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Econometric Study on the Impact of Public Spending on Imports in Algeria between the Period (1990 – 2012)

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Abstract
We consider public spending as a very important tool in the financial policy and participate essentially in imports. So, there are many studies related to public spending and import. The work below is an application of Co-integration analysis (test of constant variables (*augmented Dickey-Fuller*) and the test of (*Johansen and Juselius*). In addition to a corrections sample and the annual report of the period between *1990 – 2012*. The aim is to study the impact of public spending on import in Algeria.
Keywords: Public spending, importation, test of constant variables, correction of mistakes.

Introduction

Government is responsible of any economic state; employment, law, unemployment, price stability, salaries and economic rise. They are the most important goals of any government.

Governments rely on their futuristic sight in planning to reach their goals. In order to realize these goals, they have to use taxes in different forms and initiate a good public spending policy. So, our choice comes on that economic and financial policies and their role in the economic sphere, of any country. This work is an attempt about all these elements, since we lack many points about this topic; we decided to do the research.

Studies obstacles

According to « *John Maynard Keynes* » (*John Maynard KEYNES,1936*), the financial thought rely on public spending and he considered it as an important Financial policy in order to reach a kind of economic development. Keynes principle was that "*supply create the offer*" that's to say public spending is a public supply that create parallel response with the offer, consequently an increase in national income.

In *2001*, Algeria adopted this public spending in 3 forms, within different periods. In *2001 – 2004*, the weakening economic program, the complementary to launch the economy between *2009 – 2014*.

The main objective of their programs is to ameliorate the financial position, due to the crises of oil prices within the last years.

Algeria has adopted these policies to reach the economic stability of the country.

In this study we attempt to focus on public spending and the possible changes in imports. This is to show how to relive economic disturbances so as to create economic stability.

In our study the following questions were raised:

- In what way can the change in public spending influence the imports in Algeria?
- What is the relationship between public spending and the imports in Algeria between the period *1990 – 2012*.

1. Public spending

Public spending as an important tool in the political policy has witnessed many phases, theorical and practical answers. In the classical period, governments restrained public spending to a low level and restricted the role of government in spending. According to them, this latter is a waste and unproductive, however within the economic development changes permit to reinforced public spending since it's an important element in the social and economic balance. This is due to the world economic crisis witnessed in 2008 which increased the spending in general (Bernier wasmone, 1989).

A.P. Lerner abolished the classical thoughts about spending, when he created functional finance and encourages the policy of any country (*Ahmed abedda mahmoud, 1971*).

In the modern financial thought, both (*Myrdal and Lindale*) (*Two Swedish known economists*) considered that public spending is so essential in order to avoid taxes imposed which emerged numerous problems .This phenomena was seen in the nineteenth century .

The financial policy cooperate with the general spending, this policy is applied in hard moments. Like crisis or unemployment where it's necessary to raise the averages of spending and reduce taxes of consumption and also taxes an investments. In case of inflation, the financial policy is required to decrease spending by increasing the averages of taxes to allow a decrease in consumption and to raise the average of benefits in order to decrease the spending on investment.

So, we can define public spending as follow:

Public spending is all the sums of money spent by a person to realize a general need (*al-housin khalef, 2008*).

It is first, a sum of money, second this sum is released by a general power, third it is designed to reach a general need .

2. The orientation of imports in Algeria

The economy of Algeria rely mostly on the import of the raw material, semi-industrial and industrial product. There is a close link between public spending and the imports. The source of Algerian spending comes from taxes and oil. This is the most important source since *90%* of the balances revenues are from oil.

The international trade of Algeria is the same compared with most Arab countries, and developing countries because it's attached with the industrial countries and International markets, especially Europe in matters of export and imports.

The European community is the most important market for Algeria. The average imports from this market between *2001 – 2012* had reached *54%*, and *61.36%* of the exports. As a result Algeria has great commercial exchanges within European countries.

The position of imports in Algeria is similar to the export, since the European countries are the most essential partners for Algeria.

3. The causality relationship between the public spending and import in Algeria

Algeria has relied on the « *John Maynard Keynes* » average to achieve the economic growth because of lack of private investment inside the country or outside it, and the reed to prepare one's national economy to start a new phase by relying on a strategy that aims at reinforcing underground structure (*construction*) and form human capital through education, and improve services in general.

This resulted in important public spending which contributed to increase in the size of demand and therefore the use of import of mainly industrialized products due to the lack of production (*Boudakhdakh karim and selamna mohammed,2011*) as shown in the line graph below.

