SMEs and economic growth: Algeria's example

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Abstract:
The purpose of this study is to better understand the relationship between SMEs and the long-awaited socio-economic development by examining the contribution of SMEs to that development. We base our analysis on the ARDL model for the years 2000–2020. The results demonstrated a consistent upward trend in the number of SMEs established in proportion to value added and non-hydrocarbon exports, underscoring the significance of SMEs.
Keywords: Small and Medium Enterprises **JEL** Causality, Economic development **JEL** Added value.

ملخص:
تستهدف هذه الدراسة أفضل فهم للعلاقة بين المؤسسات المتوسطة والصغيرة من جهة والتنمية الاجتماعية والاقتصادية لمدة زمنية ليست بالقصيرة من خلال دراسة مساهمة المؤسسات المتوسطة والصغيرة في تلك التنمية ARDL. ونستند في تحليلنا إلى نموذج 2000-2020 للسلسلة الزمنية. وقد أظهرت النتائج اتجاهاً تصاعدياً ثابتاً في عدد المؤسسات المتوسطة والصغيرة المنشأة بما يتناسب مع القيمة المضافة والصادرات خارج قطاع المحروقات، وهو ما يؤكد أهمية المؤسسات المتوسطة والصغيرة.
تصنيفات JEL: المؤسسات المتوسطة والصغيرة JEL السببية JEL التنمية الاقتصاديةJEL القيمة المضافةJEL

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1. Introduction

Regardless of a nation's level of development, small and medium-sized businesses (SMEs) have emerged as the mainstay of any socio-economic development strategy in recent years. This interest in SMEs is supported by their ability to positively impact growth through job creation and value addition in an environment of rising competition amid trade liberalisation and globalisation.

Like all other world economies, Algeria's growth has seen ups and downs, but it has stood out since gaining independence by depending mostly on big public corporations and large groupings. This made it possible for it to be established and grow as the price of hydrocarbons increased. But it was only when SMEs experienced a multifaceted crisis as a result of the 1986 decline in hydrocarbon prices and the incapacity of major firms to guarantee economic expansion and generate the anticipated wealth that the authorities realised how important SMEs were. Actually, since the early 2000s, a number of initiatives have been developed and put into place with the goal of supporting and assisting SMEs. A statute was enacted to provide guidance on the development of small and medium-sized businesses. (Law n°01-18 of 12 December 2001 on the orientation law on the promotion of small and medium-sized enterprises) at the end of 2001.)

This law includes provisions for administrative facilitation during the startup phase of a business, a guarantee fund for bank loans to SMEs, and subcontracting encouragement to boost the density of the SME fabric. Numerous support systems have also been developed to help these businesses succeed. Commercial bodies for the management and implementation of financial, fiscal, parafiscal, and administrative advantages (National Agency for the Support of Youth Employment ANSEJ, National Unemployment Insurance Fund CNAC, National Agency for the Development of Investment ANDI, National Agency for the Management of Youth Employment) are some examples of these mechanisms. Public bodies of an administrative, consultative, or informational nature (National Agency for Investment Development ANDI-PME, National Consultative Council for SMEs, regional SME directorates, National Council for Subcontracting); (ABDELLAH, 2021).

A new orientation law on the development of small and medium companies was enacted in 2017 as part of new initiatives to assist the growth and promotion of SMEs and entrepreneurship. (Law n°17-02 of 10 January 2017, on the orientation law on the development of small and medium-sized enterprises (SMEs)).

Problem

Algeria's SMEs should have contributed to an acceptable level of economic development in terms of income and employment creation. Actuality and other scholarly investigations have demonstrated that the outcomes fall short of the people's and reform makers' aspirations. This study aims to quantify the role that recently established SMEs have played in the long-awaited economic development and to comprehend the current dynamics that exist between SMEs and this development.

Considering the aforementioned, the main query we will try to address is: "Is there a causal connection between recently established SMEs and economic progress in Algeria?

The following follow as sub-questions from this primary question:

- What is the contribution of SMEs to the Algerian economy?
- Is this impact of the independent variables (number of jobs, GDP, added value, non-hydrocarbon exports) on the dependent variables (number of SMEs) positive or negative?

