

## Public devices entrepreneurship and employment in the industry in Algeria

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### Abstract

*The company is the basic unit of wealth creation, employment and innovation. Encouraging its creation is to implement the conditions for its development and especially its sustainability. In Algeria, the liberalization of the economy and trade, the agreements with IMF, the free trade agreements, led to the proliferation of private companies and especially the microenterprises. These companies which are not integrated into an economic strategy and not enough prepared, are suffering from a lack of competitiveness.*

*Our work demonstrates that there is no link between job creation and these enterprises, so we conclude that these public devices haven't solved the unemployment problem. We have used for this demonstration the Moran test that shows us whether or not there is a tendency to clustering and then we locate significant clusters by Kulldorff Scanning Method.*

### Introduction

Economic growth depends on the creation of enterprises which in turn is an important source of job creation. In Algeria, since the second half of the eighties, the non-hydrocarbon industry experienced deindustrialization due mainly to the lack of investments and the effects of the measures of the Structural Adjustment Program implemented (SAP) during the 1990s (devaluation, liberalization of prices, lack of credit and privatization of public enterprises). At the end of the SAP, there was not a lot of enterprises created neither in the public sector nor in the private one. In this situation, the government has implemented an employment policy which focused on supporting the creation of microenterprises. This assistance takes the form of tax reduction, facilitation of obtaining credit, interest-free credit, access to business premises etc. The aim of this policy is above all to eliminate the imbalance of the industrial labor market.

#### I. The situation of industrial small and medium-sized enterprises in Algeria

Job creation is intimately linked to the growth and entrepreneurship. The latter can't exist without the creation of new businesses. In Algeria, until the 1990s, the creation of companies was essentially in the public sector and mainly confined to non-strategic areas. From the middle of this decade, under the aegis of international financial institutions (IMF and World Bank), measures to support the private sector have been taken as investment codes promulgated in 2001 and 2006, privatization of public enterprises and liberalization of foreign trade. All these encouragements were all factors that have favored the emergence of a business class that can be categorized in small rather than medium enterprises.

It seems important before continuing our analysis on SMEs to give their definition according to the Algerian 01-18 act of 21<sup>st</sup> December 2001 on the orientation and the promotion of SMEs. This law defines them as: "any company producing goods and / or services:

- Employing 01-250 workers

➤ Whose annual turnover does not exceed 2 billion dinars

A survey conducted by the National Statistics Office (ONS) in 2011 identified 934,250 economic entities existing at the national level. These entities are mainly concentrated in the urban areas (over 83%) in the private sector (almost 98%) and over 78% were created since 2011. The majority of these companies were born thanks to public measures to help the creation of companies set up from the 2000s, privatization of public enterprises or partnership with foreign companies including *Greenfield* and *Brownfield* FDI.

The table below shows the predominance of enterprises in services. Services (provided to households and businesses) experienced a strong growth during the second half of 2000s, driven by food services and those related to the development of telecommunications and health.

Table 1: Evolution of the number of companies by sector

	1995	%	2000	%	2004	%	2011	%
Industry	36285	10	43721	9,84	46991	18,02	95445	6,58
Building	16010	4,41	18674	4,20	72869	27,96	9117	0,62
Services	183461	50,54	224385	50,52	102841	39,46	829688	57,22
Including Commerce	127234	35,05	157392	35,43	37954	14,56	515700	35,56
Total	362990	100%	444172	100%	260655	100%	1449950	100%

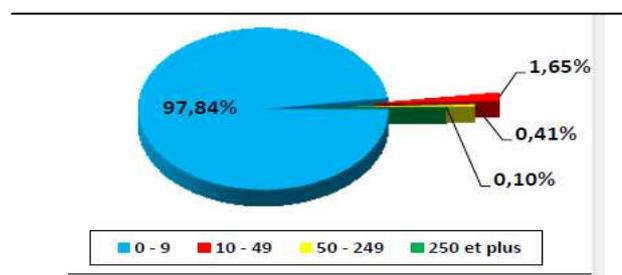
Source: Data from the Ministry of SMEs and crafts, CNAS(National Social Insurance Fund) and ONS

The industrial sector <sup>2</sup>, supposed to play the role of leverage in overall growth and innovation in particular, recorded a very low rate of business creation or stagnation until 2011. This phenomenon was first the consequence of deindustrialization as a result of the implementation of the SAP, trade opening with the corollary expansion of imports, and secondly, it was due to the concentration of the resources in the energy sector and unproductive sectors (such as infrastructure, related to Keynesian stimulus programs).