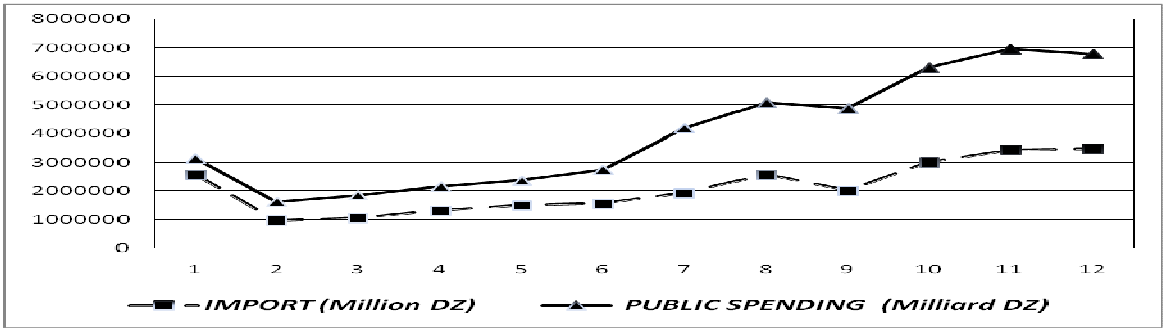

Figure 01. Evolution of public spending and importation in Algeria (2001 - 2012)

Source: customs general direction. National institute of computer science and statistics *C.N.I.S*

- ONS: Algeria in some numbers, *2001 / 2011…..*
- ONS: Evolution of the commercial balance of Algeria, period *2001 – 2012*.

During the previews conditions, that's to say, huge dispenses by the government and the absence of an industrial basis capable to absorb these dispenses, the size of import rose and this helped in energizing (improving) the economy of other exporting countries.

Besides, Algeria hasn't benefited from external demand on its local products outside fuel sector.

4. Designation of a sample used in study

Empirical economic literature includes a lot of studied which deals with the public spending *DEP* and the import *IMP* and we notice that these studies conclude in variable results.

In addition, Algeria aims at applying (implementing) a contributory and complementary analysis (*Co integration analysis*) and a sample of correction of mistakes on the annual declarations between (*1990 – 2012*), to study the relationship between public spending and the import. But before doing studying this relationship we have to anal use the time sequences to be sure of its stability (*sedentation*) through time and designate its complementary degree.

In this study, we shall construct a standard sample to know the importance of the public spending on the imports between (*1990 – 2012*), using a new classical sample of development which constitutes variability's and define IMP as a variety which represents the imports supposing it is (*function*) in both the *PIB* and inflation

INF, the price of the benefit (*PBRL*) and the public spending *DEP* as interpreting variability's:

The sample takes the mathematical general form.

$$IMP = f(PIB, INF, TR, DEP) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

IMP: The real inside result

PIB : Real Gross Domestic Product (*real GDP*),((*Including the prices of 1990 and 2012*),Prices into *US* dollars.

INF : Inflation Value Rate, taken as a percentage.

IMP : The value of total imports (*taking the prices of 1990 and 2001*), as measured in *USD* prices and which represents foreign trade.

PBRL: The value of a unit price of a crude oil barrel, measured into *US* dollars

DEP: The public spending in American dollar.

We could have the statistics of the different variables which constitute the international from a basis of information about the indicators of the international sector of statistics and the ministry of finance.

Table *01*. Sample of the development of variability's.

Unit: *million American dollars*

YEARS	PIB (M$)	IMP(M$)	INF %	DEP (M$)	PBRL/$
1990	61900	9684	16,7	10100	24,34
1991	61100	7681	25,9	11000	21,04
1992	62200	8406	31,7	12000	20,03
1993	60900	8788	20,5	12000	17,8
1994	60400	9365	29	12500	16,3
1995	62700	10761	29,8	13000	17,6
1996	65300	9098	18,7	13500	21,7
1997	66000	8687	5,7	13800	19,49
1998	69300	9403	5	14200	12,94
1999	71600	9164	2,6	14500	17,91
2000	73100	9173	0,34	14800	28,5
2001	75100	9940	4,2	15400	24,85
2002	78600	12009	1,42	16200	25,24
2003	84000	13534	2,58	16900	28,96
2004	88000	18199	3,56	17600	38,66
2005	92900	20357	1,64	18000	54,64
2006	94500	21456	2,53	18700	65,85
2007	97000	27631	3,25	19800	74,9
2008	100280	39479	4,4	21600	99,9
2009	10006,7	39297	5,7	22800	62,3
2010	12034,5	40212	3,9	24900	80,2
2011	14480,7	47300	4,5	26800	112,9
2012	20795,5	23031	8,9	28400	113,4

Source: Performed by the author by using following data:

- The national statistics Office: **www. ONS.dz**
- The central bank of Algeria: www.**BCA.org.dz**
- Ministry of finance - Algeria: **www. MF.dz**
- The international bank B.Mondial,
- The general direction of customs.

$$IMP_t = f(PIB_t, INF_t, PBRL_t, DEP_t) = \beta_0 + \beta_1.PIB_t + \beta_2.INF_t + \beta_3.PBRL_t + \beta_4.DEP_t + \varepsilon_t$$

The model becomes the following mathematical mode.

ε: represents the spontaneous mistake limit of the equation (*error term*) and which supposes that its values are distributed in a natural way and with an average equal to zero and a stable differentiation.