In order to carry out this work, we have posed the following hypotheses:

H01: The creation of small and medium-sized enterprises contributes positively to the Algerian economy (value added, GDP and employment).

H02: There is a positive association between the number of newly created enterprises and the economic development of Algeria.

Previous studies

There have been many studies in recent years on the relationship between SMEs, the labour market and growth. Some of these studies include, but are not limited to, the following:

- **The study by SI LEKHAL Karim, KORICHI Youcef and GABOUSSA Ali (2013) entitled: "SMEs in Algeria:** Current situation, constraints and prospects". The study focuses on the analysis of some essential elements for understanding the position of Algerian SMEs in the national economy. The authors emphasised the contribution of these enterprises to job creation, and identified the characteristics and obstacles they face by listing and analysing the various programmes and measures dedicated to the promotion and development of SMEs(SILEKHAL, GABOUSSA, & KORICHI, 2013).

  - NAOUI Noureddine's study (2016): In his paper, the author studied the different stages of development of small and medium enterprises from 1963 to 2012. He focused on financing mechanisms, job creation and the problems encountered in their development.

  According to the results of the study, the author affirms that the SME sector in Algeria is experiencing a positive evolution in terms of the number of enterprises from one year to the next. The difficulty encountered lies in the financing of these enterprises, where the State has set up an arsenal of public institutions to ensure the launch and maintenance of these enterprises (NAOUI, 2016).
- **The study by DJORFI Zakaria and RAHMANI Moussa (2019):** Its authors were interested in evaluating the effects of the multiplication of SMEs on employment and knowing the number of job positions to be created in the future. Using data forthe period from 2000 to 2018, this study revealed a clear improvement in the employment situation and a significant decrease in the unemployment rate(DJORFI & RAHMANI, 2019).
- **The study by ABDELLAH Redouane (2021):** The author is interested in the evaluation of the effectiveness of the State strategy in the promotion of SMEs and entrepreneurship. The different mechanisms have allowed to achieve very appreciable progress in terms of business creation where the number of SMEs

has more than tripled between 2003 and 2019, from less than 300 000 to nearly 1.2 million, that is to say an average evolution of about 8% per year. The author states, moreover, that the effectiveness of the State's effort, through the densification of the SME fabric, is limited. He suggests a revision of the various measures to encourage SMEs and entrepreneurship (improvement of the institutional environment, reduction of the tax burden, reduction of pre-investment costs, etc.) in the sense of improving their effectiveness in meeting the expectations of project holders(ABDELLAH, 2021).

2. Concept of smal and medium-sized enterprises (SMEs):

According to (BOUYAKOUB & BENCHIKH, 2020) it is much easier to describe SMEs than define them. This is due to the disparity of economic activity across SMEs as well as the difference in the degree of economic growth and development of countries in which they are located. Indeed, there are many criteria by which this concept is defined. Quantitative criteria are the most commonly used. Their purpose is to determine the size (small or large) of each enterprise. There are also qualitative criteria to explain the nature of each organisation.

Studies have shown that there are more than fifty definitions of SMEs. Many countries do not have an official definition for this type of enterprise. The definition is either approved by a legal text as in Algeria or by an administrative definition as in Germany. Other definitions are approved by international organisations. In the following, we will outline some of these definitions.

2.1 European Commission definition of SMEs:

The EU defines the concept of an SME as any entity that respects the principle of autonomy (less than 25% control by another company). According to ((Organisation for Economic Co-operation and Development (OECD), 2000), 2000), The EU Commission has divided SMEs into three distinct categories:

- Very small enterprises with less than 10 employees;
- Small companies with fewer than 50 employees, a turnover of less than EUR 07 million and a technical budget of less than EUR 05 million;
- Medium-sized companies with more than 250 employees and a turnover not exceeding 40 million euros and not dependent on any other company. Its technical budget does not exceed EUR 27 million.

2.2 UN Committee definition

The UN Committee on SMEs defines SMEs as follows:

In developing countries :

- 19 to 15 workers: small enterprise;
- 20 to 90 workers: medium enterprise;
- more than 100 workers: large enterprise.

In industrialised countries:

- 05-99 workers: small enterprise;
- from 100-499 workers: medium enterprise;
- more than 500 workers: large enterprise.

