

# Determinants of direct foreign investment: Evidence from Jordan

**Husni Ali Khrawish<sup>1</sup>, Walid Zakaria Siam<sup>2</sup>**  
*Department of Banking and Financial Science<sup>1</sup>*  
*Department of Accounting<sup>2</sup>, Hashemite University, Jordan*  
*e-mails: khrawish@hu.edu.jo; siam@hu.edu.jo*

In order to show the effect of direct foreign investment flows on the economy of Jordan, this study comes to examine the economic and financial risks on FDI on the macro level over the period (1997-2007). This study applies a version of the model developed by Chan and Gemayel (2004) by using Multiple Linear Regression Model. The analysis revealed that there exists significant and positive relationship between foreign direct investment flows into the economy of Jordan and economic and financial variables. The study claims for further FDI promotion through incentives to attract new investments. These factors are: providing targeted fiscal incentives, such as tax concessions, cash grants, and specific subsidies; improving domestic infrastructure; promoting local skills development to meet investor needs and expectations; establishing broad-reaching FDI promotion agencies and improving the regulatory environment and decreasing red tape.

**JEL Classifications:** F21, O53

**Keywords:** Direct foreign investment, economic and financial risks, export of goods and services and exchange rate stability.

## Introduction

The main purpose of this study is to examine the determinants of direct foreign investment flows into the Jordanian economy over the period of 1997-2007. Capital flows have been a key feature of recent financial crises in emerging market countries. Although short-term flows have proven to be volatile and unwanted, long-term capital flows such as foreign direct investment (FDI) have tended to be more stable and thereby more desirable (Lipsey, 2001). As a result, developing countries have come to increasingly rely on FDI compared with other sources of financing.

Most studies suggest that the macroeconomic environment has an important effect on the level of country's productivity (Singh and Jun, 1995; Haile and Assefa, 2006). Maintaining macroeconomic stability has been of the main challenges for developing countries (Zubair, 2001).

In this study, we investigated the impact of different factors affecting the risk level associated with foreign investment. International Country Risk Guide (ICRG) rating includes three subcategories of risk. These risks (Chan and Gemayel, 2004) are:

1. Economic risk components: GDP per head of population, real annual GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account balance as a percentage of GDP;
2. Financial risk components: foreign debt as a percentage of GDP, foreign debt service as a percentage of export of goods and services (XGS), current account as a percentage of XGS, net liquidity as months of import coverage, and exchange rate stability.
3. Political risk components: government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality.

This study examines the economic and financial risks, and excludes the political risk because no data is available on political factors.

## Background and an overview of the related literature

According to the World Investment Reports (1998, 2003, 2007 and 2009) and some of studies (Haile and Assefa, 2006; Zubair, 2001) there exist three possible motives for FDI:

Market seeking FDI: refers to FDI for the purpose of serving local and regional markets. Host countries' characteristics that can attract market seeking FDI include market size of the host country, per capita income and growth (potential) of the market.

Resource/asset seeking FDI: refers to FDI for the purpose of acquiring resources which are not available in the home country. Such resources include natural resources, availability of raw materials, and productivity and Availability of skilled and unskilled labor.

Efficiency seeking FDI: This kind of FDI occurs when the firm can gain from the common governance of geographically dispersed activities, especially in the presence of economics of scale and scope and diversification of risk.

The above three motives are categorized under economic determinants of FDI. Besides these economic determinants, there are also two other crucial determinants of FDI: host country FDI policy framework and business facilitation.

The policy framework for FDI includes: economic, political and social stability, rules regulating entry and operation of FDI, standard of treatment of foreign affiliates, policies on functioning and structure of the markets, international agreement on FDI, privatization policy, trade policy and tax policy. Business facilitation refers to the ease with which business can be conducted in the host country. The most important business facilitations include investment promotions and incentives, hassle costs related to corruption and administrative efficiency, development of financial institutions, enforceability of contracts and protection of property rights.

