

## Prospective study of FDI determinants in Algeria using the Micmac program

دراسة إستشرافية لمحددات الإستثمار الأجنبي المباشر في الجزائر باستخدام برنامج Micmac

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### Abstract:

Foreign direct investment (FDI) is one of the most important means of external financing for economic development in developing countries. It contributes to enhancing the foreign exchange resources needs of these countries (FDI) plays an essential role by achieving many advantages to the economies of the host countries, such as job creation and the transfer of modern technology (TOT) As well as raising the level of productivity, Algeria, like other countries has developed effective policies to attract foreign investments, this study seeks to find the composition of the variables that affect FDI using the Micmac program and it aimed at exploring possible changes and then evaluate strategic options leading to the creation of possible change.

**Keywords:** Foreign direct investment, Determinants, prospective, effects, Structural analysis.

**Jel Classification Codes:** F21.F23

ملخص:

يعد الإستثمار الأجنبي المباشر من أهم وسائل التمويل الخارجي للتنمية الإقتصادية في الدول النامية، حيث أنه يسهم في تعزيز إحتياجات هذه الدول من موارد النقد كما يلعب دورا أساسيا من خلال تحقيق العديد من المزايا لاقتصاديات الدول المضيفة، كتوفير مناصب الشغل ونقل التكنولوجيا الحديثة ورفع مستوى الإنتاجية، فالجزائر كغيرها من البلدان قامت بوضع سياسات فعالة لجلب الاستثمارات الأجنبية،

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وبذلك تهدف هذه الدراسة إلى تحديد المتغيرات المفتاحية التي تقود وتوجه النظام، باستخدام برنامج micmac والذي يمكن من إستشراف التغيرات ومن ثم تقييم الخيارات الإستراتيجية وصولاً إلى إحداث التغيرات الممكنة.

**كلمات مفتاحية:** الإستثمار الأجنبي المباشر، المحددات، الإستشراف، التأثيرات، التحليل الهيكلي

تصنيفات JEL : F21 ، F23

## 1. Introduction:

FDI is a form of external financing on which many emerging countries relies on, it is capable to provide adequate financial resources to carry out the investment programs targeted by the development plans of these countries and prepare the economic climate of these countries as an alternative source of loans and other forms of Foreign capitals flows.

As is commonly known, emerging countries face economic, social and environmental development challenges. FDI is designed to bridge the gap in Local resources for investment.

As a emerging country that aims to set its development strategy for sustainable development, Algeria seeks to attract foreign direct investment through efforts to improve the investment business climate in order to achieving fundamental changes in sources of growth and support and covering the deficit recorded in domestic savings Hence, the following problematic can be raised: **how can the determinants of FDI affect FDI flows?**

### Research assumes:

-The levels of foreign direct investment flows into Algeria remain subdued and away from aspirations despite the ongoing efforts of reforms and the provision of infrastructure and conditions, in general this has led to a weakening of its contribution to gross domestic product (GDP).

-The system is composed of a number of variables that lead, guide, influence and be influenced by each other, and that governments must build their policies referring to them, explore, and evaluate the available options.

The purpose of this study is to use the prospecting programs to help guide decision making, by anticipating possible changes, then evaluating strategic

options and making the desired changes.

Due to the nature of the subject, we use the analytical descriptive method in addition to the use of the foresight programs.

## **2. The concept of foreign direct investment:**

The subject of foreign direct investment has become very important at the global level. There have been many studies and researches on foreign direct investment.

### **2.1. Definition of some international bodies and institutions:**

#### **2.1.1. United Nations Conference on Trade and Development (UNCTAD):**

It defined it as "an investment that assumes a long-term continuity relationship between the foreign countries and the foreign investors, and these investors may seek to control projects or institutions belonging to the local country that belongs to them entirely". (al jabouri 2014,p.33)

#### **2.1.2. International Monetary Fund (IMF):**

"FDI is the as a category of international investment that reflects the objective of a resident in one economy (the direct investor) obtaining a lasting interest in an enterprise resident in another economy". (kaki, 2013,p.19)

### **2.2. The definition of some economic researchers and thinkers:**

#### **2.2.1 Lindert definition:**

Foreign direct investment (FDI) is defined as any flow of lending or an increase in the percentage of ownership of any company or branch in a foreign country, where the shares of nationals of the foreign country constitute the largest proportion of the total ownership of such enterprises. (basha, 2015,p.25)

As was defined by others as "the flow of loans by the parent company to its overseas subsidiary or its ownership company in another company, provided that the percentage of ownership abroad is not less than 10%." (al hadi, 2015,p.23)

**Through the previous definitions, we conclude two basic characteristics: (naja, 2015,p.39)**

- The flow of capital between two states, whether in cash or in stocks.

