

## THE IMPACT OF ENTREPRENEURSHIP TO ECONOMIC GROWTH IN TUNISIA: APPLICATION OF THE ARDL MODEL

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### **Abstract:**

Entrepreneurship is human action, generating value on the market through the creation or development of an economic activity, evolving with this value to ultimately affect the economy, with the aim of better meet the individual and collective needs of a territory. Thus, it becomes essential to understand the entrepreneurial paradigm. The objective of this study is to study and analyze the link between entrepreneurship and economic growth in Tunisia based on data collected from the World Bank between 2006 and 2020. The application of the ARDL model shows a relationship significant between the chosen variables likely to have a significant effect. However, the estimation results indicate that entrepreneurial dynamics have a significant and positive effect on economic growth.

**Keywords:** entrepreneurship, economic growth, ARDL model, Tunisia.

*JEL Classification:* B41, L26, M21

### **INTRODUCTION**

Given the current economic context characterized by imbalances, inequalities and crises at all levels, and faced with a competitive environment, several developing countries have had to adjust their development plan by establishing a framework conducive to entrepreneurial activity. However, the creation of innovative businesses seems to be, for several years, the cornerstone of public policies in several countries (Dudjo et al 2022). Entrepreneurship is not only an economic phenomenon, it is also a socio-cultural issue. Thus, governments give capital importance to entrepreneurial activity and try to put in place recovery, aid and support plans intended for entrepreneurs and project leaders. These aim to establish an economic environment conducive to innovative businesses. Note here that entrepreneurship is considered to be one of the key factors for a growing economy. Indeed, the promotion of entrepreneurship has become a necessity for the development of any nation that wants to be competitive. Entrepreneurship means the action of creating wealth while appropriating it, with the aim of proposing, finding and implementing solutions that meet the needs of individuals or groups. Furthermore,

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entrepreneurship is seen as the dynamic process of creating additional wealth. This wealth is created by individuals who assume the main risks in terms of capital, time, and professional involvement in order to give value to a good or service. This activity results, however, from an individual decision process and constitutes an important channel for implementing useful and valuable information (Aubry et al., 2015). However, it constitutes a difficult activity, given that entrepreneurs are not easy to identify and study this phenomenon which is heterogeneous, complex and equivocal. From then on, it is a question of the exploitation of an opportunity within the framework of an organization driven, created from scratch or taken over initially, then subsequently developed, by natural persons who undergo a significant change according to a process that results in the creation of new value. Business creation is not only a means of combating unemployment but also a very important source of innovation. It is, in fact, considered as the solution to all the ills that society and the economy face and this is what explains the interest of states and communities in measures intended to stimulate the spirit of 'business. This is an initiative carried out by an individual building or seizing a business opportunity, the profit from which is not necessarily pecuniary, through the impetus of an organization that can give rise to one or more entities, and creating new value for the stakeholders to whom the project is aimed. At this level, entrepreneurship constitutes the most important vector of economic growth. Indeed, growth and entrepreneurship are inseparable. This depends partly on the behavior of entrepreneurs, because they promote jobs in a stable economic environment from then on, the entrepreneur remains an essential link in economic activity through his dynamism. However, the growth process becomes a creative-construction process where the entrepreneur uses knowledge not used by firms present on the market to innovate and maintain the wealth creation process. Thus, it is essential today to rehabilitate the profession of entrepreneur by spreading the spirit of entrepreneurship throughout society. It is essential to promote the entrepreneurial spirit among the population and more specifically among young people so that they are future entrepreneurs. Let us note here that the Tunisian government, in recent years, has been oriented towards the launch of several policies and strategies intended to accelerate economic growth, and this is by establishing opportune instruments to the factors of business creation and promotion of entrepreneurship. Given this observation, we will focus in this research work on the relationship between economic growth and entrepreneurship. The objective is to analyze the impact of this paradigm on Tunisian economic growth. To do this, in the first section we try to present a literature review that has addressed the issue of entrepreneurship. In a second section, we focus on the methodology and data. The third section concerns a discussion of the results obtained and we end in a final section with a conclusion.

