic price level

R = the real exchange rate of the dollar against Real, RR= nominal interest rate

FDI= foreign direct investment, U= such a disturbing rate

3.1. Stability test and stationary test

Stability test and stationary test using unit root test (Unit root test) Dickey Fuller selected variables for each level has been studied.

Table 1: Dickey Fuller unit root tests developed to zero level time series data

variables	ADF	MacKinnon critical values			Test Results
		1%	5%	10%	
LPD	-3.99	-3.65	-2.95	-2.61	stable
LARZEH	-1.34	-3.65	-2.95	-2.61	unstable
LFDI2	-0.03	-3.66	-2.96	-2.61	unstable
Lk	-1.05	-3.66	-2.96	-2.61	unstable
LM	0.18	-3.65	-2.95	-2.61	unstable
LNERKH	-0.62	-3.65	-2.96	-2.62	unstable
LX	-0.06	-3.65	-2.95	-2.61	unstable
LY	0.65	-3.73	-2.99	-2.63	unstable
BOP	-3.86	-3.66	-2.96	-2.61	stable
LOPEN	-0.41	-3.65	-2.95	-2.61	unstable
Lpp	-3.89	-3.65	-2.95	-2.61	stable

As shown in Table 1 are observed at levels other variables domestic price level and the balance of payments and the ratio of domestic prices to the prices of foreign variables at 1%, 5% and 10% of

a unit root is not to say unstable (non-stationary).

Table 2: Unit root tests Fuller for a first-order difference

variables	ADF	MacKinnon critical values			Test Results
		1%	5%	10%	
D(LARZEH)	-6.09	-3.68	-2.97	-2.62	stable
D(LFDI2)	-5.65	-3.66	-2.96	-2.61	stable
D(L k)	-6.98	-3.66	-2.96	-2.61	stable
D(LM)	-4.25	-3.66	-2.96	-2.61	stable
D(LNERKH)	-4.17	-3.66	-2.96	-2.61	stable
D(LX)	-6.04	-3.96	-2.96	-2.61	stable
D(LY)	-8.76	-4.41	-3.62	-3.24	stable
D(LOPEN)	-4.68	-3.66	-2.96	-2.61	stable

D icon in the table below, Represents the first-order difference variables. As this research is to estimate the non-logarithmic variables as logarithms, Therefore, the variables in this table are ready to be used in any situation where the reliability of the above table, have been investigated. Given the reliability of test results will be deduced The surface (making a difference) real exchange variables, foreign direct investment, capital account, Nominal interest rate, export value, import value, fixed income, Economics respectively at 1%, 5% and

10% of the unit root In other words, the steady (stationary) function. So the overall result of the above tables and estimating stationary or static test variable, suggesting that Function export rates, imports, capital account and the balance of payments will be estimated using the SUR method. In time series models, this studies because one of the two variables and other variables are stationary surface Therefore the mass is no need to test.

3.2. Co-integration test

One criticism of the method is that it assumes that the parasite Granger There have accumulated a single vector, While it may take more than one mechanism is present converge.

To resolve this problem, we use the unrestricted co-integration test.

Table 3: Test co-integration

Prob.**	0.05 Critical Value	Trace Statistic	Eigenvalue	Hypothesized No. of CE(s)
	Unrestricted Co-integration Rank Test (Trace)			
0.0001	197.3709	557.8032	0.999867	None *
0.0000	159.5297	298.9286	0.941816	At most 1 *
0.0000	125.6154	216.4487	0.892539	At most 2 *
0.0000	95.75366	151.7604	0.857252	At most 3 *
0.0001	69.81889	95.30697	0.762232	At most 4 *
0.0130	47.85613	53.64970	0.605242	At most 5 *
0.1093	29.79707	26.69468	0.462610	At most 6
0.3954	15.49471	8.684776	0.240497	At most 7
0.4004	3.841466	0.707120	0.024089	At most 8

The calculated test If the critical level, the critical values provided by MacKinnon - Hayg -Michaels is more, Null hypothesis, that there r co-integration vector is accepted. Thus, according to the results, the existence of a co-integration vector of the model is accepted; the quantity of the test statistic critical value at 95% and more prob less than 0.05. In this paper, based on the results of the test - integration and test work,

Fulfills the functions, the existence of a co-integration vector of the model is accepted; thus, the accumulation of 6 vector equilibrium among the variables studied there. Hence, the use of OLS to estimate equations without regression problem is false.