- Direct supervision of the foreign party on the project, through the full ownership of the project, or ownership of a large proportion of the capital, which gives it the right to manage and influence the organizational decisions of the project.

### **3. Forms of Foreign Direct Investment:**

Foreign direct investment (FDI) has several forms. We will address its classification according one criterion:

**3.1. Classification according to the standard of ownership:** The foreign investment according to this criterion is the following forms:

#### **3.1.1 Investment (joint venture):**

It is a project involving two or more parties. This investment is one of the most common types in emerging countries, where the local investor participates with the foreign investor (an individual, a public company or a private company (**amiroush, 2012,p.21**))

It is a subsidiary company of two or more companies which is established by agreement without affecting the decisions and policies of the company regardless of the amount of participation in its capital.

#### **3.1.2 Investment wholly owned by the foreign investor:**

This phenomenon appeared in the emerging countries during the 1990s as a result of the privatization process, which helped foreigners to buy many companies, where the number of companies privatized was 750 companies worth \$ 24 million in **1994 (naja, 2015,p.40)**

In this case, the project is owned by the capital and management of the foreign investor.

Foreign investors prefers this type because they enjoy the total freedom of supervision and management of the project in addition to their expectations for large profits. (**basha, 2015,p.26**)

But on the other hand, resident countries are apprehensive about economic dependence and the dominance of multinational corporations on the markets of those countries.

#### **3.1.3. Free Zones Investment:**

This type of investment arises when a company uses the host country as an export base, it is associated with specific areas on land and sea ports and is not subject to foreign trade controls and is exempted from customs

exemptions. (kaki, 2013,p.27)

#### **3.1.4. Projects or assemblies:**

This form of investment is based on the establishment of foreign investor units at the host country level, and takes the form of an agreement between two parties through which a party provide the second party with the components of a factory product in the country of origin, to be assembled and installed and then marketed to international markets. (mallahsou & thakhnouti, 2015,p.6)

#### **4. Determinants of FDI:**

The process of direct foreign direct investment depends on many of the determinants upon which the investment decision depends, which vary according to the nature of the investment project. The following are the determinants of FDI in the emerging countries: (al hadi, 2015,p.28,29)

##### **4.1 Business Processors:**

The investment climate, the reputation of the country and the provision of the necessary financing services, as well as the provision of investment incentives and low cost, in terms of poor management and corruption, after-investment services, social welfare of the provision of schools and others and this will promote investment.

##### **4.2 Determinants of the policy frame work foreign investment:**

These include political, economic and social stability, privatization policies, entry and labor laws, tax policies and trade policies (customs tariff and national protection policy), as well as market structure policies, especially competition, mergers and acquisitions, and international agreements on direct foreign investment.

##### **4.3 Economic determinants:** Divided into:

###### **4.3.1 Market factors:**

They include market growth, market size, per capital income and access to world markets.

###### **4.3.2 Resources factors:**

Providing skilled manpower and cheap manpower, providing raw materials and technological innovations.

#### **4.3.2 Efficiency factors:**

Include the cost of assets, regular and resources, the cost of inputs such as transport and communication rather the cost of goods and intermediate.