Table 1 shows that FDI inflows and outflows have increased significantly during 1982-2007. The World Investment Report (2009) and some of studies (Graham and Barry, 2004) state that FDI plays an extraordinary and growing role in global business. It can provide a firm with new markets and marketing channels, cheaper production facilities, access to new technology, products, skills and financing.

TABLE 1. VALUE AT CURRENT PRICES, BILLIONS OF USD

Years	1982	1995	2007
FDI inflows	58	207	1979
FDI out flows	27	234	2147

Source: UNCTAD (2009).

In Jordan FDI increased from 287.9 million JD or 6.34% as a percentage of GDP in 1997 to 2301 million JD (20.5%) in 2007, and the growth rate of GDP increased from 5.2% to 6.0% (Table 2). So, it has tended to be more stable and thereby more desirable.

TABLE 2. MAIN ECONOMIC INDICATORS OVER THE PERIOD 1997- 2007, IN MILLION JD

	FDI	GNP	GDP	Growth rate of GDP	FDI as % of GDP
1997	287.9	4654.6	4537.8	5.2	0.063
1998	309.3	5146.7	5035.2	4.8	0.061
1999	312.4	5767.3	5758.6	4.1	0.054
2000	312.4	5989.1	6084.6	4.7	0.051
2001	97.6	6496.1	6,363.3	5.3	0.015
2002	52.8	6858.3	6778.5	5.7	0.008
2003	309.3	7353.6	7228.7	4.1	0.043
2004	461.6	8320.3	8090.7	7.7	0.057
2005	1257.8	9231.2	8941.5	7.2	0.141
2006	2282.5	10409.1	9997.4	6,3	0.228
2007	2301	11817.4	11225.3	6.0	0.205

Source: Central Bank of Jordan, Annual Report, various issues: 1998, 2000, 2002, 2005 and 2007.

There was a marked improvement in the FDI 2007 compared to that in 1997. It is related to Investment Promotion Law No. 16/1995 has been amended to take effect on the first week of September 1995 as part of the Jordanian government reform campaign to create a competitive investment environment. There are no restrictions on foreign ownership in any sector in Jordan. Table 3 shows the Non-Jordanian Ownership in the listed Companies of each sector over the period 1997-2007 as a percentage of market capitalization.

TABLE 3. NON-JORDANIAN OWNERSHIP IN THE LISTED COMPANIES OF EACH SECTOR (%) OVER THE PERIOD 1997-2007, AS A PERCENTAGE OF MARKET CAPITALIZATION

Year	Sectors				
	Banking	Insurance	Services	Industrial	All Sectors
1997	45	15	3	21	29
1998	45	16	3	23	30
1999	46	16	3	24	31
2000	48	17	7	22	33
2001	54	16	9	26	39
2002	57	15	11	28	44
2003	57	16	14	31	43
2004	55	18	21	30	42
2005	49	18	20	27	38
2006	54	20	22	27	38
2007	58	20	25	32	43
Mean	51.64	17	12.55	26.45	37.27

Source: Amman Bourse annual report, various issues (1997 - 2007).

Thus, it is possible to say that the mean of the Non-Jordanian Ownership represent around 37% of total investment of all sectors.

Many studies have examined the determinants of the foreign direct investment. Singh and Jun (1995) empirically analyzed various factors including political risk, business conditions, and macroeconomic variables that have influenced FDI flows 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 substantial foreign capital flows. For countries with relatively low FDI, a key determinant was the degree of sociopolitical instability, proxies 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.

Blomstrom and Kokko (2003) studied the rationale behind providing incentives for attracting foreign direct investment (FDI). The authors argue that the case for such incentives is not compelling, since the expected spillovers used to justify the provision of incentives only take place if the domestic firms are sufficiently capable. Considering evidence of spillovers their research concludes that domestic sector efficiency improvements should accompany any FDI incentives.