## **1. LITERATURE REVIEW**

The literature review on the link between entrepreneurship and economic growth is very vast and rich. It allowed us to certify that there is a great deal of empirical research examined this relationship. The latter are part of a purely economic approach to entrepreneurship. They are also based on the principle of the GEM (Global Entrepreneurship Monitor) model. Recent studies have shown that entrepreneurship has a significant impact on economic growth, this effect being conditioned by the

characteristics of the countries (Van Oort and Bosma, 2013; Fritsch and Schroeter, 2011).

Bosma et al. (2018) added the quality of the institutional environment in the relationship between entrepreneurship and economic growth. They used a data for 25 countries in the European Union for the period from 2003 to 2014. , the authors found that the quality of institutions stimulates entrepreneurship, which, in turn, would contribute to growth economic. Entrepreneurship affects positively economic growth, and the most important factors affecting the latter are financial stability, size of government, and perceived skills to start a firm.

Another empirical study conducted by (Stoica, 2020) on 22 European countries during the period from 2002 to 2018 also concluded that there is a very strong and positive relationship between entrepreneurship and economic growth. Similarly Adusei (2016) found that entrepreneurship has a strong positive impact on the growth of 12 African economies. Galindo & Mendez (2014) have concluded that exists a very close link between entrepreneurship, innovation and economic growth. They conducted a study of 13 developed economies for 2002–2007. Their analysis shows that several factors, including monetary policy and social climate, have a positive impact on entrepreneurship and innovation. In their research, the authors have identified a vicious circle between innovation, entrepreneurship and economic growth. Furthermore, each of these three factors would have a positive effect on each of the other two remaining factors. They observed a feedback effect, which was significant. Economic activity promotes entrepreneurship and innovation, which, in turn, promotes economic activity.

A growing and large body of literature emphasizes the importance of new small business creation to economic prosperity. Ribeiro-Soriano (2017) indicates that new small firms play an important role in improving the overall innovation capacity of an economy and increasing competition in emerging sectors. While the aggregate-level links between entrepreneurship and economic growth are significant and interesting, entrepreneurship is essentially a firm-level phenomenon. The decisions and initiatives of individual entrepreneurs affect their own businesses and the other businesses with which they interact. The entrepreneurial activity of small businesses serves as agents of innovation and change within the economy. Most of the earlier studies on economic growth and entrepreneurship were centered on developed economies rather than developing economies. Empirically, the effect of entrepreneurship on growth in developing economies remains uncertain and further research is needed. According to the analysis of Stam and van Stel (2011), entrepreneurship does not influence the growth of middle-income economies but contributes to the growth of high-income economies. Van Stel, Carree and Thurik (2005) show that the effect of entrepreneurship on economic growth depends on the level of development of the economy, which is measured by GDP per capita. The authors find a much more limited and weak impact of entrepreneurship on growth in poor countries. The authors attribute the limited effect to the lack of large companies and lower levels of human capital. Doran et al. (2018) used 14 different indicators of entrepreneurship to analyze whether these different measures of entrepreneurship can explain economic growth in an unbalanced panel of low income, middle and high income economies in 2004-2011. They found that entrepreneurial activity promotes growth in high-income economies, but not in low- and middle-income economies. Salgado-Banda (2005) shows that the relationship between business

creations is negatively related to growth. He explains this relationship by the fact that these companies can be unproductive, because they are focused on non-innovative activities. The link between entrepreneurship and economic growth is strongly validated in the literature. However, the majority of empirical research focuses on developed countries. Rare are those carried out with the aim of determining the correlations between entrepreneurship and the economic growth of developing countries such as Tunisia

## 2. DATA AND METHODOLOGY

In order to meet our main objective, notably the impact of entrepreneurship on Tunisian economic growth, we will take into account the ARDL model (autoregressive model with staggered lags) proposed by Pesaran and al.(2001). This model studies long-term and short-term relationships using the limit test on series which are not integrated of the same order. Thus, we apply this approach based on data from the statistics of the World Bank database, covering the period from 2006 to 2020

Our model will therefore be defined as follows:

$$\text{GDP} = f(\text{EXP}, \text{GP}, \text{INFL}, \text{DMH}, \text{DNB})$$

➤ GDP : Gross domestic product per capita, (constant 2010 US dollars).