The service sector of the Algerian economy is not a post-industrial sector as in the developed economies where it is induced by labor productivity gains and demand for services, rather it reports to a stylized fact in the developing countries according to [Kalantzis 2005]. A stylized fact that he relates to an asymmetric sectoral development..

Concerning the size of these companies, we notice that they are mostly very small with a small staff of no more than ten workers. These small companies represent over 97% of all the entities, while 932 enterprises with a staff of 250 and more represent only 0.1% of the total.

Graph 3: Distribution of enterprises by slices of staff



Source: Data from the National Statistics Office (NSO), 2011

The distribution of firms by annual slices shows that nearly 8.6% of the companies activating in the industry have an annual turnover lower than twenty (20) million dinars and those with a turnover greater than two (2) billion dinars represent only 0.4% of

companies. Within this activity, companies with a turnover below 20 million dinars represent almost 84% of the total of this class, while only 0.4% has annual revenues exceeding 2 billion Dinars. Within this last installment, it is, however, the industrial companies that occupy the first place with a rate of 44% of companies, followed by construction and services.

**Table No. 2:** Distribution of industrial companies according to turnover

Turnovers in industry (million dinars)	Number of companies	Of total enterprises	On total industry	Including manufacture eraindustry
<20million DA	80029	8.60%	83.80%	78992
20-200000000 DA	1 3047	1.70%	1 3.2%	11747
> 200 million DA	1946	0.2%	2.03%	1297
> 2 billion DA	423	0.05%	0.44%	300

Source: Ibid

Geographically, the imbalance in the distribution of firms in the country is as important as that which characterizes sectors. Thus, over 66% of businesses are in the North, and the North Center alone counts more than 34% of the total. Some wilayas, like Algiers, Tizi Ouzou and Bejaia totalize more than 17% of all the enterprises and over 53% of the industrial companies. Highlands, represented by the wilayas of Setif, Batna and Msila essentially come second.

**Table 3:** Distribution of industrial enterprises by region

REGION	Number business	Industrial companies		
		Number of Companies	In% of total enterprises	As% of total industry
NORTH CENTRAL	309830	32650	3.49%	34.2
NORTH WEST	166632	16563	1.77%	17,35
NORTH EAST	141090	15454	1.65%	16.20%
HIGHLANDS	236515	23088	2.47%	24.20%
GRAND SUD	80183	7690	0.82%	8.05%
<b>TOTAL</b>	<b>934250</b>	<b>95445</b>		<b>100%</b>

Source: Ibid

All wilayas, without exception, have a commercial vocation, industry ranks third behind the services. Thus, for the majority of wilayas, trade is the activity that characterizes more than 50% of companies, with the services the rate is over 80%. The leading cause of this situation is the expansion of trade opening induced by the free trade agreements that Algeria signed: the Free Trade Agreement with the European Union and with the Arab countries (AFTA: Arab Free Trade Area). It is basically importing of finished products and reselling them without any transformation or any value creation.

L R. Elizondo and Krugman (1992) have, from the example of Mexico (considered as the largest urban center), established a strong link between the formation of these "giant cited" specialized in the exporting of manufactured products and the model of import substitution rather than a more open trade which, in contrast, tends to reduce them. Thus, according to these authors, specialized in economic geography, there is a greater concentration of manufacturing companies realizing scale economies, where the State opts for a political orientation of the economy towards the domestic market. The agglomerations are built from the interaction of factors such as economies of scale, the size of market and transportation costs.