Miyamoto (2003) studied the role of human capital formation and skills development both in attracting foreign direct investment and in influencing the impact of FDI. The author concludes that not only is human capital a key prerequisite for benefiting from FDI, it is also very important for attracting FDI in the first place. Accordingly, policies that strengthen the stock of domestic human capital serve as useful FDI promotion strategies.

Banga (2003) reviewed determinants and trends of foreign direct investment flows to Asia. She develops a model for FDI as a function of a number of variables, including overall economic factors, specific FDI policy, and investment agreements. The effects of bilateral and regional agreements are given special attention. The author addresses other variables, such as labor costs and productivity, educational attainment, and infrastructure and loan costs, and the effect of these variables on FDI.

Chan and Gemayel (2004) investigated the risk of instability and the pattern of foreign direct investment in the Middle East and North Africa Region. They found that instability associated with investment risk is critical in explaining the level of foreign direct investment for the Middle East and North Africa (MENA) countries, which generally have higher investment risk than developed countries.

Nonnenberg and Mendonca (2004) explored the determinants of foreign direct investment in developing countries. They performed an econometric model based in panel data analysis for 38 developing countries (including transition economies) for the 1975-2000 period. They argue that FDI is correlated with level of schooling, economy's degree of openness, risk and variables related to macroeconomic performance like inflation, risk and average rate of economic growth. The results also show that the FDI is closely associated with stock market performance. Lastly, a causality test between FDI and GDP is performed.

Onyeiwu and Shrestha (2004) considered the determinants of foreign direct investment in Africa (FDI). In this study, they used the fixed and random effects models to explore whether the stylized determinants of FDI affect FDI flows to Africa in conventional ways. Based on a panel data 29 for African countries over the period 1975 to 1999, the paper identifies the following factors as significant for the foreign capital flows to Africa: economic growth, inflation, openness of the economy, international reserves, and natural resource availability. Contrary to conventional wisdom, political rights and infrastructures were found to be insignificant for FDI flows to Africa. The significance of a variable for FDI flows to Africa was found to be dependent on whether country- and time-specific effects are fixed or stochastic

Coupet and Mayer (2005) investigated the institutional determinants of foreign direct investment, and re-evaluate the role of the quality of institutions on FDI. They use a newly available database, with unprecedented detail on institutions of a set of 52 countries, and compare the results with matched variables from more familiar datasets. The paper controls for the correlation between institutions and GDP per capita of the host country, and also accounts for potential endogeneity of institutions. Finally, they evaluate whether proximity of institutions between the host and the origin country raises bilateral FDI.

Getinet and Hirut (2006) studied the nature and determinants of foreign direct investment in Ethiopia over the period 1974-2001. The study gives an extensive account of the theoretical explanation of FDI as well as reviewing the policy regimes, the FDI regulatory framework and institutional set up in the country over the study period. It also undertakes empirical analysis to establish the determining factors of FDI in Ethiopia. This paper findings show that growth rate of real GDP, export orientation, and liberalization, among others, have positive impact on FDI. On the other hand, macroeconomic instability and poor infrastructure have negative impact on FDI. These findings imply that liberalization of the trade and regulatory regimes, stable macroeconomic and political environment, and major improvements in infrastructure are essential to attract FDI to Ethiopia.

In view of these findings, it is reasonable to believe that the level of FDI inflows to Jordan is likely to be affected by the degree of stability associated with investment risk. Previous studies have provided empirical analysis on the level of investment risk and the pattern of FDI within and across countries. However, none of these studies have observed the degree of instability associated with investment risk on FDI inflows into the economy of Jordan.

## Methodology

This study applies a version of the model developed by Chan and Gemayel (2004) to examine the determinants of foreign direct investment flows into the economy of Jordan over the period 1997-2007 by using a Multiple Linear Regression Model. This model analyzes the effect of a number of economic and financial variables by using the following form:

$$FDI = f(X, Y),$$

where:  $X$  - A vector of Economic risk variable;  $Y$  - A vector of Financial risk variable.