These hypotheses are necessary for obtaining impartial potentials characterized by competence to each of the teachers of the modal $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ according to the economical theory predictions which shows that the effect of the public spending and the effect of the internal strut should be positive:

$$\frac{\partial IMP}{\partial DEP} \rangle 0 \qquad \& \qquad \frac{\partial IMP}{\partial PIB} \rangle 0$$

The utilized metric method used in this study try to estimate the relation throughout a period of time (*1990 – 2012*) which include *22* temporal observations for each variant from the modal. This type of analyses has a great important in the inquiry of the nature of the relation between the public spending and the acuity of importing in Algeria.

Through that type of analyses we are going to estimate the modal of the study as follows:

$$LnIMP_t = \alpha + \beta_1 LnPIB_t + \beta_2 .LnINF_t + \beta_3 .LnPBRL_t + \beta_4 .LnDEP_t + \varepsilon_t \quad \text{.....02}$$

A variants logarithm was used in the modal become a doubled logarithm (*Double-log regression modal*), so that we avoid probable metric problems.

Moreover, the double logarithm modal potentials express flexibility of all variants in regard to the economic growth, the variants flexibility in regard with the economic growth becomes $\beta_1, \beta_2, \beta_3, \beta_4$ successively.

To prove that, admitting that the equation relation in the modal be:

$$IMP = \beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t}$$

As DEP flexibility in regard to the importing activities be:

$$E_{DEP} = \frac{\partial IMP}{\partial DEP} \times \frac{DEP}{IMP}$$

When comparing the importing activities *IMP* in regard to the public spending *DEP*, we obtain:

$$\frac{\partial IMP}{\partial DEP} = \beta_4 \left(\beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4 - 1} e^{\varepsilon t}\right)$$

$$= \beta_4 \left(\beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t}\right) DEP^{-1}$$

After setting, it becomes:

$$\frac{\partial IMP}{\partial DEP} = \beta_4 \times \frac{\left(\beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t}\right)}{DEP}$$

With a simple replacement from the equation relation in the modal, we obtain:

$$\frac{\partial IMP}{\partial DEP} = \beta_4 \times \frac{IMP}{DEP}$$

With replacement of the value of $\frac{\partial IMP}{\partial DEP}$ in the flexible mode above, it becomes:

$$E_{DEP} = \beta_4 \times \frac{IMP}{DEP} \times \frac{DEP}{IMP}$$

After simplification, we get:

$$E_{DEP} = \beta_4$$

So, as for the flexibility of the rest of variants (*PIB ،INF ، PBRL*) in regard to the economic growth .

5. Results of the study of the impact of public spending on imports in Algeria

Annual data (*1990 – 2012*) of the study variants were represented with (*IMP ،PIB ،INF ، PBRL ،DEP*), have been used to explain the effect of the public spending on the import activity in Algeria, throughout evaluating the modal of the study:

$$LnIMP_t = \alpha + \beta_1 LnPIB_t + \beta_2 .LnINF_t + \beta_3 .LnPBRL_t + \beta_4 .LnDEP_t + \varepsilon_t$$

$$t = 1, 2, ..., 22$$

This study doesn't accurate results in regard to the time chains, we are going to use the URT (*the Unit root test*) which brings out more accurate results.

We've used in this study ADF (*Augmented Dickey-Fuller*) test.

5.1. Testing the stability of the variants: (*The Unit Root Test*)

The test (*ADF*) is one of quantitative tests in this study so as to detect the variations stability and static or the chronological series whereas the test (*DF*) which is a simple test has been avoided because it doesn't correspond to (arriver) or ignores the auto-correlation in the uncertain error thus the sizes (greatnesses) of least squares don't satisfy the decline equation of the efficient estimates.

5.1.1. ADF (*Augmented Dickey-Fuller*) test:

The ADF test is given by the following equation as fellow:

$$\Delta Y_t = A_1 + A_2 T + \lambda Y_{t-1} + \sum_{i=1}^{m} \lambda_i Y_{t-m} + U_t$$

By presenting the datum (pieces of data) of the test of the root unity (test ADF) which are given is table nº 2, it clearly appears that all the variations used in this estimate contain (insert) the root unity, however

we have to accept that the hypothesis of the unity root is useless for all the variations at the abstract level 5 % . That is to say that they are not stable in the general level in the case where it is categorical and without general direction (Intercept) and also is the case of its presence category (Trend and Intercept) or the in existence and the general chronological direction