2.3 Definition by the Algerian legislator

SMEs are defined in Algeria in Article 04 of Law n°01-18 of 12 December 2001 on the orientation law on the promotion of small and medium-sized enterprises (SMEs) as follows "The SME is defined, whatever its legal status, as a company producing goods and/or services:

- employing between 01 and 250 people ;
- whose annual turnover does not exceed 02 billion Dinars or whose balance sheet total does not exceed 500 million Dinars
- and which respects the criteria of independence".

3.*Algerian SMEs and economic development*

3.1 Classification of SMEs in Algeria

The Algerian legislator has based the classification of SMEs on three criteria: the number of employees, turnover and total assets, which are criteria used by many countries in the world. Table 1 illustrates this classification.

Table 1: Classification of small and medium-sized enterprises under Algerian law.

Organisational structure	**Number of employees**	**Turnover**	**Total assets**
Micro-enterprise (Very Small Enterprise (VSE))	01-09	Less than 20 million dinars	Not exceeding 10 million dinars
Small business	10-49	Less than 200 million dinars	Less than 100 million dinars
Medium-sized enterprise	50-250	From 200 million dinars - 02 billion dinars	100-500 million dinars

Source : Established by the authors based on the law n°01-18 of 12 December 2001 on the orientation law on the promotion of small and medium-sized enterprises (SMEs), articles: 05, 06, 07.

3.2.Step of SME development in Algeria since independence

The development of SMEs in Algeria has gone through three Step(MERZOUK, 2009) :

- **The first Step (1963-1982):** This period was characterised by the government's choice of an administered economy which relies on state control of economic development forces and gives primacy to the public sector over the private sector. This situation has marginalised the role of SMEs. The development of the private sector remained limited on the fringes of national plans and framed by the investment law of 1966.
- **The second Step (1982-1988):** This period saw the promulgation, in 1982, of the law on investment where a timid opening to the private sector was noted. Indeed, the private sector, for the first time, played a limited role in the achievement of national development objectives due to the ceiling on investment, which led to the channelling of part of private savings towards unproductive or speculative expenditure.

- The third Step (from 1988): Due to the negative results obtained in various sectors following the application of the administered economy since the country's independence, the market economy was chosen as an alternative option. To this end, several laws favouring the latter were enacted:

- The law on money and credit was promulgated on 14 April 1990, enshrining the principle of freedom of foreign investment and the encouragement of all forms of partnership, guiding the action of banks and redefining the role of the Central Bank;
- The law on the promotion of investments was promulgated on 10/05/1993 to reinforce the will to liberalise the economy, which stipulated equality between national and foreign investors before the law, the right to invest freely, and the creation of an Investment Support and Monitoring Agency (APSI);
- Ordinance n°01-03 of 2001 relating to the development of investment and the directive law for the promotion of small and medium-sized enterprises was promulgated on 12/12/2001, which aims to improve the environment for small and medium-sized enterprises.
- Law No. 17-02 of 10 January 2017, on the orientation law for the development of small and medium-sized enterprises. The latter redefines the SME and establishes appropriate tax regimes, access facilities to industrial land and financial instruments and services. It also provides for a seed fund to encourage the creation of innovative start-ups and the development of SME groupings and cooperation.

4.Evolution of SMEs

Before analysing the contribution of SMEs to economic development, it is necessary to analyse their evolution over time. Indeed, the SME sector has experienced a very appreciable evolution and progress in the last two decades following the efforts of the State (DRIDICHE, 2018). The data in Table 2 illustrates this development.

Table 2: Evolution and growth of SMEs in Algeria from 2002 to 2020

Year	Type of business			
	Private	Public	Craft	Total
2002	189562	778	71523	261863
2003	207949	778	79850	288587
2004	225449	778	86732	312959
2005	245842	874	96072	342788
2006	269806	739	106222	376767
2007	293946	666	116347	410959
2008	392013	626	126887	519526
2009	455398	591	169080	625069
2010	482892	557	135623	619072
2011	511856	572	146881	659309
2012	550 511	557	160 764	711 832
2013	601583	557	175676	777816
2014	656949	542	194562	852053
2015	700739	532	233298	934569
2016	786989	390	235242	1022621
2017	831 914	267	242 322	1 074 503
2018	880 950	261	260 652	1 141 863
2019	918 542	243	274 554	1 193 339
2020	942 120	229	288 724	1 231 073