3.3. Model Estimation

Table 4: Model estimation

Prob.	t-Statistic	Std. Error	Coefficient	
0.0000	-6.776770	0.072544	-0.491612	C(2)
0.0000	17.00369	0.034693	0.589914	C(1)
0.0002	-3.913043	0.076010	-0.297429	C(3)
0.0000	12.12380	0.071649	0.868661	C(4)
0.0593	1.906379	0.070421	0.134249	C(5)
0.3174	1.004574	0.073541	0.073877	C(6)
0.0000	4.353601	0.085580	0.372581	C(7)
0.0004	3.670157	0.096800	0.355272	C(9)
0.0000	17.88679	0.053229	0.952095	C(8)
0.0000	-4.782581	1.269336	-6.070701	C(10)
0.0000	7.809385	0.705615	5.510419	C(11)
0.0003	3.743638	0.178315	0.667548	C(12)
0.0051	2.857772	0.167117	0.477581	C(13)
0.0281	2.225875	0.114188	0.254167	C(18)
0.0000	-4.815734	1.253167	-6.034917	C(14)
0.0000	7.371309	0.744705	5.489455	C(15)
0.0000	4.227542	0.192474	0.813690	C(16)
0.0272	2.239967	0.160042	0.358490	C(17)

Equation: LOG(X)=C(2)*LOG(PP)+C(1)*LOG(R)+C(3)*DU13
+[AR(1)=C(4)]
Observations: 32

| 1.868802 | Durbin-Watson stat | 0.917973 | R-squared |
| | | 0.909185 | Adjusted R-squared |

Equation: LOG(M)=C(5)*LOG(PD)+C(6)*LOG(R)+C(7)*LOG(Y)
+[AR(1)=C(8)]+C(9)*DU14
Observations: 32

| 1.715650 | Durbin-Watson stat | 0.938801 | R-squared |
| | | 0.929735 | Adjusted R-squared |

Equation: LOG(K)=C(10)+C(11)*LOG(RR)+C(12)*LOG(R)+C(13)
*LOG(FDI2)+[AR(1)=C(18)]
Observations: 30

| 1.914693 | Durbin-Watson stat | 0.946961 | R-squared |
| | | 0.938475 | Adjusted R-squared |

Equation: LOG(BOP1)=C(14)+C(15)*LOG(RR)+C(16)*LOG(R)
+C(17)*LOG(FDI2)
Observations: 31

| 1.376886 | Durbin-Watson stat | 0.939737 | R-squared |
| | | 0.933041 | Adjusted R-squared |

The numbers can be interpreted but this interpretation cannot express relations and acceptance or rejection of the variable. The simultaneous equation model to describe the relationship of convergence tests, Divergence done. If variables can be said to converge to Simultaneous equations on the impact and if you were divergent simultaneous equations have the same effect.