In 2007, the Department of holdings and Investment Promotion (MPPI), has in the "preliminary draft White Paper" on "the strategy and stimulus policies and industrial development" published in 2007, raised the issue of the need for an industrial policy: should it

retain a targeting policy to develop branches and measures to accompany or implement an institutional environment conducive to free enterprise creation?

To alleviate this situation, the authorities have implemented a set of business creation schemes to boost growth and employment.

## II. Public devices creation of businesses

From the beginning of the 1980s, it was noted a slowdown in the investment in all areas and particularly in industry. This slowdown is justified by the public authorities in the fact that the leftovers to make development plans are too large, so it seemed more rational to finalize them before new spending. Moreover, the process of the falling of oil prices began in the same period and reinforces the government in this decision, which will result in reduced growth and employment.

The situation will further worsen with the implementation of the conditionalities of the Structural Adjustment Program of the 1990s, imposed by the international financial institutions in return for the rescheduling of external debt. Among the conditionalities which had disastrous effects on the economy we can point out the devaluation of the exchange rate, price liberalization and privatization. Thus, despite several reforms undertaken by the authorities for the recovery of the national economy, the growth situation and employment remains fragile. To remedy this situation, a package of incentives for the creation of businesses and jobs mechanisms were put in place by the government since the 1990s.

The purpose of these devices was the reduction of unemployment increasingly affecting young people who could not find jobs because of the investment falling and the cessation of the activity of many public enterprises during this period.

The improving of the financial situation of the country induced by rebuilding foreign exchange reserves at the beginning of the 2000s, encouraged the authorities to initiate Keynesian stimulus plans, articulated around the construction and especially infrastructure. The aim of these plans is to boost growth and consequently employment through facilitation measures for job creation (microcredit, tax incentives etc.) including jobs for young graduates.

It is in this context that the three most important incentive schemes for the creation of activity were implemented. These are the CNAC (National Unemployment Insurance Fund), created in 1994 and ANSEJ (The National Agency for the Support of the Young people Employment) established in 1996. More recently, in 2004, another agency the ANGEM (National Agency for Microcredit Management) was created.

All these devices have a common objective to encourage, support and assist unemployed young entrepreneurship project leaders. They cover (for ANSEJ and ANGEM) all phases of creation, launch and expansion of the business and all areas of economic activity.

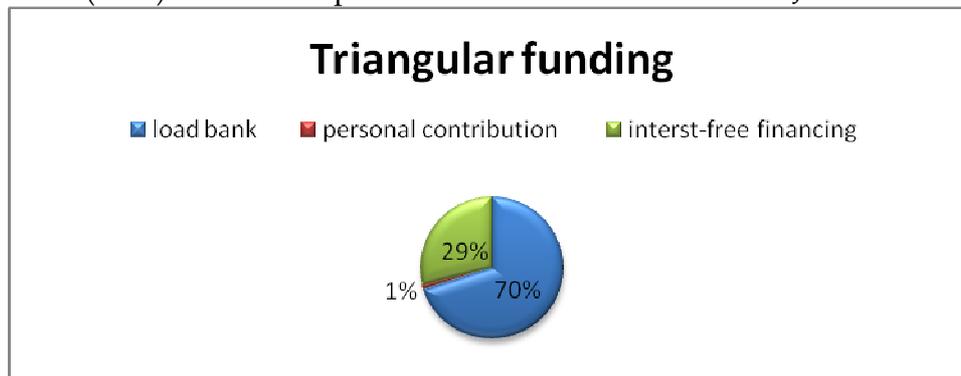
**Table 2: Summary of criteria and advantages of job creation schemes**

Device	CNAC	ANSEJ	ANGEM
<b>Creation date</b>	1994	1996	1999
<b>Age</b>	35-50 Unemployed	19-35 Unemployed	18 years and over Low income
<b>Areas of activity covered</b>	All activities	All activities	All activities
<b>Tax incentive</b>	VAT exemption (For goods and services) Customs duty at 5%	VAT exemption (for equipment) Customs duty at 5%	VAT exemption (for equipment) Customs duty at 5% Exemption from

			property tax (for 3 years)
<b>Type of Funding</b>	Triangular	Triangular	Triangular
<b>Interest rate subsidies</b>	interest-free financing	interest-free financing	interest-free financing

Source: Table prepared from information of various devices sites.