$X$  includes  $GDPPH$ ,  $RAGDPG$ ,  $AIR$ ,  $BB$ , and  $CAB$ , where:  $GDPPH$  - GDP per head of population;  $RAGDPG$  - real annual GDP growth;  $AIR$  - annual inflation rate;  $BB$  - budget balance as a percentage of GDP;  $CAB$  - current account balance as a percentage of GDP.

$Y$  includes  $FD$ ,  $FDS$ ,  $CA$ , and  $ERS$ , where:  $FD$  - foreign debt as a percentage of GDP;  $FDS$  - foreign debt service as a percentage of  $XGS$ ;  $CA$  - current account as a percentage of  $XGS$ ;  $ERS$  - exchange rate stability.

In order to estimate the  $FDI$  function, the following basic linear model of FDI is specified as:

**Model (1)**

$$FDI_t(X) = a_0 + a_1 GDP_{PH}t + a_2 RAGDPG_t + a_3 AIR_t + a_4 BB_t + a_5 CAB_t + e_t \quad (1)$$

**Model (2)**

$$FDI_t(Y) = a_0 + a_1 FD_t + a_2 FDS_t + a_3 CA_t + a_4 ERS_t + e_t \quad (2)$$

Where the variables are defined as before, and  $e_t$  is the error term.

**Variables****Dependent variable**

*Foreign direct investment as a percentage of GDP (FDIGDP).* Foreign direct investment (FDI) represent the long-term capital flows, it plays an extraordinary and growing role in global business. It can provide a firm with new markets and marketing channels, cheaper production facilities, access to new technology, products, skills and financing. For a host country or the foreign firm which receives the investment, it can provide a source of new technologies, capital, processes, products, organizational technologies and management skills, and as such can provide a strong impetus to economic development (Graham and Barry, 2004).

The FDI is measured by cash inflows into the economy of Jordan over the period 1997-2007. The accounting value of the foreign direct investment is represented as a percentage of GDP. There are many factors as incentives to attract new investments. These factors (Blomstrom and Kokko, 2003) are:

- providing targeted fiscal incentives, such as tax concessions, cash grants, and specific subsidies;
- improving domestic infrastructure;
- promoting local skills development to meet investor needs and expectations;
- establishing broad-reaching FDI promotion agencies;
- improving the regulatory environment and decreasing red tape.

**Independent variables****a. Economic risk (X)**

(1): GDP per head of population (GDPPH). The GDPPH may have a direct impact on FDI. Most studies suggest that the macroeconomic environment such GDPPH has an important effect on the level of country's productivity. Maintaining macroeconomic stability has been of the main challenges for the country (Zubair, 2001).

(2): Real annual GDP growth (RAGDPG). There is a direct impact between RAGDPG and FDI, as soon as, many studies found a positive relationship between RAGDPG and FDI (Chan and Gemayel, 2004; Singh and Jun, 1995).

(3): Annual inflation rate (AIR). This is another important environmental condition which may effect on FDI. This factor represents the changes in the general price level or inflationary conditions in the economy. The impact of inflation rates on FDI depend on its effect on the investor's return. Nonnenberg and Mendonca (2004) investigated that the FDI is correlated to level of economy's degree of openness, risk and variables related to macroeconomic performance like inflation, risk and average rate of economic growth. The results also show that the FDI has been closely associated with stock market performance. Lastly, a causality test between FDI and GDP is performed.

(4): budget balance as a percentage of GDP (BB). Many studies found a positive relationship between BB and FDI (Chan and Gemayel, 2004; Singh and Jun, 1995).

(5): Current account balance as a percentage of GDP (CAB). There is a direct impact between CAB and FDI (Singh and Jun, 1995; Nonnenberg and Mendonca, 2004).