#### **5. Explanatory theories for FDI:**

There are many theories that explain FDI movements:

##### **5.1 Classical theory:**

This theory explains the movements of capital to invest based on international trade, the non-transferability of factors of production outside the borders has been separated between the seller and the buyer considering that the companies are operating in a competitive market, this theory has been developed and criticized earlier. The theory of international capital movements moves from country to country as a result of differences in marginal productivity of capital. (al jabouri, 2014,p.50)

##### **5.2 The imperfection of markets:**

It is based on the absence of full competition in the markets of host countries and the lack of goods and the inability of national companies to compete with multinational companies to enjoy the latter huge financial and technical potential, which creates inequality, which contributes to the advantage of multinational companies. (kaki, 2013,p.77,78)

##### **5.3 General theory of foreign direct investment: (mashhadani & farhan, 2015,p168,169)**

The production financed by foreign direct investment depends on three systems of variables:

- The competitive advantage of the investing company is called the specific property advantages, and this is due to the advantages that other companies have with the possibility of exploiting these features outside the borders of the country of origin.
- The absolute and relative rationality of different regions as a location for each of the acquisition of ownership features is based on the ability of local markets and governments to provide the quality of the necessary stocks that are not movable or transfer of invested companies.
- The relative characteristics of a company require coordination between specific property features and location features for a spatial area other than

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the market-centric point internally.

## 6. FDI inflows into Algeria:

The levels of foreign direct investment flows into Algeria remain subdued and Away from aspirations despite the ongoing efforts of reforms and the provision of infrastructure and conditions in general to keep its contribution to GDP weak.

**Figure.1.** FDI inflows to Algeria during the period (2005-2013)( million USD)



**Source:** (Arabe Investment & Export Credit Guarantee Corporation, 2019)

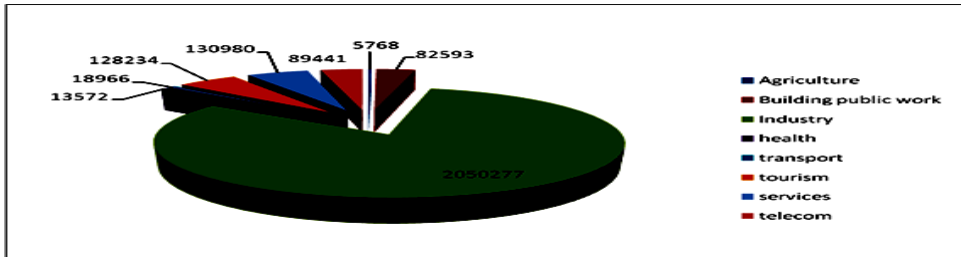
We note that foreign investment in Algeria is weak, despite the incentives granted to foreign investors, it is decreasing and increasing, the highest value recorded was estimated at: 2746 million dollars in 2009, a large decline recorded after that in 2012 amounting to 1484 million dollars due to deteriorating of security situation and the instability in the neighboring countries in both Libya and Mali contributed to the reluctance of foreign investors to invest in Algeria. We also noticed the positive relationship between the volume of foreign direct investment (FDI) and GDP (the higher the foreign investment) which demonstrates the importance of foreign direct investment in economic development.

## 7. Foreign direct investments in Algeria by sector and their role in providing jobs:

Foreign direct investment (FDI) is different from one sector to another according to its economic importance:

## 7.1 Foreign direct investments by economic sector:

**Form.2.** Volume of foreign direct investments in Algeria per sector (2002-2017)  
(Million DZD).



**Source:** (andi, 2019)

The industrial sector is dominated by more than 60% of the total foreign direct investment, which is based on the hydrocarbons sector as the main economic sector and the main artery of Algeria's income, followed by the construction and services sector, which has witnessed rapid growth due to the policy of expanding the road network, and the establishment of the infrastructure of the transport network and residential projects in various formats.

## 7.2 Foreign direct investment and job creation:

Foreign direct investment plays an important role, mainly in the provision of jobs and thus reducing unemployment in emerging countries. Algeria and other countries are working to attract foreign direct investment by providing attractive incentives to investors to finance their development programs, such as providing jobs.