Tableau *02*. Résultats du test *Dickey-Fuller Augmented*

Test Augmented -Dickey-Fuller			**abstract level and test**	**caractéristiques**	
None	**Trend & Intercept**	**Intercept**			
-2.674290	***-4.440739***	***-3.769597***	**%1**	**Critical Values**	
-1.957204	***-3.632896***	***-3.004861***	**%5**		
-1.608175	***-3.254671***	***-2.642242***	**%10**	**variabls**	
-0.90	***-1.52***	***-1.38***	**t**	**Level**	**Logarithme real GDP (Ln PIB)**
0.3143	***0.7890***	***0.5710***	**Prob***		
22.64	***22.69***	***22.67***	**AIC****		
-4.65	***-4.67***	***-4.58***	**t**	**1st difference**	
0.0001	***0.0065***	***0.0018***	**Prob**		
22.73	***22.85***	***22.81***	**AIC**		
-0.35	***-5.007***	***-5.61***	**t**	**Level**	**Logarithme of importation (Ln IMP)**
0.5424	***0.0040***	***0.0002***	**Prob**		
20.05	***19.68***	***19.61***	**AIC**		
-2.48	***-1.71***	***-2.06***	**t**	**1st difference**	
0.0163	***0.7034***	***0.2606***	**Prob**		
19.95	***20.09***	***20.05***	**AIC**		
0.81	***-2.99***	***-2.36***	**t**	**Level**	**Logarithme of inflation (Ln INF)**
0.8802	***0.1562***	***0.1632***	**Prob**		
-9.60	***-9.77***	***-9.70***	**AIC**		
-5.08	***-5.21***	***-5.15***	**t**	**1st difference**	
0.0000	***0.0024***	***0.0006***	**Prob**		
-9.66	***-9.59***	***-9.61***	**AIC**		
2.38	***2.44***	***5.33***	**t**	**Level**	**Logarithme of public spending (Ln DEP)**
0.9937	***1.0000***	***1.0000***	**Prob**		
14.80	***14.82***	***14.78***	**AIC**		
-0.49	***-3.01***	***-1.43***	**t**	**1st difference**	
0.4897	***0.1505***	***0.5455***	**Prob**		
14.97	***14.72***	***14.96***	**AIC**		
1.28	***-1.93***	***0.25***	**t**	**Level**	**Logarithme of price of a crude oil barrel (Ln PBRL)**
0.9447	***0.6035***	***0.9702***	**Prob**		
8.09	***7.97***	***8.16***	**AIC**		
-4.81	***-5.49***	***-5.26***	***t***	***1st difference***	
0.0000	***0014***	***0.0004***	***Prob***		
8.21	***7.98***	***8.18***	***AIC***		

*-Mackinnon ***(1996)*** one-sided P-values.
** - (*P = 1*).

See annex n° (*01*)

The illustrated finding in the table above show that the calculated of (t) are lower than the critical values in 5%. It has been revealed that all the first differences of the variables became stable when taking them in the estimation, it doesn't include the unit root which means the refuse of the hypothesis of the non existence of the unit root, where the calculated values of (t) are greater than the critical values in the significance level 5%, (Ln PBRL , Ln PIB) or 1% (Ln INF , Ln DEP) or 10% (Ln IMP), and then the variable become integral from the first close and stable which justifies the ongoing to implementing to the common integration and designing the model of mistake correction.

Figure (02) clarifies the time chains path in the general level and the path of these chains after taken the first differences:

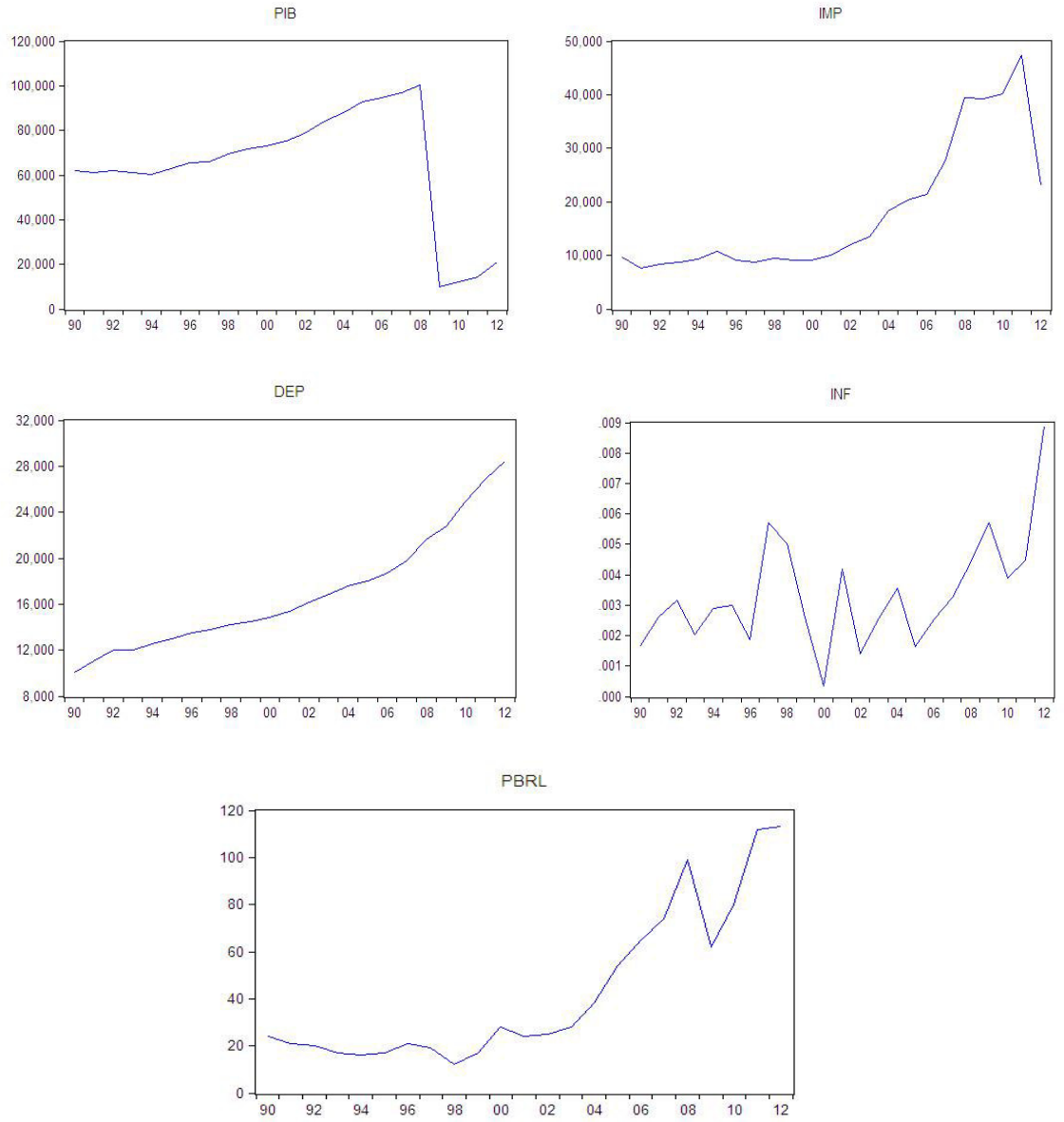

Figure 02: Temporal chains in levels and first differences according to ADF test

The graphic of the test (Eviews.8) have been calculated in function of the realizations by (Eviews 8), used in this study, these values vary according to the number of the greatnesses of the test sample.

5.2. The co-Integration Test according to Johansen and Juselius method .

Regarding that the temporal chains of the model variables are integral from the first class, it was quite important to test the presence of a long-term balance between them, despite of the existence of a disruption in the short-term. According to the testing of the common integration between the variables used in the method (*Johansen, 1988*) and (*Johansen and Juselius, 1990*), which consists of two and more variable and considered as the best one in case of two variable because it allows the mutual effect or the feedback effect among variables being studied and not existing in the method (***Engle-Granger***) (*Khaled ben hamed ben abdellah el-kadire, 2005*).

Johansen and *Juselius* method depends on testing the number of the relation of common integration in the *VAR* system vector autoregressive (*VAR*) wish represents the relation of the long-term of variables in the equations system with consideration that all variables are internal in the modal.

The test has been held with (*J.J*) method with rupture and temporal direction in the integration equation and *VAR* test which is shown in table *N° 03*.

Table *03*: Johansen and Juselius Test

Critical Values %5		%1Critical Values		Maximal Eigen Value Statistic	Trace Statistic	Eigen Value	Vector
Test auto-grande vecteur	Test d'impact	Test auto-grande vecteur	Test d'impact				
33.87	*69.81*	*39.37*	*77.81*	*33.44*	*90.44*	*0.796*	$*\ r = 0$
27.68	*47.85*	*32.71*	*54.68*	*28.93*	*57.00*	*0.747*	$r \leq 1$
21.13	*29.79*	*25.86*	*35.45*	*18.29*	*28.07*	*0.581*	$r \leq 2$
14.26	*15.49*	*18.52*	*19.93*	*6.75*	*9.78*	*0.275*	$r \leq 3$
3.84	*3.84*	*6.63*	*6.63*	*3.02*	*3.02*	*0.134*	$r \leq 4$

See annex N° (*02*)

The test and the great individual value test in the table above show the regression of the null hypothesis saying ($r = 0$) that there's no common integration between variables in the significance level *5%*, where the calculated value of the trace test (λ *trace*) estimated (*90.44*) greater than the two critical value (*77.81*) and (*69.71*) in *1%* and *5%* , successively, while the following value estimated by (*57.00*) is less than the critical value of (*58.68*) and (*47.85*). This is the test of the greatest possibility which show the non-regression of the null hypothesis saying the existence of a unique vector at most of the common integration. Furthermore, the maximal Eigen statistic (λ *max*) has given the same results of the test. In consequence to, it's obvious that (*IMP*) representing the importation in Algeria is integral to a common integration with the public spending (*DEP*), the Gross domestic product (*PIB*), the inflation level (*INF*) and the oil price (*PBRL*).

These results mean that there's a stagnant linear continuation between (*IMP*) and the variables (*DEP,PBRL,INF,PIB*) despite of the fact that these variables are not stagnant. Moreover, these finding certifies that, finally, there's a long term balanceable relation between these variables which means that they are not far from each other where they go similarly.

As we can express the equation of the common integration as follows:

$$LnIMP_t = -1.324 - 0.182\ LnPIB_t - 0.556\ LnINF_t - 0.378\ LnPBRL_t + 0.0062\ LnDEP_t$$
$$(0.19141) \qquad (0.4386) \qquad (0.69) \qquad (0.02432)$$
$$\log \cdot Likelihood = 514\ .8499$$

(*The values in brackets represent standardized errors*)

It is evident from the estimations of the Co-integration vector in the above model that flexibility of the public spending on the importations in a long-term is equal to *0.0062%*, which mean that the increase of equation with *10%* leads to an increase in government with an increase rate of *6.2%*, with a positive sign which goes perfectly with the theory, there's a direct relation of a direct investment of a long term with the importation.