**b. Financial risk (Y)**

- (1): Foreign debt as a percentage of GDP (FD). FD considered as a component of financial risk, so it is influencing on the FDI (Nonnenberg and Mendonca, 2004). This factor captures the market conditions that certainly have an impact on FDI. During periods of good economic condition, loan demand tends to be higher allowing banks to provide more loans. Further, improved economic condition may affect positively on FDI, so fewer loan defaults normally occur during these periods.
- (2): Foreign debt service as a percentage of XGS (FDS). FDI affected by FDS, because this variable considered as a component of financial risk (Nonnenberg and Mendonca, 2004).
- (3): Current account as a percentage of XGS (CA). There is a direct impact between CA and FDI. (Singh and Jun, 1995; Nonnenberg and Mendonca, 2004).
- (4): Exchange rate stability (ERS). The exchange rate may have a direct impact on FDI given a favorable movement in exchange rates; the expectation is that the coefficient of this variable will be positive on FDI (Singh and Jun, 1995).

**Description of variables**

Table 4 reports some descriptive statistics for the variables incorporated in this study. It appears that the mean of FDI is acceptable over the period (1997-2007) if we compared with other countries like that Syrian Arab Republic. For this country, the World Investment Report (2009) indicates on the FDI mean as 3.9% to CDP over the period (1990-2000) and less than 6% in 2006.

TABLE 4. DESCRIPTIVE STATISTICS FOR THE VARIABLES OF STUDY

Variables	Mean	SD
FDIGDP	0.06285	0.04272
GDPPH	1049.53	780.736
RAGDPG	0.07135	0.06843
AIR	4.57459	1.45768
BB	0.22045	0.15597
CAB	0.14867	0.09777
FD	0.61163	0.42162
FDS	0.02799	0.01839
CAGS	0.02875	0.04759
ERS	1.5432	0.02321

We notice that other variables are also acceptable, because it is conforming with the measurement in the other countries (Singh and Jun, 1995; Nonnenberg and Mendonca, 2004).

Table 5 outlines the correlation matrix among the variables. The chief object is measuring the strength or degree of linear relationship between variables. This matrix helps to account for some econometric problems, especially multicollinearity among independent variables. In general, most variables have high pair-wise correlation coefficients, except the one between the growth rate of GDP and CA.

TABLE 5. THE CORRELATION MATRIX AMONG THE VARIABLES OF STUDY

	FDI	FD	CAB	BB	CAGS	ERS	log/ gdp	inflation	GDPPH	RAG- DPG
FDI	1.000									
FD		1.000								
CAB		.965	1.000							
BB		.987	.907	1.000						
CAGS		.512	.665	.543	1.000					
ERS		.672	.654	.388	.067	1.000				
log/gdp		.996	.942	.986	.445	.575	1.000			
inflation		.243	.047	.387	.396	.154	.342	1.000		
GDPPH		.964	.921	.997	.465	.487	.994	.409	1.000	
RAGDPG		.532	.485	.245	.008	.932	.398	.068	.321	1.000

## Hypotheses

Based on the above discussion we can state the hypotheses as follows:

a. Economic risk (X):

1. GDP per head of population (GDPPH):

*Ho1: There is no effect to FDI on GDP per head of population (GDPPH).*

2. Real annual GDP growth (RAGDPG):

*Ho2: There is no effect to FDI on real annual GDP growth (RAGDPG).*

3. Annual inflation rate (AIR):

*Ho3: There is no effect to FDI on the annual inflation rate (AIR).*

4. Budget balance as a percentage of GDP (BB):

*Ho4: There is no effect to FDI on budget balance as a percentage of GDP (BB).*

5. Current account balance as a percentage of GDP (CAB):

*Ho5: There is no effect to FDI on current account balance as a percentage of GDP (CAB).*

b. Financial risk (Y):