**Figure.3.** Jobs provided by FDI in Algeria by sector (2002-2017)



**Source:** (andi, 2019)

The chart shows the dominance of the industrial sector in the total number of jobs, which provides about 81 thousand jobs, or more than 60%



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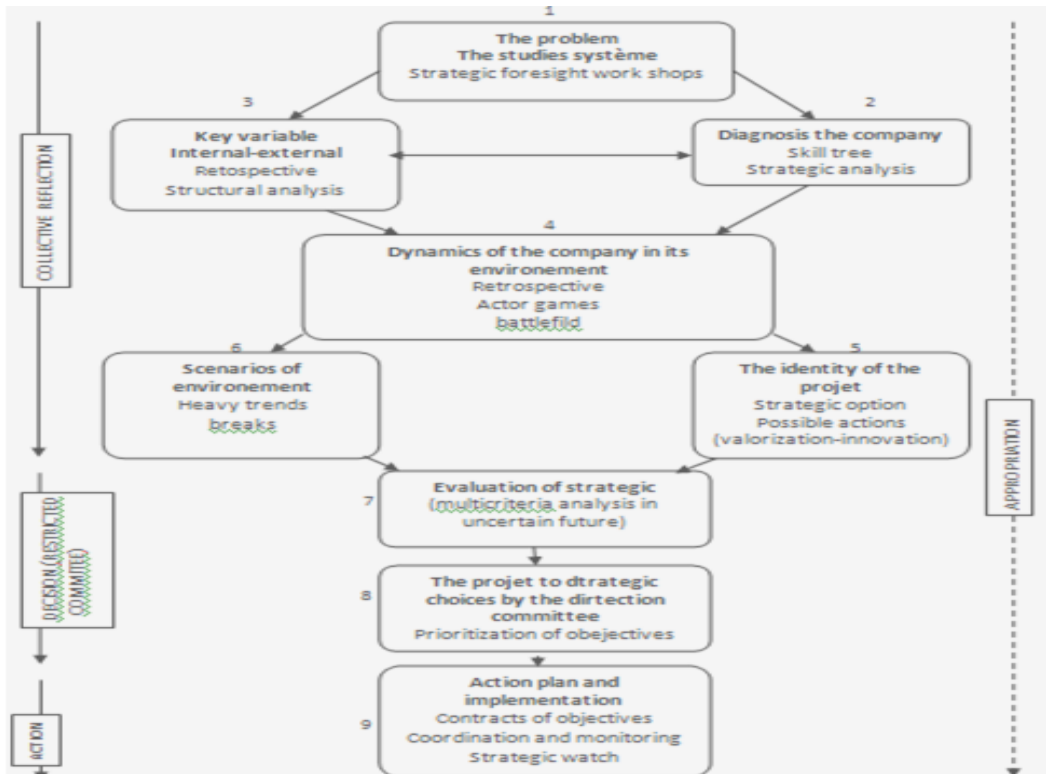
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of all jobs, the second sector is construction provides more than 23 thousand jobs, followed by the service sector, which provides more than 13,000 jobs, reviewing the telecommunications sector, we find that although Algeria registered only one project, it was able to provide 1500 jobs.

**8. Strategic Foresight:** (Godet, manuel de prospect stratégique, tome1 une indisciplinée intellectuelle, 2007, p.5)

The concept of strategic Foresight was spread at the end of the eighties, it was (Faston Barge) that with the foresight we must look forward and think about the strategic action. Looking at the future requires anticipating (imagining the future), which is based on scenarios whether optimistic or pessimistic, requiring explanation of the options of the future (options of interest).

**Form.4.** a diagram explaining strategic scenario planning



**Source:** (Godet, Manuel de prospective stratégique tome 2, L'art et la méthode,

2007,p.18)

**9. the Micmac program** (matrix of cross impact multiplication applied to a ranking):

The program was developed by the institute of innovation and IT development for 3IE at the request of the lipsour laboratory specialized in the strategic perspective, it facilitates the process of structural analysis and arranging indirect relations through modeling relations in the form of matrices, within the system and between the system and its external environment, in addition to the concern to all key variables and even the implicit ones, by thinking about the counter aspects of the behavior of the system (**help Micmac program**)

The Micmac program aims to:

- Discuss the different indirect relationships and then the order of variables.
- A comprehensive representation, as possible, of the system under study
- To reduce the complexity of system for key variables.

**10. The structural analysis the Micmac program goes through:** (Godet Michel, 2019)

### **10.1 Collecting variables:**

It means the calculation of the internal and external variables of the examined system with explanation of each variable, this enables to observe the different relations between the variables to the process of setting a database necessary of every forward-looking thinking.