However, the rest of variables came with a negative indication which means that it has a negative effect on importation on the long-term, and that is opposite to the economic theory.

The finding have also shown that the coefficients of the common integration vector, which describes the long-term relation, are significant because the value ***Log Linklihood*** is equal to (*514.8499*).

5.3. Estimating vector error correction model

After testing the variables with unity root test, that certified the stability of the temporal chains after taking the first differences to it, and also testing the common integration, which proves existence of a common integration, another step comes up which consists of designing a *VAR* in a form of first difference to the variables (*[VECM] vector error Correction Model* to estimate the adaptation speed i.e. adaptation of any disruption in the short-term to a long-term balance between the importations and the study variables), and adding a slow time-gap to error correction term. This is implemented by estimating the following model after adding an individual correlation as follows:

$$\Delta LnIMP_t = \alpha + \sum_{j=1}^{k} \beta_j \Delta LnIMP_{t-j} + \sum_{j=1}^{k} \phi_j \Delta LnPIB_{t-j} + \sum_{j=1}^{k} \lambda_j \Delta LnINF_{t-j}$$

$$+ \sum_{j=1}^{k} \rho_j \Delta LnPBRL_{t-j} + \sum_{j=1}^{k} \gamma_j \Delta LnDEP_{t-j} + \omega Ec_{t-1} + \varepsilon_t$$

Where the parameters $\alpha, \beta, \phi, \lambda, \rho, \gamma$ in the equation show that they are parameters of importation

functions variables in the short-term, and **ω** denotes error correction coefficient Ec_{t-1} which include the test of the long-term. In addition to, it measures the disruption adaption fast in the short-term to the long-term balance, where the short-term dynamic differs of the long-term balance, and the slowing following variables are added to be sure that $\mathcal{E}_t$ (*the rest*) is stable or from the (***White Noise)*** [♣] type.

The finding in table (*04*) show that the estimated adaptation coefficients, which are implemented to test the extension of the effect power of the integrated variables in the equation on the importations, where it comprises the weighs through which the common integration vector integrate the mechanism of the short-term, and it measures the response fast of the short-term disequilibrium which occurs in the whole system.

Table *04*. Estimating error correction vectors model

t-statistic	Std.Errors	Coefficients	variabls
4.131	***0.00134***	***0.0555***	*C*
-1.51440	***0.015265***	***-0.023***	Ec_{t-1}
0.64	***0.031250***	***0.0202***	Δ *Ln IMP* $_{t-1}$
-4.272	***0.00698***	***-0.029***	Δ *Ln PIB* $_{t-1}$
0.197	***39865.0***	***7864.23***	Δ *Ln INF* $_{t-1}$
3.081	***13.30***	***40.99***	Δ *Ln PBRL* $_{t-1}$
0.331	***0.175***	***0.0583***	Δ *Ln DEP* $_{t-1}$
		0.84	*R2*
		0.028	*S.E*
		12.20	*F - Statistic*
		-136.87	*Log Likelihood*

See annex N° (*03*)

The table (*04*) shows that the variables shift has help to know possible changes in the (*PIB*) representing the economic growth in Algeria, that is to say, the government expenses lead to importation according to (*Granger*). The variance in the government expenses during the period (*t-1*) by *10%* leads to an increase in the period (*t*) [♣♣2]wish *0.64%* lead to a slight positive effect in the national economy.

The results also show that the impact of the (*PIB*), the inflation and the petrol price in the period (*t-1*) on the importation is due to the compatibility of the *PIB*. (*-0.029*) it is each year decreasing by *2.9%* which led to an economic balance during *9* years.

The correction of the wrong doing in Ec_{t-1} in the (*VEC*) has taken the negative symbol (-) it means that *2.3%* of the economic imbalances are corrected each year.

Conclusion

In this study there is a trial to know (*to measure*) the impact of the public expenses on the Algerian importation.

where the analysis of the study using the standard tests (tests of static variations. Co- integration Test the model of error correction) has revealed the following:

1- The results of the static variations tests (***A**ugmented **D**icker **F**uller*) have shown that all the variations of the economic study contain the root of the unity that is to say that, it is non – static (*or unstable*) at its level, then by becoming stable in the first differences which means that it is about an integration of first order .

2- The Co- Integration Test (***J**ohansen and **J**usellus*) has shown that there is a Co-Integration vector within the variations which indicate the existence of a long term relation between the public expresses and the imports .

3- The model estimation of the correction vectors of error has shown that the public expresses contributed in the imports but it is weak in short term , this is due to the weak rationalization of the public expenses in Algeria , whereas the results obtained by the determination of the model error correction has been rejected (*or refused*) as it has been shown that the public expresses are statically abstract whereas the same model has shown that the other model coefficients are abstract and positively influent on the imports in a short term which is in agreement with the economic theory .