3.4. Interpretation
Adjusted coefficient of determination $\bar{R}^2$ model of export value, import value models, models of capital accounts, balance of payments model, respectively: 0.90, 0.92, 0.93, 0.93 is obtained indicating that the explanatory power voter model is appropriate. Values $\bar{R}^2$ indicate that the independent variables in the sum of 0.90, 0.92, 0.93, 0.93, the percentage change in the dependent variable explained.
That t- Statistic represents the amount of t-Statistic each of the independent variables on the dependent variable are effective choice. This number must be greater than 2 are acceptable to the individual variables. The equations show that the t-statistic Prob All coefficients are significant at the 95%.
Watson statistic level camera (D_W): This statistic represents the amount of autocorrelation between variables is optional. Rate this statistic without AR (1) model of export value, import value models, models of capital accounts, balance of payments model Respectively equal to 0.52, 0.42, 1.91, 1.37 is This indicates that the value of exports and imports of selected variables in the models, there is the problem of autocorrelation Models and capital account of the balance of payments between selected variables, there is no autocorrelation problem. So to solve the problem of the AR (1) models in export value and import value is used D W, whereas the rate of 0.52 at a rate of 1.86 and 0.42 at a rate of 1.71 enhanced the Shows the correlation between the selected variables, there is no problem.

3.5. Interpretation of coefficients
The model is an export value of domestic price level relative to foreign price levels (pp) increase in export value of 0.49% decreases .If a percentage of the real exchange rate (R) to increase the value of exports and 0.58% increase .Can cause such as the exchange rate increased with increased purchasing power for foreign buyers Thus, exports are expected to rise. As the shock in the war years (1980-1988), liquidity shocks (1995), and.... There are to eliminate this variable shocks into the model animal (du) for

years (1981-1986-1987-1998-2001) is used in the model. According to the estimated coefficient for the variable livestock (-0.29) can be said to shock the effect on exports is negative In other words, the glory of export value has decreased. According to the model, we can say the real exchange rate on export value of 1.18 times than domestic prices relative to foreign prices is affecting.
Model, the value of imports if the domestic price level (p d) increases the value of imports of 0.13% increases. If one of the real exchange rate (R) to increase the value of import 0.07% increase. These variables were not significant. If a percentage of national income (y) increases the level of imports valued at 0.37% increase. According to the estimated coefficient for the variable livestock (du) (0.3) this effect can be said to doubt the value of imports is positive. In other words, the glory of the value of imports has increased. Because over the years (1990-1991-1992-1993) liquidity in the economy has occurred; this increase in liquidity demand is increasing Following the increasing demand inflation occurs. One way to control inflation is the increase in imports .According to this model can be said to have the greatest effect on the value of imports income So that 2.84 times the domestic price level and the domestic price level of imports valued 1.85 times the real exchange rate is affected .
The model accounts for a percentage of the amount invested if the domestic price level will increase the capital account rate of 5.5 % increase. It can cause such as the level of interest rates (RR), which belongs to the deposit so willing to deposit increases. If a percentage of the real exchange rate (against Real against the Dollar) (R) to increase the amount of capital accounts 0.66 % increase. The cause can be as way that foreign direct investment increases the real exchange rate is rising .Because the value of the foreign currency against the currencies of most countries are So the amount of foreign investment increases. If one percent of foreign direct investment (FDI) to increase the amount of capital accounts 0.47 % increase.
In the model, the balance of payments of a percentage of the domestic price level to rise Degree of capital account 5.48% increase. As these can cause the capital account according to equation (equation above), Capital account directly correlates with the level of interest rates, However, the balance of payments capital account balances will also be included .So the interest rates both directly and through imports has a direct impact on the balance of payments Outer balance of payments is increasing .If a

percentage of the exchange rate (R) increased to 0.81 increase in the balance of payments. It can be increased due to the effect of exchange rates on exports and imports and capital account.

Because it is a function of the current account of balance of payments accounts (exports minus imports) and is the capital account. By comparing the effect of exchange rate increases in all three equations, the value of exports, imports and capital account most influence on the capital account, Export and import levels are the lowest rates on accounts As a result, since it has a positive effect on the balance of payments accounts. For every one percent increase in foreign investment (fdi2) increased from 0.35 % balance of payments increases. The main reason it can have a positive effect on foreign direct investment into the capital account and the capital account of the balance of payments. As can be seen in the most effective and least effective rate of foreign investment has had on the balance of payments. It could be because of the absence of the necessary conditions for foreign investments including the lack of proper infrastructure and shortage of skilled labor in the economy.

