

# Endogenous growth factors as a catalyst for economic diversification in Algeria

Sabrina CHIKH- AMNACHE<sup>\*1</sup> , Kamelia DIFFALLAH<sup>2</sup>

1. Mouloud MAMMERI University, Tizi-Ouzou, Algeria

2. University of Brussels, Belgium

## عوامل النمو الداخلي كمحفز للتنوع الاقتصادي في الجزائر

صبرينة شيخ أمناش<sup>\*1</sup> كاميليا ضيف الله<sup>2</sup>

1. جامعة مولود معمري تيزي وزو - الجزائر 2. جامعة بروكسل - بلجيكا

Received: 30/04/2023

Accepted: 01/06/2023

Published: 15/06/2023

### Abstract:

Algeria's economy depends on its hydrocarbon sector, which explains its vulnerability to oil price fluctuations. The export of internationally priced oil and gas is what propels growth. The alternative to this would be the diversification of the Algerian economic fabric based on endogenous factors that would guarantee the resilience of our economy. It was in the late 1980s and early 1990s that the problem of growth focused on factors integrated into the economy as determinants of said growth. From there, economists set out to shed light on the main parameters that could influence the growth rate of an economy. These are the works of Romer (1986, 1990), Lucas (1988), and Barro (1990).

**Keywords:** Growth; Economic Diversification; Human Capital; Physical Capital; Public Capital; R&D.

**(JEL) Classification:** F43, E24, O32

### ملخص:

يعتمد الاقتصاد الجزائري على قطاع الهيدروكربونات، وهو ما يفسر تعرضها لتقلبات أسعار النفط. إن تصدير النفط والغاز المسعرين دولياً هو ما يدفع النمو. سيكون البديل عن ذلك هو تنوع النسيج الاقتصادي الجزائري بناءً على عوامل داخلية من شأنها أن تضمن مرونة اقتصادنا. في أواخر الثمانينيات وأوائل التسعينيات، ركزت مشكلة النمو على العوامل المدمجة في الاقتصاد كمحددات للنمو المذكور. من هناك، شرع الاقتصاديون في إلقاء الضوء على المعايير الرئيسية التي يمكن أن تؤثر على معدل نمو الاقتصاد. هذه هي أعمال رومر (1986، 1990)، لوكاس (1988)، وبارو (1990).

**الكلمات المفتاحية:** نمو؛ تنوع الاقتصادي؛ رأس المال البشري؛ رأس المال المادي؛ رأس المال العام؛ بحث وتطوير.

**الترميز الاقتصادي (JEL):** F43, E24, O32

\*Corresponding author, e-mail: [Sabrina.chikh@ummto.dz](mailto:Sabrina.chikh@ummto.dz)

## I-Introduction :

The Algerian economy is characterized by a weak diversification of its productive base. It is heavily dependent on the oil sector. Moreover, outside the hydrocarbon sector, the tertiary character of the economy is well defined. Moreover, in a short-, medium- and long-term perspective, the diversification of the economy is an imperative for Algeria (OUKACI K., 2012).

This economic diversification is unequivocally conditioned by a favourable environment for investment. However, there is a set of endogenous factors that seem to be able to consolidate this process.

With this in mind, we ask ourselves the following question: **To what extent, could endogenous growth factors be catalysts in the process of diversification of the economic fabric in Algeria?**

In order to provide some answers to our problem, we begin with a first point by presenting the concept of economic diversification. In a second point, we highlight the importance of endogenous growth factors to boost the non-hydrocarbon economy. While placing the cursor on the state of affairs in Algeria.

## II. Concept of economic diversification

Economic diversification is the expansion of an economy's productive apparatus. By this we mean the development of the division of labor in an economy.

### 1. Definition

With regard to diversification of production, the following distinction should be made:

- Horizontal diversification of production aims at the emergence of new sectors of activity;
- Vertical diversification aims to broaden the range of products manufactured in the same sector (a knock-on effect).

### 2. Objectives of economic diversification

Of course, the imperative in any oil economy is to strengthen the non-oil sector, to overcome the imbalance between the different economic sectors.

This makes it possible to create a competitive economy capable of integrating effectively into the global economy (SID AHMED A., 2000). In doing so, a set of objectives would be achieved:

First, the purpose of economic diversification is to dilute risk. This issue has to do with the vulnerability of an economy. Beyond the vulnerability associated with fluctuating oil prices, an economy may also be vulnerable to technological change or the arrival of new competitors.

It must therefore be remembered that economic diversification is first and foremost seen as a remedy to reduce the risks of foreign trade on the one hand; and to "develop products other than hydrocarbons, as sources of revenue and services, to counter their depletion", on the other hand (SID AHMED A., 2000).

Of course, economic diversification plays a role in controlling the vagaries of commodity prices for developing countries.

Especially since "a country or region whose economic activity is diversified is less sensitive to cyclical hazards, since the hazards affecting the different sectors are not perfectly correlated positively" (MASSEL B. F., 1970). Economic diversification, in general, and export diversification, in particular, strengthen the resilience of oil economies to external shocks.