Source : Compiled by the authors based on data from (Ministry of Industry and Mines: Statistical Information Bulletins of the SME (2002 to 2020)

The number of SMEs has experienced a very significant increase from 261 863 enterprises in 2002 to 1 231 073 enterprises at the end of 2020, i.e. a variation of 370.12%. This increase is mainly due to the sustained increase of private enterprises from 189 562 enterprises in 2002 to 942 120 in 2020. The most important increase was recorded during the years 2008 and 2009 due to the change in the method of calculating the number of SMEs. From 2008 onwards, natural persons (self-employed) have been taken into account. This evolution is the result of the economic reforms that the State has undertaken in this sector since the mid-1990s. It is linked to the setting up of different organisations to support business creation such as the CNAC, ANSEJ and ANGEM (KADI, 2017).

In contrast to private SMEs, those in the public sector experienced a relative stagnation from 2002 to 2004 when their number was fixed at 778 enterprises, then a slight increase in 2005 following the restructuring of certain enterprises and their reorganisation in order to facilitate their privatisation. From that date onwards, their number decreased to 229 companies in 2020.

A detailed analysis of the evolution of private SMEs by sector of activity clearly shows a concentration of the latter in the services sector (about half), followed by the BTPH sector (about a third). The share of services has indeed increased from 45.88%

in 2006 to 54.15% in 2018. That of the BTPH sector has decreased from 33.62% in 2006 to 28.77% in 2018 with a significant decrease in 2016 (17.10%).

Furthermore, the analysis of the evolution of SMEs in geographical terms shows a disparity in distribution between the north, the highlands and the south. This disparity is explained by the concentration of the population, the existence of services, land and climate. About 70% of SMEs are located in the north of the country, about 20% in the highlands against only about 10% in the south and this despite the various facilities granted by the public authorities for the highlands and the south. This observation leads us to affirm that SMEs in Algeria do not ensure a balance between the different regions of the country.

5 Empirical study of causality

5.1 Presentation of the ARDL model

The ARDL model makes it possible to test long-term relationships on series that are not integrated of the same order and to obtain better estimates on small sample sizes. In addition, it gives the possibility to deal simultaneously with long-term dynamics and short-term adjustments. Thus, the ARDL model relates the variable to be explained: the total number of SMEs, and the explanatory variables: the gross domestic product, the total number of jobs, the value added and the non-hydrocarbon exports for the period from 1990 to 2020.

5.2 Presentation of variables

The choice of variables for this study was made on the basis of the theoretical literature presented above as well as previous empirical work dealing with a similar issue. The variables retained in the econometric modelling: the total number of SMEs (NUMBR_SME) as an endogenous variable (or variable to be explained), the Gross Domestic Product (GDP), the total number of jobs (NUMBR_EMPLOYMENT), the value added (V_ADDED) and the exports excluding hydrocarbons (X_H_HYDRO) as exogenous variables

6. Estimation and interpretation of results

6.1 Result of the stationarity test

In order to avoid spurious regression problems, it is useful before any estimation to check the stationarity of the variables studied. The specification of this model requires that the time series be stationary at the level (I(0)) or stationary after the first difference (I(1)), the ADF test is used to check whether the variables are stationary at the level or after a first difference.

In order to determine the order of integration of the time series and the stationarity of the series studied, the Augmented Dickey Fuller (ADF) stationarity test is used. Indeed, in order to use the Bound-Test approach developed by Pesaran, it is necessary to ensure globally that none of the series is integrated of order 2 or higher because the critical values provided by Pesaran concern only the integration levels 0 and 1.

The study shows that all the series do not have a trend except the LOG(NOMBR_PME) series. Therefore, it can be assumed that the series are stationary except for LOG(NOMBR_PME).

6.2 Unit root test

To ensure that the variables under study are stationary either at the I(0) level or after the first I(1) differentiation, we will use the Augmented Dickey-Fuller test (ADF).