### **10.2 Analyzing the links between variables:**

Here it is going to fill the matrix with the same persons who contributed to collecting variables through answering the following:

Is there a direct influence relation between variable (i) and variable (j)? if the answer no we put the number(0), and if yes we put(1) if the direct influence relation is weak, and we put(2) if this relation is intermediate, and (3) for strong direct influence relation, and the symbol (p) if there is a “possible” direct influence relation.

Here we refer that there is no influence relation of the variable on itself

### **10.3 Highlighting the key variables:**

In this final stage, the key variables (which contribute to the

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development of the system) are extracted through the direct order of variables at first (what means the direct influence if variable (i) on variable (j) and vice versa, then through indirect order (where a 3<sup>rd</sup> variable (k) affects both variable (i) & (j) at the same time. There is an intermediate variable (r) where the variable (i) affects the variable (r) and this latter affects the variable (j).

## **11. The structural analysis of FDI determinants in Algeria using the Micmac program**

### **11.1 Collecting variables:**

After the random combination of variables related to each foreign direct investment, in addition to those relating to the outside condition, it was agreed to retain those that are characterized by more accuracy and more influence than others, so it has been selected a group of 13 variables as shown in the following table:

**Table.1.** variables after examination and selection.

N °	long TITLE	Short Title	Description	Theme
1	Savings	SAVG	An important resource for monetizing investments	Investment determinants
2	Expenses public	EXPN	Total Expenses of the State on various sectors	Investment determinants
3	Laws	LAW	Procedures and legal texts governing the investment	Investment determinants
4	Man power	MAN,PW	Persons of working age and able to work	Investment determinants
5	economic stability	STAB, ECO	The state of economic variables	Economic determinants
6	population	POPL	Total population	Social determinants
7	Social ills	SOC,ILL	Social hazards	Social

N o	long TITLE	Short Title	Description	Theme
				determinants
8	Political stability	STAB, POLT	The political situation, the democratic	Political determinants
9	Corruption	CORP	Various laws that fight corruption	Social determinants
10	Public investments	PUB, INVST	Its role in achieving economic growth	Investment determinants
11	General revenues	GNRL, RVN	Total State Revenues	Investment determinants
12	Inflation	INFN	General price level	Economic determinants
13	the growth economic	GRWT, ECO	Reflects the gross domestic product	Economic determinants

**Source:** prepared by the researchers

## **11.2 The links between variables:**

### **11.2.1 Create the Direct Effects Matrix (DEM):**

Working method Structural analysis on the monitoring of all the links between the variables, using a two-entry list called the structural analysis rule, which is filled based on the opinions of the experts and this filling is qualitative code. Thus, we obtain the direct effects matrix (DEM) which allow us by describing the direct effects as well as the various interrelationships between the variables, and from the latter we can create another matrix of direct potential correlation between the various variables (DEPM)

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**Table 2:** The direct effects matrix (DEM)

	1 : SAV	2 : EXPN	3 : LAW	4 : MAN.POW	5 : STB.ECO	6 : POPL	7 : SOC.ILL	8 : POT.STB	9 : CORP	10 : PUB.INV	11 : GNL.REV	12 : INFL	13 : GRT.ECO
1 : SAV	0	2	0	0	1	0	0	1	0	3	3	2	3
2 : EXPN	0	0	0	0	2	0	1	1	1	3	0	1	3
3 : LAW	1	0	0	1	1	0	2	3	3	3	0	0	2
4 : MAN.POW	1	0	2	0	0	1	2	0	0	2	2	0	2
5 : STB.ECO	2	2	0	1	0	0	1	2	0	2	2	1	3
6 : POPL	1	2	0	2	0	0	2	0	0	1	1	2	1
7 : SOC.ILL	0	0	1	0	1	0	0	1	3	0	0	0	0
8 : POT.STB	1	1	0	0	2	1	0	0	1	2	2	1	2
9 : CORP	0	0	0	0	2	0	3	2	0	1	1	0	0
10 : PUB.INV	1	0	0	2	3	0	0	2	0	0	3	2	3
11 : GNL.REV	3	3	0	0	2	0	0	2	0	3	0	0	3
12 : INFL	2	2	0	0	2	0	0	1	0	2	3	0	3
13 : GRT.ECO	3	3	0	0	3	1	0	2	0	3	3	2	0

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**Source:** prepared by the researchers based on the outputs of the Micmac program.