Then, economic diversification and an instrument to increase export earnings while involving production for the local market; This consequently makes it possible to intensify import substitution.

In addition, economic diversification policies are aimed at creating jobs for national populations. Thus, the development of non-oil sectors is necessary to reduce unemployment (it should be remembered here that the oil sector is a capitalistic sector that creates few jobs) (DEVAUX P., 2013).

In addition, and this is a very important element, economic diversification makes it possible to achieve long-term economic performance. This is justified by the fact that manufacturing production is a catalyst for a learning process, capable of improving productivity and incomes.

In addition, the diversification of industry is at the origin of the constitution of human capital, in the sense of the development of skills through the acquisition of know-how (GELB A., 2010).

Promoting investment, in a large "product space", allows a country to produce more externalities and diversify more. For example, let us note that a country producing and exporting electric ovens is easily able to produce and export microwave ovens or even other household electrical products (this is allowed by the fact that these different items belong to the same "product space", so they call for related know-how, , common knowledge, skills and markets).

This is not allowed in the case of the oil sector having no obvious links with the rest of the economy (the oil sector is a landlocked sector) (GELB A., 2010).

### **3.Determinants of economic diversification**

There are several elements that can positively or negatively influence a process of economic diversification (KAMGNA S. Y. , 2008):

- Physical factors (investment);
- Human factors (the quality of human capital);
- Policy choices (the direction of economic, trade and industrial policies);
- Macroeconomic variables (such as interest rate, exchange rate, etc.);
- Institutional quality (mode of governance, business climate, etc.) (MEKHZOUMI L., ABDELLAOUI O., DJOUADI I., 2018);
- Market access (elimination of tariff barriers, development of the financial market, etc.).

Essentially, the expansion of non-oil products is conditioned by a number of essential services: education, training, scientific capacity, infrastructure services, institutions, etc. And this, in order to increase the efficiency of the factors of production (SID AHMED A., 2000).

## **II. The importance of endogenous growth factors for economic diversification**

The theory of endogenous growth seems to be adapting, in response to the economic problems posed in Algeria. This theory considers that the sources of economic growth would emanate from the economy in question.

It was in the late 1980s and early 1990s that the problem of growth focused on factors integrated into the economy, as determinants of said growth. From there, economists began to shed light on the main parameters that can influence the growth rate of an economy. These are the works of Romer (1986, 1990), Lucas (1988) and Barro (1990).

### 1. Physical capital

(Romer, 1986) highlights the importance of physical capital, emphasizing that the collective accumulation of fixed capital creates positive externalities between firms. In this model, the author specifies that the accumulation of physical capital would pass through the phenomenon of *learning by doing*. There is therefore an accumulation of learning, know-how and knowledge that are part of a virtuous circle logic (ROMER P. M., 1986).

### 2. Research and development

(Romer, 1990) highlights the importance of the R&D factor in economic growth. This parameter is one of the fundamentals of growth (MEKHZOUNI L., ABDELLAOUI O., BAH I O., 2018), which present a vector for the rehabilitation of the role of the State. The State, thanks to spending in this area, could create externalities in the economic field (innovation for example) (ROMER P. M., 1990).

In the case of Algeria, it should be noted that the share of expenditure reserved for innovation is insufficient (R&D accounts for only 0.3% of GDP in terms of allocated funding).

### 3. Human capital

Lucas (1988) points out that the collective productivity of human capital depends on individual accumulation of training, education, health, etc. The accumulation of human capital also rehabilitates the role of the State, which should invest in the above-mentioned areas (LUCAS R. E., 1988).

In fact, intangible capital presents wealth for the country concerned; because it is a profitable investment in the long term (REZINE O., 2015).

Other countries have set an example in this area: Malaysia, Chile, China have taken off well, economically, starting by investing in the human factor. It must be remembered here that human intelligence and information are, irreversibly, two factors in the success of firms and nations.

Taking charge of the human factor is vital for the Algerian economy because this factor remains a prerequisite for the success of any macroeconomic policy in a country. In concrete terms, it will be a question of retraining all operational citizens and modernizing pedagogical engineering, in order to raise training standards worldwide. This should be done by:

- Modernise the education sector and carry out the necessary retraining of teachers;
- Modernise the university: by modernising its partnerships, programmes, recycling policies and developing pedagogical engineering;
- Adapt vocational training to the needs of the economy;
- Encourage companies to qualify workers through additional training and retraining.

A comparative vision between Algeria, on the one hand, and developed or emerging countries, on the other hand, shows that France, the USA and South Korea spend nearly 8% of their GDP on the various sectors of education and training. While Algeria devotes only 4.5% of its GDP to this area.

Similarly, companies in developed countries invest more than 2.9% of the payroll in training and retraining programs for their employees.

South Korea spends more than 3.5% of the wage bill in this area. Algeria, on the other hand, allocates only an insignificant share of 0.4% of the wage bill to such a program.

Qualitatively, the various studies carried out on the business environment in Algeria assume that the factor most cited as a deterrent would be that of the quality of human resources (managers, accountants, engineers and especially technicians and specialized workers).