Table 3**:** Result of the unit root test applied on the variables studied

The variable		At the level of		Decision
		DF test statistics	Probability	
NUMBER_OF_EMPLOYMENT	In level	M3:-1,341659	0,8573	Stationary in level
		M2:-7,528599	0,0000	
		M1:		
X_H_HYDRO	In level	M3:-1,626265	0,07582	Stationary in level
		M2:-5,653977	0,0001	
		M1:		
GDP	In level	M3:-2,25533	0,4443	Stationary in level
		M2:-4,359925	0,0018	
		M1:		
ADDED_Value	In level	M3:-3,971107	0,0210	Stationary in level
		M2: -	-	
		M1: -	-	
NUMBER_SME	In level	M3:-1,626265	0,7582	Stationary in level
		M2:-5,653977	0,0001	
		M1: -	-	
NUMBER_SME	In difference	M3: -	-	Stationary in first difference
		M2: -	-	
		M1:-5,737175	0,0000	

Source: Compiled by us from Eviews10

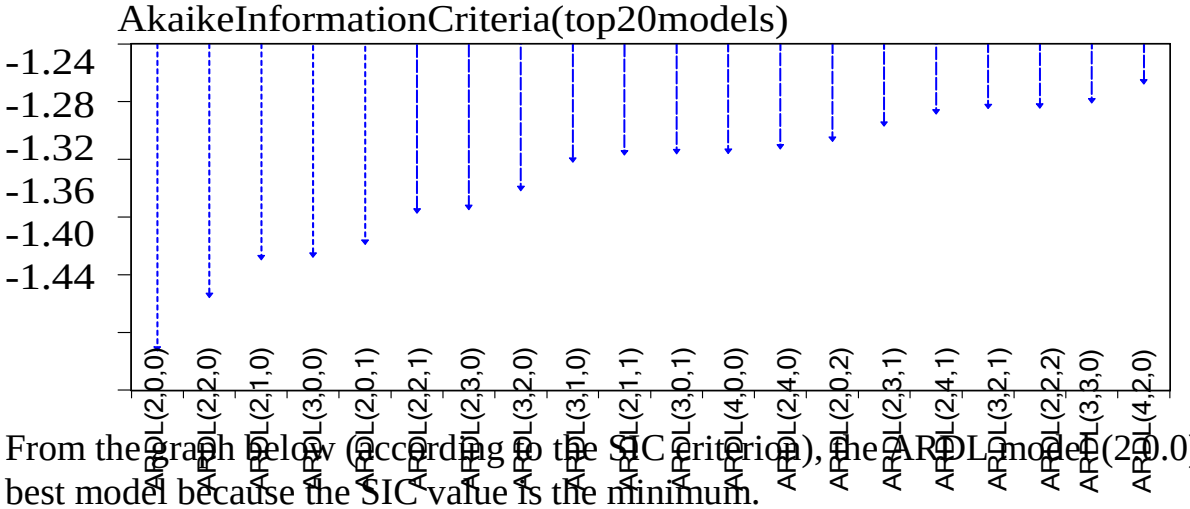
Noted Good: I(0) the variable is stationary in level, I(1) the variable is stationary after the first differentiation.

- M3: Model with trend and constant.
- M2: Model without trend and constant.
- M1: Model without trend and constant.

After testing the stationarity of the different variables included in this study, it is found that all variables are stationary either in level or after the first differentiation. Consequently, the ARDL model can be applied to estimate a possible cointegration relationship between the non-hydrocarbon Gross Domestic Product and the explanatory variables (NAME_EMPLOYMENT, GDP, V_AJUST and X_H_HYDRO).

6.3 Determining the number of delays

Fig.01: The Schwarz Information Criterion (SIC) graph



From the graph below (according to the SIC criterion), the ARDL model (2.0.0) is the best model because the SIC value is the minimum.

6.4 Estimation of the ARDL model (2.0.0)

Table 4**:** Result of the assessment

Variable	**coefficients**	**Std.Error**	**c-Statistic**	**Prob***
LOGNOMBR_PME(-1)	1,461769	0,161907	9,028457	0,0000
LOGNOMBR_PME(-2)	-0,648088	0,107291	-6,040476	0,0000
LOGV_AJOUTÉS	0,055515	0,016850	3,294684	0,0029
LOGX_H_HYDRO	0,132111	0,116856	1,130548	0,2690

Source: compiled by us from Eviews10

($R2$= 0.998092);(Durbni-Watsonstat 2.160855)

The model of SME promotion estimated by the ARDL method is written as follows:

log ($NOMBR\_PMEt$)= 1.46log (NOMBR_PMEt-1)-0.64log (NOMBR_PMEt-2) +0.05log(V_Add) +0.13log(X_H_HYDRO).