[♣] - White Noise: The white noise is a stationary time series or a stationary random process with zero autocorrelation. In other words, in white noise *N (t)* any pair of values $N(t_1)$ and $N(t_2)$ taken at different moments $t_1$and t_2 of time are not correlated - *i.e.* the correlation coefficient $r(N(t_1),N(t_2))$ is equal to null.

[♣♣] Public spending was missing the period (t) is the application first, and influence on the increase in gross product of period (t + 1), so the problem is the non-compliance Temporal between the cause and the result.

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(*Myrdal and Lindale*): Two Swedish economists known.

The ***ADF*** test value table is calculated by *EVIEW.8* program used in this study,

*-Mackinnon (1996) one-sided P-values.

** - It has been one slowdown period (*P = 1*) awarding to the standard (*AIC*) .

Web Site

- Central Bank of Algeria: www.BCA.org.dz
- Directorate General of Customs National Centre of Informatics and Statistics C.N.I.S.
- The World Bank B.World.
- Ministry of Finance of Algeria: www.MF.dz
- National Statistics Office: www.ONS.dz
- ONS, Algeria The results in figures 2001 - 2011 N 30 2012 Edition.
- ONS, Evolution of trade balance of Algeria period 2001 – 2012.

ANNEX

Annex N° *01*. Results of the static variable in the model.
(Test Augmented Dickey-Fuller)
Ln (PIB) in level.

Null Hypothesis: PIB has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.384300	0.5710
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

R-squared	0.087437	Mean dependent var	-1868.386
Adjusted R-squared	0.041809	S.D. dependent var	19835.26
S.E. of regression	19416.19	Akaike info criterion	22.67211
Sum squared resid	7.54E+09	Schwarz criterion	22.77130
Log likelihood	-247.3932	Hannan-Quinn criter.	22.69548
F-statistic	1.916288	Durbin-Watson stat	1.829762
Prob(F-statistic)	0.181519		

Ln (IMP) in level.

Null Hypothesis: IMP has a unit root
Exogenous: Constant
Lag Length: 3 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.612547	0.0002
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.

R-squared	0.744891	Mean dependent var	749.6316
Adjusted R-squared	0.672003	S.D. dependent var	6865.902
S.E. of regression	3932.170	Akaike info criterion	19.61270
Sum squared resid	2.16E+08	Schwarz criterion	19.86124
Log likelihood	-181.3207	Hannan-Quinn criter.	19.65477
F-statistic	10.21965	Durbin-Watson stat	2.068587
Prob(F-statistic)	0.000437		

Ln (INF) in level.

Null Hypothesis: INF has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.361641	0.1632
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

R-squared	0.218058	Mean dependent var	0.000329
Adjusted R-squared	0.178961	S.D. dependent var	0.001999
S.E. of regression	0.001812	Akaike info criterion	-9.702587
Sum squared resid	6.56E-05	Schwarz criterion	-9.603401
Log likelihood	108.7285	Hannan-Quinn criter.	-9.679222
F-statistic	5.577348	Durbin-Watson stat	1.658639
Prob(F-statistic)	0.028450		

Ln (DEP) in level.

Null Hypothesis: DEP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		5.333620	1.0000
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

R-squared	0.587182	Mean dependent var	831.8182
Adjusted R-squared	0.566541	S.D. dependent var	571.8694
S.E. of regression	376.5051	Akaike info criterion	14.78625
Sum squared resid	2835121.	Schwarz criterion	14.88543
Log likelihood	-160.6487	Hannan-Quinn criter.	14.80961
F-statistic	28.44750	Durbin-Watson stat	1.393478
Prob(F-statistic)	0.000032		

Ln (PBRL) in level.

Null Hypothesis: PBRL has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.259798	0.9702
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

R-squared	0.003363	Mean dependent var	4.045455
Adjusted R-squared	-0.046468	S.D. dependent var	13.45708
S.E. of regression	13.76620	Akaike info criterion	8.168817
Sum squared resid	3790.164	Schwarz criterion	8.268003
Log likelihood	-87.85699	Hannan-Quinn criter.	8.192182
F-statistic	0.067495	Durbin-Watson stat	2.415486
Prob(F-statistic)	0.797675		

Annex N° *02*. Results On integration of common variables in the model test.
(Test Johansen and juselius) abstract level at *1 %*

Date: 10/17/14 Time: 22:44
Sample (adjusted): 1992 2012
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: DEP IMP INF PBRL PIB
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.01 Critical Value	Prob.**
None *	0.796570	90.44752	77.81884	0.0005
At most 1 *	0.747877	57.00644	54.68150	0.0055
At most 2	0.581448	28.07188	35.45817	0.0780
At most 3	0.275159	9.781860	19.93711	0.2979
At most 4	0.134112	3.023999	6.634897	0.0820

Trace test indicates 2 cointegrating eqn(s) at the 0.01 level
* denotes rejection of the hypothesis at the 0.01 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.01 Critical Value	Prob.**
None	0.796570	33.44108	39.37013	0.0563
At most 1	0.747877	28.93456	32.71527	0.0334
At most 2	0.581448	18.29002	25.86121	0.1194
At most 3	0.275159	6.757861	18.52001	0.5182
At most 4	0.134112	3.023999	6.634897	0.0820