This is the dependent variable, which is a handy indicator. It is supposed to be an indicator of both the level of economic development and the standard of living for a country. It is the sum of the gross value added of all resident producers in the economy plus product taxes and minus subsidies not included in the value of the products.

The remainders of the variables are the exogenous variables, notably:

➤ INFL: Inflation rate (annual %), Inflation as measured by the consumer price is the inflation rate which has an ambiguous relationship with the growth rate. This indicator of loss of purchasing power of money is characterized by a constant increase in prices.

➤ EXP: it is the Export of goods and services The share of exports of goods and services in GDP. This indicator measures, for each product, the degree of concentration of export markets by country of origin. It tells us whether exports of a product are concentrated in a few economies or if, on the contrary, they are distributed more evenly among a larger number of countries. However, we expect a positive sign from this variable

➤ GP: Annual population growth (% of total population)

➤ DNB: the density of new businesses. This variable represents the number of new businesses registered per 1000 people aged between 15 and 64).

➤ DMH: Military expenditures per capita, they are presented as a percentage of Gross Domestic Product (GDP)

## 3. RESULTS AND DISCUSSION

In this section we try to enumerate the various steps required in order to perform the ARDL regression model. Firstly, we are used to investigate the stationary properties of the variables. We employ the mostly used classical unit root tests Augmented Dickey–Fuller ,secondly, the existence of co-integration relationship between variables applying

the bounds test developed by Peseran et al. (2001). Once, the hypothesis of the existence of co-integration relationships is confirmed, the following step consists to investigate the long and short-run causality between the variables applying the ARDL model.

➤ **unit root tests**

First, to examine the stationarity of the series, we will apply the ADF tests. As shown in Table 2.

**Table 2.** Unit root test results: Augmented Dickey–Fuller

Variables	In level	First difference	Second difference	Conclusion
<b>GDP</b>	-2.690439***			<b>I(0)</b>
DNB		-4.361749*		<b>I(1)</b>
<b>Mil Exp</b>		-2.728985***		<b>I(1)</b>
INF		-4.580213*		<b>I(1)</b>
EXP		-4.927324*		<b>I(1)</b>
GP	-2.793342***			<b>I(0)</b>

ADF without trend  
\*, \*\*, \*\*\* Show that the variables are significant at 1%, 5% and 10% levels, respectively

The results of table 2 show that the variable GDP and GP are stationary at level. We can conclude that they are integrated of order I(0)

The variables DNB, EXP, Mil Expand INF are stationary in first difference, this variables are integrated of order I(1)

Finally the variables of our study are integrated of order I(0) and I(1).

➤ **Cointegrationtest : ARDL Bound test**

To examine the Cointegration test we will apply ARDL Bound test as shown in Table 3.

**Table 3.** ARDL Bounds test results

Variables	Critical Bound's Value	
GDP(EXP,GP,INF, Mil Exp,DNB)	Lower	Upper
level	2,08	3
10%	2,39	3,38
5%	3,06	4,15
1%		

The ARDL Bound test indicated in Table 3, actually shows that the result confirms the presence of a long-term relationship between the variables for the period considered in Tunisia. Indeed, the calculated F-statistic 48.19337 was greater than the critical values at the signification level of 1%, 5% and 10%, therefore, inferring that there is a cointegration relationship between the time series.

➤ **Estimation of the ARDL model**

The Akaike information criterion (AIC) allowed us to select the optimal number of lags for each of the variables for the estimation of the ARDL model. The objective being to choose the number of delays which minimizes this information criterion. The estimates of the different models suggest the use of an ARDL model (1, 1, 0, 0, 1).