Funding for projects in those three devices is triangular-type: personal contribution, bank credit and unpaid loan (PNR). As an example for devices and ANGEM ANSEJ <sup>4</sup> we have:



Source: ANGEM and ANSEJ data

The two most important devices (ANGEM and ANSEJ) are characterized by a concentration of activity in industry, agriculture and building. Concerning ANGEM the creation of activity concerns more trade and services (especially transportation and catering). In terms of number of projects for both devices for the years 2012 and 2013, the data shows some stability in the creation of ANSEJ projects and for all sectors. The same trend is also observed for the ANGEM device. This stability while the number of business start-ups has increased over the period is explained by the death of some SMEs (8% in 2015).

Mortality affects all sectors but particularly services, industry and construction. Several causes are behind the disappearances: existence of strong competitiveness in some sectors (services), use of traditional management methods that are ineffective as soon as the number of staff exceeds a certain threshold, research of easy gains and short-term opportunities, lack of market research which can offer insight into the most promising sectors in the long term etc.

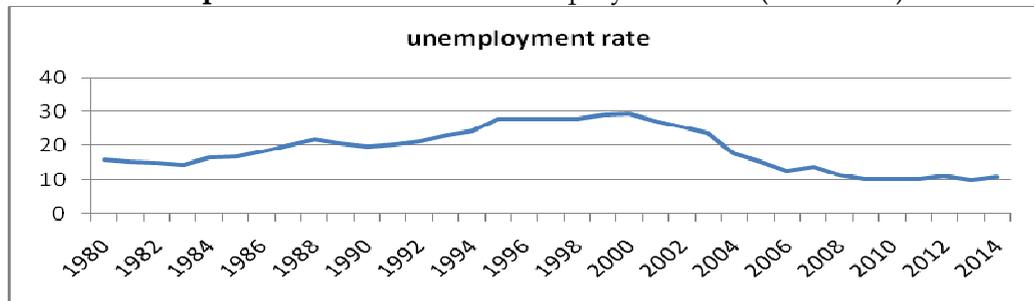
### III. The creation of jobs

There is no doubt that economic growth is the main source of jobs, and we cannot conceive of job creation without enterprises creation because the development of human capital is the main engine of economic growth.

In Algeria, job creation has experienced contrasting trends over the past three decades. During the 1980s, job creation was mainly the result of the implementation of development plans focused on the industrialization of the 1970s. The 1990s were conversely marked by a decline of jobs caused by the decline in investment and the closure of businesses mainly due to the implementation of the SAP. The improving of the financial situation of the economy due to the rise in oil prices during the 2000s has pushed the authorities to remediate the imbalance in the labor market expressed by a very high unemployment rate. Thus, medium-term development plans of infrastructure spending, financed by the state, will be launched: the first in 2001, this is the plan to support economic recovery; the second in 2005, the additional Economic Recovery Plan; a third in 2009 and finally the 2014's plan is in current realization.

All these plans aim to create direct and indirect jobs by stimulating the creation of companies in infrastructure-related sectors. These plans have certainly helped to reduce the unemployment rate, but it remains high and marked by a change in its structure.

**Graph 5:** Evolution of the unemployment rate (1980-2014)



Source: data of the National Statistics Office

The analysis by age and gender enables us to further identify the population which is the most affected by unemployment. The data indicates that the segments most affected are those of [15-24] and [25-35ans] and especially women.

For the category of unemployed youth, the graduates and particularly university graduates are most at risk of unemployment. The reason for this phenomenon is that the labor demand from a low capital intensive productive sector do not require a high level of qualification. According to the 2012 IMF report on employment in Algeria, the private sector has not been able to create enough skilled jobs; in addition there is a distribution of students in favor of sectors such as law, social science and education that do not meet the needs of this sector.

As reported earlier, it is mainly the sectors of services and public works which employ the active population.