The estimation results indicate that all the coefficients of the variables of SME promotion in Algeria, the total number of SMEs delayed by one year, and by two years, and the value added are statistically significant, since the associated Student's ratio is higher than the table value at the 5% level.

As well as non-hydrocarbon exports is not significant as the associated Student's tatistics is lower than the table value at the 5% threshold.

Furthermore, the goodness of fit of this model is R^2 = 99.80%, i.e. the total variability of the total number of SMEs is explained at 99.80% by the selected variables. In this way, the goodness of fit of our model is very good.

6.5 ***Co-integrationTest (Boundstest)***

Table 5**:** Results of the Co-integration test by Pesaran et al (2001)

Variable	**LOG(SMB_NAME), LOG(JOB_NUMBER) , LOG(GDP), LOG(V_ROADS),LOG(X_H_HYDRO).**	
F-Stat calculated	-1,574030	
Critical threshold	1(0)	1(1)
1%	-2,58	-3,66
5%	-1,95	-3,02
10%	-1,62	-3,66

Source: compiled by us from Eviews10

The results of the Co-integration test are presented in the table above. It can be seen that the Fisher statistic (F=-1.574030) is above the upper bound for the different significance levels of 1%, 5% and 10%. This result leads us to reject the hypothesis of the absence of a long-term relationship, and we note the existence of a Co-integration relationship between the different variables.

6.6 Estimation of the long- and short-term relationship using the ARDL model

We note (Table6) that (DLOGNOMBR_PME (-1)) = 0.64 is positive and significant because the statistic associated with this variable is higher than the Student's table value at the 5% threshold. Its estimated coefficient is negative and highly significant, confirming the existence of an error correction mechanism. This coefficient, which expresses the degree to which the variable log(NOMBR_PME) will be recalled towards the long-run target, is estimated to be -0.18 for our ARDL model, reflecting a more or less rapid adjustment to the long-run target.

Table 6**:** Estimation of the short term relationship (short term dynamics)

ARDLErrerCorrectionRégression
Dépendent Variable : D(LOGNOMBR_PME)
SelectedModel:ARDL (2,0, 0)
Case1: NoConstant
andNoTrendDate:06/14/22Time: 11:24
Semple:1990 2020

Includedobservations: 29
ECM Regression

Case1:NoConstantandNoTrend

Variable	Coefficient	Std.Error	t-Statistic	Prob.
D(LOGNOMBR_PME(-1))	0.648088	0.089445	7.245637	0.0000
CointEq(-1)*	-0.186319	0.054325	-3.429730	0.0021
R-squared	0.881887	Mean dependentvar		0.2955

AdjustedR-squared	0.877512	S.D. dependentvar	76 0.295367
S.E. of regression	0.103373	Akaikeinfocriterion	-1.634470
Sum squaredresid	0.288522	Schwarzcriterion	-1.540174
Loglikelihood	25.69982	Hannan-Quinncriter.	-1.604938
Durbin-Watsonstat	2.160855		

Source: compiled by us from Eviews10

Table 7: Estimation of the long-term relationship

LevelsEquation

Case1:NoConstantandNoTrend

Variable	Coefficient	Std.Error	t-Statistic	Prob.
LOGV_AJOUTES	0.297957	0.161396	1.846124	0.0767
LOGX_H_HYDRO	0.709060	0.193469	3.664974	0.0012

EC = LOGNOMBR_PME- (0.2980*LOGV_AJOUTES +0.7091 *LOGX_H_HYDRO)

Source:compiled by us from Eviews10

The estimation results of the long-run relationship are written in the following form:
log ($NOMBR\_PMEt$)= 0.29log ($V\_AJOUTERt$) +0.70log (X_H_HYDROt).
These results show the existence of a positive and significant long-term relationship between the total number of SMEs and non-hydrocarbon exports, thus, an increase of 1% of non-hydrocarbon exports leads to an increase of 70.90% of the total number of SMEs (NOMBR_SME). The insignificant positive effect of the value added on the total number of SMEs suggest that an increase of 1% of the value added entails, all things being equal, leads to an increase of 29.79% in the long term of the total number of SMEs.