Max-eigenvalue test indicates no cointegration at the 0.01 level
* denotes rejection of the hypothesis at the 0.01 level
**MacKinnon-Haug-Michelis (1999) p-values

1 Cointegrating Equation(s): Log likelihood 514.8499

Normalized cointegrating coefficients (standard error in parentheses)

DEP	IMP	INF	PBRL	PIB
1.000000	-1.324815	-556659.4	378.6233	-0.182899
	(0.19141)	(438699.)	(69.9100)	(0.02432)

(Johansen and juselius Test) abstract level at *5 %*

Date: 10/18/14 Time: 00:38
Sample (adjusted): 1992 2012
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: DEP IMP INF PBRL PIB
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.796570	90.44752	69.81889	0.0005
At most 1 *	0.747877	57.00644	47.85613	0.0055
At most 2	0.581448	28.07188	29.79707	0.0780
At most 3	0.275159	9.781860	15.49471	0.2979
At most 4	0.134112	3.023999	3.841466	0.0820

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.796570	33.44108	33.87687	0.0563
At most 1 *	0.747877	28.93456	27.58434	0.0334
At most 2	0.581448	18.29002	21.13162	0.1194
At most 3	0.275159	6.757861	14.26460	0.5182
At most 4	0.134112	3.023999	3.841466	0.0820

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Annex N° *03*. Results of the model estimation of vectors error correction.

Vector Error Correction Estimates
Date: 10/17/14 Time: 23:06
Sample (adjusted): 1993 2012
Included observations: 20 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Error Correction:	D(DEP)	D(IMP)	D(INF)	D(PBRL)	D(PIB)
CointEq1	**-0.023095**	**-0.115228**	-1.26E-07	0.000990	3.275083
	(0.01525)	**(0.29195)**	(1.2E-07)	(0.00075)	(0.86639)
	[-1.51440]	**[-0.39468]**	[-1.05558]	[1.31321]	[3.78013]
D(DEP(-2))	**0.058317**	**-11.78277**	1.16E-06	-0.001356	7.206053
	(0.17574)	**(3.36435)**	(1.4E-06)	(0.00869)	(9.98402)
	[0.33184]	**[-3.50224]**	[0.84069]	[-0.15605]	[0.72176]
D(IMP(-2))	**0.020228**	**0.922107**	-2.06E-07	0.000453	-1.556634
	(0.03125)	**(0.59819)**	(2.5E-07)	(0.00155)	(1.77518)
	[0.64737]	**[1.54149]**	[-0.83942]	[0.29315]	[-0.87689]
D(INF(-2))	**7864.232**	**359058.0**	-0.337666	1366.105	1590281.
	(39865.0)	**(763171.)**	(0.31272)	(1971.13)	(2264778)
	[0.19727]	**[0.47048]**	[-1.07978]	[0.69306]	[0.70218]
D(PBRL(-2))	**40.99903**	**40.39957**	-3.05E-05	0.728436	1559.388
	(13.3030)	**(254.672)**	(0.00010)	(0.65777)	(755.761)
	[3.08194]	**[0.15863]**	[-0.29189]	[1.10743]	[2.06334]
D(PIB(-2))	**-0.029830**	**-0.156907**	2.20E-08	-0.000673	-0.814795
	(0.00698)	**(0.13366)**	(5.5E-08)	(0.00035)	(0.39665)
	[-4.27248]	**[-1.17391]**	[0.40150]	[-1.94977]	[-2.05417]
C	**555.9196**	**7498.629**	-7.93E-05	1.091921	-11601.77
	(134.568)	**(2576.15)**	(0.00106)	(6.65372)	(7644.95)
	[4.13116]	**[2.91079]**	[-0.07512]	[0.16411]	[-1.51757]
R-squared	**0.849222**	**0.555150**	0.240893	0.323094	0.597073
Adj. R-squared	**0.779632**	**0.349834**	-0.109464	0.010677	0.411107
Sum sq. resids	**1030116.**	**3.78E+08**	6.34E-05	2518.461	3.32E+09
S.E. equation	**281.4955**	**5388.922**	0.002208	13.91861	15992.11
F-statistic	**12.20323**	**2.703887**	0.687564	1.034174	3.210653
Log likelihood	**-136.8733**	**-195.9130**	98.24088	-76.73548	-217.6680
Akaike AIC	**14.38733**	**20.29130**	-9.124088	8.373548	22.46680
Schwarz SC	**14.73583**	**20.63980**	-8.775581	8.722054	22.81530
Mean dependent	**820.0000**	**731.2500**	0.000287	4.650000	-2070.225
S.D. dependent	**599.6490**	**6683.284**	0.002096	13.99351	20839.52

Determinant resid covariance (dof adj.)	**1.41E+16**
Determinant resid covariance	**1.64E+15**
Log likelihood	**-492.2212**
Akaike information criterion	**53.22212**
Schwarz criterion	**55.21358**

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