**Table 6:** distribution of employment by activity in 2012

Activity	GENDER		TOTAL
	Male	Female	
Agriculture	12,60%	6,5	11,7
Extractive industry	2,10%	0,9	2
Manufacturing	9%	27,1	11,8
Construction	22,5	1,7	19,4
Commerces and services	53,7	63,9	55,4
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: National Statistics Office

Furthermore, the creation of jobs by incentive schemes for the creation of enterprises remains very low and is characterized by job insecurity due to the death of these companies.

**Table 7:** Evolution of creating job by microenterprises

	Jobs created by SEA microenterprises
2001	2 3800
2002	28400
2003	28100
2004	19100
2005	36500

Source: Ministry of Industry

About this kind of job, its cost is relatively low when it is the result of the insertion devices while their cost is very high when it comes from credits granted to business creation.

#### IV. Statistical detection of the aggregation of industrial enterprises in Algeria

A cluster is a spatial organization defined as an aggregate, a case of grouping close to each other; the proximity being defined in the sense of geographical distance. The methods of local detection of cluster identifies the cases of incoherent clusters under the null hypothesis of no clustering and evaluates their level of significance while global detection methods studies the spatial correlation and detects the trend of clustering.

The purpose of this work is firstly to test the trend of clustering for employment's projects and industrial's projects funded by ANSEJ using the Moran's test and secondly locate significant clusters by Kulldorff scanning's method.

The Moran's test is based on Moran's statistics which measures the similarity between neighboring spatial units, its interpretation is similar to that of a correlation coefficient (Gaudart (2007)). The spatial autocorrelation is positive when the values high or low of a variable tend to cluster in space and is negative when spatial units are surrounded by neighbors with very different values for the same random variable. The determination of spatial interactions requires defining links of neighbourhood between the spatial units. All of these links is summarized in a matrix  $W = [w_{ij}]$  called proximity's matrix. Each term  $w_{ij}$  indicates how two regions  $i$  and  $j$  are spatially arranged. In the framework of this work, the proximity's matrix used is adjacency matrix because the only information available is the geographical origin. It is defined by:

$$w_{ij} = \begin{cases} 1 & \text{if wilaya } i \text{ has borders with the wilaya } j \\ 0 & \text{otherwise} \end{cases}$$

It was assumed that the wilaya  $i$  has no borders with itself implying  $w_{ii} = 0$ .

#### Moran's test

The test is based on statistical called Moran's index denoted  $I$  and defined by:

$$I = \frac{1}{w_+} \cdot \frac{\sum_{i=1}^K \sum_{j=1}^K w_{ij} (y_i - \bar{y})(y_j - \bar{y})}{\sum_{i=1}^K (y_i - \bar{y})^2 / K}$$

Où  $K = \text{number of spatial units}$

$w_{ij} = \text{elements of the adjacency matrix for the regions } i \text{ and } j.$

$$w_+ = \sum_{i,j=1}^K w_{ij}$$

$y_i = \text{value of the variable for the région } i$

$$\bar{y} = \frac{\sum_{i=1}^K y_i}{K} = \text{average of observations on the } K \text{ regions}$$

So the statistical  $I$  is a random variable. Under  $H_0$ ,  $I$  follows a normal distribution asymptotically identical regardless of the spatial unit ( $I \rightarrow N(m, \sigma^2)$ ) with :

$$\hat{m} = -1 / (K - 1)$$

$$\hat{\sigma}^2 = \frac{(K^2 \cdot \frac{1}{2} \cdot \sum_{i \neq j} (w_{ij} + w_{ji})^2 - K \cdot \sum_{i=1}^K (w_{i+} + w_{+i})^2 + 3w_+^2)}{(K - 1)(K + 1)w_+^2} - \hat{m}^2$$

$$w_{i+} = \sum_{j=1}^K w_{ij}, w_{+j} = \sum_{i=1}^K w_{ij}$$

$I < 0 \Leftrightarrow$  Negative spatial autocorrelation, so neighboring spatial units are different.

$I \simeq 0 \Leftrightarrow$  there's no correlation between the neighboring spatial units, and spatial model is perfectly random.