The quality of human resources can be measured by the labour productivity indicator. As such, it should be noted that the yield per hour of work is \$ 38 in South Korea, \$ 20 in Mexico, \$ 32 in Portugal, \$ 12 in Tunisia and it is only \$ 6.2 in Algeria.

On the other hand, development experiences have shown the possibility of catching up in terms of human resources in a few years. For example, let us take the examples of Poland and China, which have recycled a significant part of operational human resources in just a few years. In addition, they have modernized their education systems to properly care for future generations.

It should therefore be borne in mind that "the experience of successful developing countries shows that grey matter is the basis of their prosperity. Thus, special attention should be paid to the country's elite, putting an end to the brain drain which constitutes a *haemorrhage* as well as to the mobilization of Algerian potentialities (emigrants and nationals)" (MEBTOUL Has., 2002).

#### 4. Public capital

(Barro, 1990) highlights the fact that public investment in infrastructure would increase the marginal productivity of private capital. The author considers that infrastructure presents free factors of production for enterprises, since it creates positive externalities for them (Barro, 1990). points out that public spending on infrastructure is an investment in a pure public good, since the use of this infrastructure is not subject to rivalry or exclusivity (BARRO R. J., 1990).

In the case of Algeria, Benabdellah (2008) writes: "there is a clear evolution in the debate, as there is growing support, including the IMF and the World Bank, that hydrocarbon resources can be used to finance the increase in the stock of physical and human capital in order to support economic growth" (BENABDALLAH Y., 2008).

In the same empirical study on infrastructure development in Algeria, the author points out that the period of positive terms-of-trade shock allowed the state to re-emerge as a major economic player <sup>1</sup>. Thus, public investment in Algeria can be justified by three elements: "i) the exceptional financing capacity of the State; (ii) the lack of commitment from the private sector and (iii) the reconstruction of a social consensus that has been undermined by the past two decades" (BENABDALLAH Y., 2008).

According to data from the Ministry of Public Works, Algeria invested 50 billion DA in the public works sector during the period from 2000 to 2013. 4800 billion DA have been devoted to the realization of roads. 180 billion AD are spent on the construction of ports and 80 billion AD are spent on the construction of airports.

It is therefore clear that the political will in Algeria is favourable to the establishment of public capital. To estimate the weight of public capital in the state budget, we are particularly interested in the economic infrastructure that is most important for economic growth. It is possible to note in the various annual reports of the Bank of Algeria that spending on economic infrastructure averaged

only 5% of State expenditure over the period from 1970 to 2000. On the other hand, from the 2000s, this rate rose on average to 15% of state spending.

The Bank of Algeria points out that, after its level of 5.8 per cent of GDP in 1999, capital expenditure increased to 10.8 per cent of GDP in 2003. This increase in the level of investment expenditure is driven by the assumption of responsibility for the rehabilitation of infrastructure damaged by earthquakes and floods. The increase in investment spending also indicates the extent of the fiscal stimulus to economic activity and support for growth contained in the programmes to support economic recovery.

Beyond micro-economic and macro-economic incentives, which would contribute to the improvement of the investment environment, in Algeria, Cottenet-Djoufelkit (2008) stresses the importance of the institutional component. In fact, in Algeria, the existence of institutional blockages is an obstacle to the country's economic development:

- Significant transaction costs: This is a major obstacle to business creation and the promotion of productive investment more broadly.
- Network operation: In Algeria, the network replaces the legal framework. Instead of setting up a legal framework concerning the security of property rights, the settlement of commercial disputes, etc., it is the "connection" to a network that allows access to: a bank loan, an approval, a land, an administrative authorization, etc. Such an operation is the source of significant economic costs. Since it leads to the elimination of competent and efficient companies, because they are not part of this logic. As such, businessmen who are strongly committed to the network logic are able to keep many potential competitors out of the market. This discourages investment initiatives by creating barriers to entry.
- The constraint of industrial land: it presents a major obstacle to the development of industrial companies. There is significant speculation on commercial premises and industrial land, which also remain insufficient. This strong land speculation conditions the achievement of the critical size of companies so that they can be competitive (COTTENET-DJOUFELKIT H., 2008).

Now, in the case of Algeria, the disincentives to the development of a productive sector are of great weight.

In addition, and still in this area, the education system and the university should inculcate positive ethical values, and thus "produce" formal and informal institutions of good quality. In addition, the independence of the judiciary is a pillar in the fight against corruption and more generally in institutional modernization.

### **Conclusion**

The establishment of incentives as a prerequisite for economic development is essential in Algeria. This is done by giving priority to endogenous growth factors that would constitute a lever for breaking the Algerian economy with its dependence on hydrocarbons, especially in this context of falling oil prices. This would boost the other sectors of the economy, notably the industrial sector which would be at the origin of job creation, added value and reduction of imports...

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### How to cite this article by the APA method:

Sabrina CHIKH- AMNACHE, Kamelia DIFFALLAH. (2023). Endogenous growth factors as a catalyst for economic diversification in Algeria, *Roa Iktissadia Review*, Algeria: University of Eloued.13 (01), 135-141.

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