EVALUATION MODEL

4.1. Convergence and Divergence Model

Interprets numbers cannot express the relationship and accept or reject variable. The simultaneous equation model to describe the relationship test convergence, divergence can be done. If variables can be said to be converging on the impact of simultaneous equations if you were divergent simultaneous equations have the same effect.
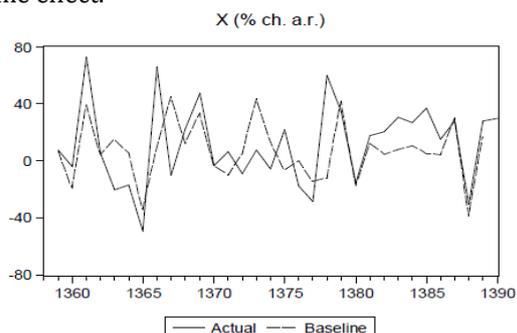

Figure 1: Value of Exports

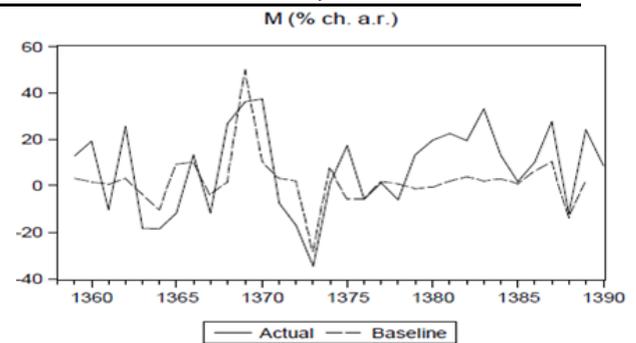As can be seen in Figure 1 actual and projected export value during 1358-1390 (1979-2011) is the converged.

Figure 2: Value of Imports

As can be seen in Figure 2 actual and predicted value of imports during 1358-1390 (1979-2011) is convergent.
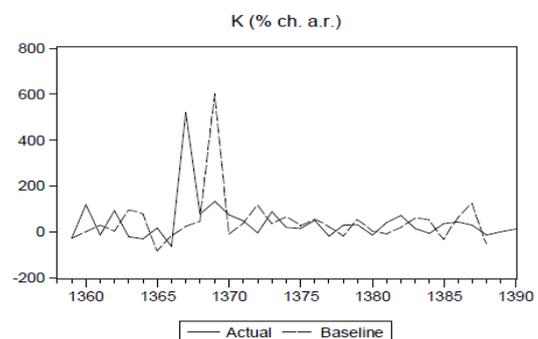

Figure 3: Capital Account

As can be seen in Figure 3 Actual and projected capital accounts during 1358-1390 (1979-2011) is convergent.
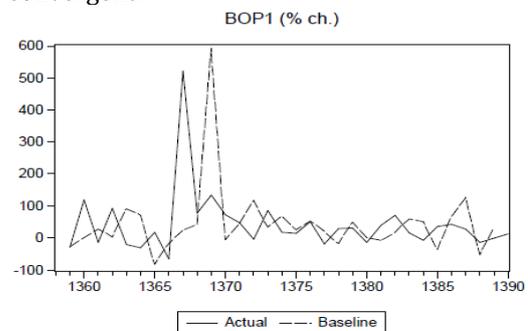

Figure 4: Balance of payments

As can be seen in Figure 4 Actual and projected balance of payments in the years 1358-1390 (1979-2011) is convergent.

Convergence Divergence charts, as was observed in all four equations are converged to so we can say irregular appearance as simultaneous equations are influencing each other.

4.2. Test for normality of residual or remaining clauses

H_0: The problem we have normalized
H_1: The problem is not normalized
According to prob the same estimated amount of stretching and skewness statistics and Jarque for

every four equations are greater than 0.05, It can be concluded that the hypothesis H0 is rejected based on the lack of normality of residual sentences. This function is valid in terms of normality.