6. Foreign debt as a percentage of GDP (FD):

*Ho6: There is no effect to FDI on foreign debt as a percentage of GDP (FD).*

7. Foreign debt service as a percentage of XGS:

*Ho7: There is no effect to FDI on foreign debt service as a percentage of XGS.*

8. Current account as a percentage of XGS (CA):

*Ho8: There is no effect to FDI on current account as a percentage of XGS (CA).*

9. Exchange rate stability (ERS):

*Ho9: There is no effect to FDI on exchange rate stability (ERS).*

## Results and discussion

### a. Economic risk (X):

Table 6 shows the results of regression analysis of the Economic risk (X):

TABLE 6. REGRESSION RESULTS OF ECONOMIC RISK (X)

Variable	Sig. *	Coefficient	t-statistic
Constant	0.031	1.865	5.808
GDPPH	< .023	1.187	3.742
CAB	< .014	3.212	3.893
BB/GDP	< .019	.872	4.147
GDP growth (annual) %	< .010	.602	5.890
AIR	< .010	5.321	7.265
F-Statistic	< .001	33.770	
* Significant at the 0.01 level, Adjusted R2 - 0.757, DW = 1.064			

As expected, the coefficient estimates for GDPPH, RAGDPG, AIR, BB and CAB are significant and positive relationship (Table 6). These results are similar to those results that are obtained by Chan and Gemayel (2004) and Singh and Jun (1995) and Nonnenberg and Mendonca (2004). Also, it is in agreement with the hypotheses of Economic risk (X) 1, 2, 3, 4, and 5. Table 6 shows also, the DW statistic is substantially less than 2, (DW =1.064) It means there is evidence of positive serial correlation. As a rough rule of thumb, if DW is less than 1.0, there may be cause for alarm. Considering the value of the F-Statistic (33.770), we can conclude that determinants - GDPPH, RAGDPG, AIR, BB and CAB - have significant and positive relationship with FDI in Jordan during 1997-2007.

**b. Financial risk (Y)**

Table (7) shows the results of regression analysis of the financial risk (Y) model used to explain determinants of the FDI evidence from Jordan.

TABLE 7. REGRESSION RESULTS OF FINANCIAL RISK (Y)

Variable	Sig. *	Coefficient	t- statistic
Constant	< .001	0.681	5.808
FD	< .001	1.543	3.742
FDS	< .001	0.339	3.893
CA GS	< .001	434.	4.147
ERS	< .001	1.334	5.890
F-Statistic	< .001	32.870	
* Significant at the 0.01 level, Adjusted R2 - 0.893, DW - 1.2038			

As expected, the coefficient estimates of Foreign Debt as a Percentage of GDP (FD), Foreign Debt Service as a Percentage of XGS, (FDS), current Account as a Percentage of XGS (CA) and Exchange Rate Stability (ERS) are significant and positive relationship (Table 7). These results are similar to those results that are obtained by Chan and Gemayel (2004) and Singh and Jun (1995) and Nonnenberg and Mendonca (2004).

Also, these results are similar to those of all the expected hypotheses which related of Financial risk (Y) (6, 7, 8 and 9).

Table (7) shows also, the Durbin–Watson statistic is substantially less than 2, (DW =1.2038) It means there is evidence of positive serial correlation. and the value of the F-Statistic (32.870), we can conclude that based on the time period (1997-2007), both Foreign Debt as a Percentage of GDP (FD), Foreign Debt Service as a Percentage of XGS, (FDS), current Account as a Percentage of XGS (CA) and Exchange Rate Stability (ERS) are significant and positive relationship of the FDI evidence from Jordan.

R2 for the first Economic risk (X) is around 0.757 and R2 for the second Financial risk (Y) is around 0.893.

**Conclusion**

This study applies a version of the model developed by Chan and Gemayel (2004) to examine the determinants of foreign direct investment flows into the economy of Jordan during 1997-2007 by using MLRM. The analysis has shown that there are significant and positive relationship between foreign direct investment flows into the economy of Jordan and economic and financial variables.

Based on this, the study emphasizes on further FDI promotion policies through focusing on discussed incentives to attract new investments.

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