$I > 0 \Leftrightarrow$  The neighboring spatial units are similar (there is a pattern in the form of a Cluster of spatial units).

In the latter case, it would be interesting to identify potential clusters.

The scan statistic is one of the methods of local clustering of cases detection; some spatial units can be homogeneous in terms of creation of industrial projects or jobs and constitute a cluster. This approach aims to bring together the various spatial units into potential clusters.

There are different scanning methods which the spatial scan statistic Kulldorff

SaTScan software can be used to implement the spatial scan statistic. This is a software developed by Kulldorff. It will detect spatial clusters and see if they are statistically significant; he tests whether the number of cases (in our case: number of projects or number of jobs) are distributed randomly in space.

The method of spatial scanning Kulldorff remains the most used tool for identifying potential clusters.

### Application:

#### Data

The study covers 2668 jobs and 786 projects operating in the industrial sector created and funded by ANSEIJ during 2008 Data includes the number of projects, jobs, industries and the total Job by wilaya (Geographical origin). There are 48 wilaya (departments) coded from 1 to 48.

#### Methods and software

SpaceStat was used to calculate Moran's index and SatScan software to detect the existence and significance of the clusters. The application of the scan method Kulldorff ([14]) allows us to group different neighboring wilayas units into meaningful clusters..

#### Results

Table 1 : Results of Tests

Variable	Moran's index	Moran's Score	Critical value	Significance level
Number of projects	0,57	6,7	1,65	5%
jobs	1,2	11,6	1,65	5%

Source : made by the authors

For both variables, Moran's index is positive and well above its average theoretical value ( $E(I)=-0.0212$ ), which induces a score higher than the critical value 1.65. Then we accept the hypothesis of spatial heterogeneity at 5% significance level. This means that projects funded by ANSEIJ and the jobs created by them are not randomly distributed over the national territory. Therefore there's a trend of clustering, then the next step will be to identify clusters using statistical scan statistic

Table 2 : Clusters of Number of jobs

Cluster	Wilayas	p-value
1	20	$<10^{-16}$
2	12, 40, 4, 24, 36, 23, 5, 21, 43, 7, 39, 19, 18, 6, 41, 34, 28	$<10^{-16}$

3	10, 35, 15, 16	<10 <sup>-16</sup>
4	26,9	82.10 <sup>-16</sup>

Source : made by the authors

Table 3 : Clusters of Number of projects

Cluster	Wilayas	p-value
1	15	<10 <sup>-14</sup>
2	33, 11, 30, 39, 47, 1, 7, 12, 4, 3,40, 32, 5, 17, 28, 24, 25, 19, 36, 43, 23, 34, 21, 45, 8, 18	<10 <sup>-14</sup>
3	27	<10 <sup>-14</sup>
4	16	<10 <sup>-14</sup>
5	46, 22, 31, 13	45. 10 <sup>-7</sup>

Source : made by the authors

The approach Kulldorff highlights four significant spatial clusters for the variable job and five for the variable number of projects with a p-value (probability that the cluster is not significant) negligible ( $p < 10^{-6}$ ).

We observe that the clusters of employment are different from these of enterprises. So, we can conclude that there is no link between these clusters

### Conclusion

The conclusion that emerges from this analysis is that growth in Algeria is not generating enough jobs. As the statistical results shows, the two kinds of clusters we have found have no link.

Growth remains the prerogative of the hydrocarbons sector, the capital intensive sector which drains a few skilled workforces. The public measures for job creation, certainly beneficial, must take more account of market needs, but also must be oriented towards innovation in products and processes as well as in scientific and technical research. To do a rapprochement between university and companies, it is necessary for public authorities to multiply the creation of BLUE in all regions. The creation of venture capital companies should be encouraged to fund research projects.

The industry and manufacturing industry in particular whose deindustrialization process is well under way should know a turnaround by promoting local and foreign investments (FDI). The financial resources are not sufficient alone to trigger the recovery that requires the implementation of an industrial policy that should take account of the reality of the Algerian economy and should not be based on other models.

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