Table 5: Test for normality

Prob.	df	Jarque-Bera	Component
0.8986	2	0.213826	1
0.2818	2	2.532951	2
0.8633	2	0.293933	3
0.2950	2	2.441871	4
0.7050	8	5.482580	Joint

Thus it can be said that foreign direct investment can be improved by increasing the capital account in the balance of payments.

CONCLUSIONS AND RECOMMENDATIONS

To investigate the hypothesis that the effect of FDI on the balance of payments Four equations, the value of exports, the value of imports, capital accounts and balance of payments SUR method to simultaneously examine the According to the following models:

Log(x) =-0.49log (Pp) +0.58log(R) +-0.29DU13+0.86AR (1) C (4)
Log (m) =0.13log (p d) +0.073log(R) +0.37log(y) +0.35ar (1) +0.95DU14
Log (k) =-6.07+5.5LOG (RR) +0.66log(R) +0.47log (fdi2) +0.25ar (1)
Log (bop1) = -6.03+5.48log (RR) +0.81log(R) +0.35log (fdi2)

As can be seen the extent of the effect of FDI on capital account and the account balance of payments calculated so that, respectively, for each percentage change in FDI, 0.47% of the capital account increases While the balance of payments for each percentage point increase in FDI 0.35% increases balance of payments This increase is caused by the accumulation of capital account. Therefore, research hypotheses based on the effectiveness of foreign direct investment on capital account and the account balance of payments are accepted. The results can be found in Iran shocks on the current account and balance of payments accounts subsequently affects pointed out. Real exchange rate in effect on the value of exports 7.94 times greater than the value of imports has the effect of so real exchange rate has a positive effect on the balance of payments. Actual earnings are positive and significant effect on imports.

SUGGESTIONS

Due to the impact of foreign direct investment on capital account and capital account of the balance of payments effects are therefore prerequisites for increasing foreign direct investment in the country met. Due to the impact of exports on the balance of payments is therefore necessary to increase exports to improve the balance of payments situation in the country met. Due to the impact of imports on the balance of payments is therefore a requirement in order to reduce imports and improve the country's balance of payments met. Due to the enormous effect interest in improving the balance of payments However, interest rates in order and therefore recommended Interest rates to be set up to attract large amounts of foreign direct investment to enter.

REFERENCES

Acaulay Egbo D. Proceedings of the 1st International Technology. Education and Environment Conference (c) African Society for Scientific Research (ASSR). source Management Academic Research Society 2005.

Barro RJ. Determinants of Economic Growth: a Cross-Country Empirical Study. Cambridge: MIT Press 1999.

Blomstrr M, Kokko MA, Zejan M. Foreign Direct Investment: Firm and Host County Starategies. New York: St. Martin 2000.

Borensztein E, Gregorio JD, Lee JJW. How dose foreign direct investment affect econimic growth?. Journal of International Economics 1988; 104(45):115-35.

Furceri D, Borelli S. Foreign Direct Investments and Exchange Rate Volatility in the EMU Neighborhood Countries. Journal of International and Global Economic Studies 2008.

Dunn Robert M. International Economics. John Wiley & Sonc Inc. 1996.

Kimberly E. Foreign Portfolio Investment and Direct Investment, 2002. Retrieved from: www.OECD.org

Grossman G, Helpman E. Innovation and Growth in the Global Economy. Cambridge: MIT Press 1991.

Walsh JP, Yu J. Determinants of Foreign Direct Investment: A Sectorial and Institutional Approach IMF Working Paper Asia Pacific Department 2010.

Kazembe P, Namizing N. The Impact of Foreign Direct Investment on Development: Policy Challenges for Malawi. Integrated Framework Policy Analysis Working Paper 2007; Series No.6.