The influences are noted from 0 to 3, with the possibility of signaling potential Influences:

0: No influence

1: Low

2: Average

3: Strong

P: Potential

Through this matrix we can calculate the sum totals (lines), which represents the weight of the variable in its effect on other variables, as well as vertical groups (columns), which represents the extent of the correlation of the variable with the rest of the variables, as highlighted in the following table:

**Table.2.** the size effect and the degree of interconnection between the different variables

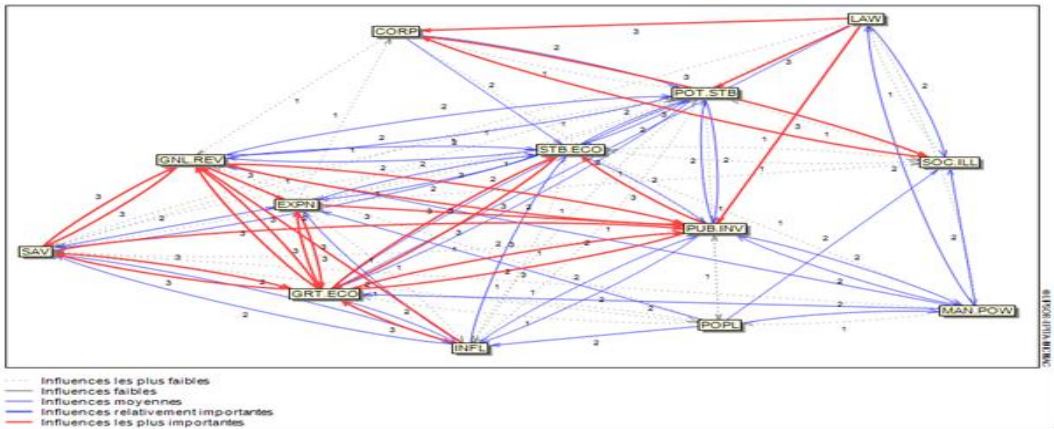
N °	Variable	Total Lines	Total Columns
1	Savings	15	15
2	Expenses public	12	15
3	Laws	16	3
4	Man power	12	6
5	economic stability	16	19

N °	Variable	Total Lines	Total Columns
6	population	12	3
7	Social ills	6	11
8	Political stability	13	17
9	Corruption	9	8
10	Public investments	16	25
11	General revenues	16	20
12	Inflation	15	11
13	the growth economic	20	25
	<b>Total</b>	<b>178</b>	<b>178</b>

**Source:** prepared by the researchers based on the outputs of the Micmac program

The greater the number of lines and columns for each variable, the more significant it is that variable is highly significant in the system and has a relationship with the rest of the variables, ie the economic variables (25+20) public investments (25+16) and general revenues (20 + 16). These effects can also be observed between the various variables, as follows:

**Figure.6.** graph of potential direct influences percentage ( 100% )



**Source:** prepared by the researchers based on the outputs of the Micmac program

-The red arrows indicate that the relationship has a very strong effect, among the mentioned effects (economics stability and economic growth) where each variable affects or is affected on the basis of the direction of the arrow, (inflation and economic growth, It is a reverse effect relationship, whenever the inflation decline, the economic growth increase) ...etc.

-The thick blue arrows indicate that effect relationship is comparatively

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large, among these effects (the effect of inflation on economic stability), (the effect in both directions between political stability and public investment)...etc.

- Medium effect relationship expressed by blue light color arrows, among these effects (the effect of economic stability on general revenues), (the effect of expenses public on economic stability)...etc.

-The black arrows are intermittent indicate that effect relationship has very weakly, among these effect (the effect of corruption on general revenues), (the effect of laws on saving)...etc. Weak effect relationship expressed by black color arrows, they do not exist in Micmac program outputs.