According to the estimation result, the coefficient of determination of the model confirms that the model is well fitted. However, taking no-account the ARDL model estimation presented in the following table, we can deduce that the capacity of the model is high following the coefficient of determination which is 98%, implying a correlation coefficient of 95%.

**Table 4.** Estimation of the ARDL model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	0.713508	0.121559	5.869652	0.0099
EXP	6.67E+08	1.51E+08	4.426031	0.0214
GP	4.65E+10	7.38E+09	6.296969	0.0081
GP(-1)	-2.91E+10	4.91E+09	-5.922436	0.0096
INFL	-1.69E+09	3.79E+08	-4.460279	0.0210
INFL(-1)	1.40E+09	4.21E+08	3.325973	0.0449
DNB	9.30E+09	2.09E+09	4.453039	0.0211
DNB(-1)	1.01E+10	1.69E+09	5.961230	0.0094
DMH	-2.76E+09	1.68E+09	-1.647043	0.1981
DMH(-1)	-1.81E+09	2.28E+09	-0.792327	0.4860
C	-5.44E+10	1.51E+10	-3.598157	0.0368
R-squared	0.993713	Adjusted R-squared		0.972756
S.E.of regression	5.16E+08	Durbin-Watson stat		2.892424
F-statistic	47.41778	Prob(F-statistic)		0.004431

However, we can note that according to the short-term ARDL model estimation results, that the effect of entrepreneurship positive on Tunisian economic growth. As for the export variable, it has a significant effect on economic growth. For its part, the inflation variable has a significant positive impact with a probability of 0.0030 so when inflation increases by 0.03%, GDP increases by 115% in the short term. The effects of the GP and DNB variables are not ably negative (-13.45268) and (-279.3548) respectively. Note again, that for the delayed GDP has a positive effect on the GDP of the current year, ie there is a permanent effect such that the standard of living depends on these previous values and cannot be improved than in the long term. The level of exports in the current year positively affects the standard of living of citizens. The product sex ported to Tunisia seem to be a primary necessity, as export revenues are distributed to the entire population. The GP variable has a negative and significant impact in the long term The inflation variable has a negative impact and it is significant with a probability of 0.0210 in the short term. On the other hand, the negative effect of inflation did not persist in the long termsince the effect of the lagged inflation variable (1.40E+09) is positive and significant the 5% threshold (P value = 0.0449<5%. DNE variable and lagged DNE have a positive and significant impact of (0.0211), (0.0094) respectively. Given these conclusions, we can deduce that these results are consistent with work that maintains positive links between entrepreneurship and economic growth. These results are consistent with the conclusions of Fritsch and Schroeter, 2011; Van Oort and Bosma, 2013). Simon-Moya et al. (2014), Bosma et al. (2018) (Stoica, 2020) Adusei (2016), whostudied the effect of entrepreneurship on the economic growth of various countries.

## CONCLUSION

Entrepreneurship has great potential in the economy. Indeed, it creates prospects for opportunities based on social relations innovations and networks developed by entrepreneurs. These networks make the share capital. In this regard, this research work aims to provide a study and analysis on the contribution of Tunisian economic growth entrepreneurship. Over the study period from 2006 to 2020, the estimated ARDL model and the causal test showed that entrepreneurship has a positive effect on economic growth confirming the empirical work of De Fritsch and Schroeter, 2011; Van Oort and Bosma, 2013). Simón-Moya et al. (2014), Bosma et al. (2018) (Stoica, 2020) Adusei (2016) on the issue of entrepreneurship. However, we can confirm that the favorable relationships between economic growth and entrepreneurship are based on the innovative action of the latter. In this context, the Tunisian government, must implement policies encouraging entrepreneurs to become productive workers within the economy. While establishing solid economic policies and an environment conducive to companies. Ultimately, we estimate that the results of our study are far from definitive due to the limited number of explanatory variables, so the prospects for analysis are open for the use of a wider model which takes into account a broader period and other explanatory variables.

### Statements and Declarations

The authors declare that they have no competing interests.

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