For the length of the road between the variables, in other words how to have been influencing the process between the different variables do you bilaterally or through the entry of intermediaries (indirect effect), as mentioned in the following table:

Iteration	Influence	Dependence
1	89%	96%
2	100%	104%

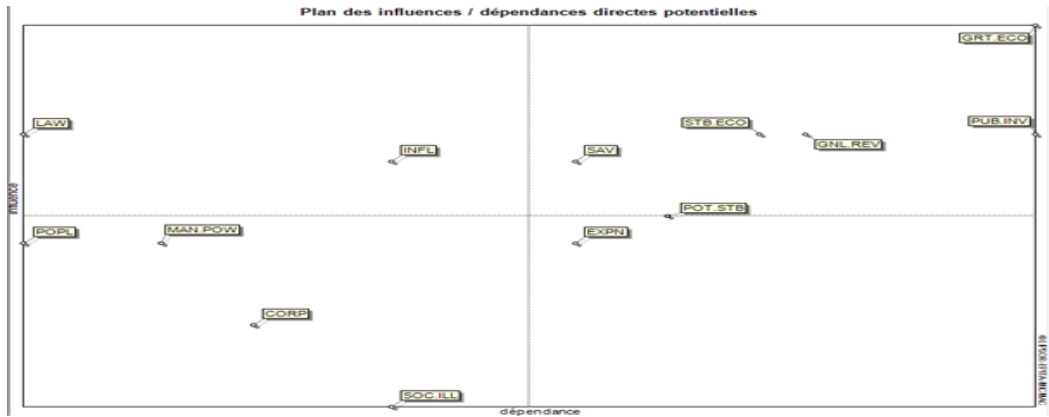
Note from the table above that the effects are grouped in iteration 2, this means that the path is short and the effects between the variables are two-fold.

### **11.3 The key variables:**

Are obtained from the indirect maximum effects matrix (IMEM), due to the inability the direct effects potential matrix (DEPM) to highlight some variables that play an intermediate role or a police role, so it was relied on (IMEM) to avoid neglecting these variables.

From the location of the variables for each other through the indirect maximum effects matrix (IMEM) highlighted in the figure below we can identify and extract basic variables.

**Figure 07:** Effect and correlation of variables through its position.



**Source:** prepared by the researchers based on the outputs of the Micmac program

1. The variables of entry: through the location of variables we note that: laws and inflation have little correlation in the system studied with a significant impact on the rest of the other variables, which made them as variables of entry;

2. Correlated variables (rotation): it includes six (6) variables, namely: economic growth, political stability, economic stability, public investment public revenues, savings, and is characterized by strong association with each other, in addition to the strength of its impact on other variables.

3. Variables Results: they are variables with little impact and strong correlation with each other, and are represented in overhead;

Discrete variables (excluded): the four variables are: labor force, population, bribery and social pests, these variables are characterized by low impact and weak link with the rest of the variables, in the sense that they do not enter the system directly.

## 12. Conclusion:

The method of structural analysis of the system specified for the flow of foreign direct investment produced a set of variables, so that the classification of laws and inflation as fundamental variables guide the system, through its impact on the interrelated variables that affect and are linked in turn, to produce us the variables of results and other subsystems of the system and all these variables key (core) variables that combine the input variables and the associated variables, which drive, guide and affect the system, and thus affect the volume of FDI flows, as one of the best



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options used by emerging countries, foreign direct investment is used to finance economic development through improved economic conditions, its contribution to the transfer of advanced technology, and the financing of the internal deficit, which has not been achieved in Algeria despite the efforts made, the improvement of the economic and social conditions and the security and political stability. The levels of foreign investment in Algeria are far from the expectations, which indicates a defect which suggests some of the following points:

- Standardize the investment system without distinguishing between domestic and foreign investors
- Reconsideration of the fiscal system.
- The need to activate the role of the stock exchange as one of the latest financing means to which the foreign investor resorted.
- Reconsideration of rule 49-51, which is one of the most important obstacles to which a foreign investor complains.
- Establishment of a special body to fight corruption and bureaucracy and fight bribery.
- The need to reform the banking system in Algeria in order to be consistent with the developments at the global level in the international movements of capital.

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