7.Validation of the model

7.1Causality test

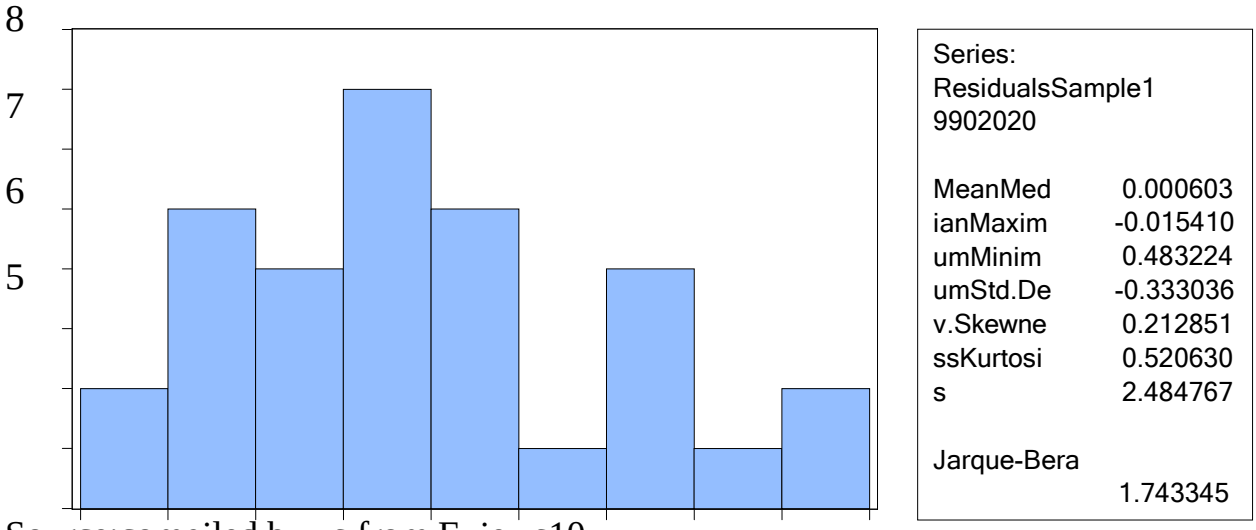
The Granger causality test examines whether the contemporaneous value of Y is significantly related to the values and lagged values of X which is considered the causal variable.

The results of the causality test show that the explanatory variables selected for the empirical study, i.e. non-hydrocarbon exports (LOGX_H_HYDRO), have a significant effect in the Granger sense on the dependent variable (LOGNOMBR_PME), the total number of SMEs, at the 5% threshold.

7.2Testfor normality of residuals

If the model is ideally good, then the differences between the predicted and observed values (the residuals) are entirely attributable to measurement errors. Therefore, the residuals must have the classical properties of a normal distribution, symmetrical around the predicted value, the Jarque-Bera test will only allow to better appreciate the normality of the residuals.

Fig.02: Results of the normality test for residuals



Source:compiled by us from Eviews10

The probability associated with the Jarque-Bera statistic 0.41 is greater than 0.05. The hypothesis of normality of the residuals is therefore verified. We can then conclude that the residuals of the long-term model estimation are stationary. Obviously, the normality of their distributions is confirmed.

7.3 Heteroscedasticity test

This is an important test as it identifies not only heteroscedasticity, but also the model misspecification. Homoscedasticity is observed when the dispersion of the residuals is homogeneous over the whole spectrum of predicted values. It is therefore clear that this is a desirable property, since if the residuals correspond to measurement uncertainties, there will be no reason for the dispersion of these residuals to change with the variations in the predicted values.

Table 8: Results of the heteroskedasticity test

HeteroskedasticityTestBreusch-Pagan-Godfrey			
F-statistic	0,573166	Prob.F(18.9)	0,4558
Ops*R-carré	0,603942	Prob.Chi-Square(18)	0,4671

Source:compiled by us from Eviews10

We therefore accept the hypothesis of homoscedasticity of errors at the 5% threshold, as the probabilities are greater than 0.05. Hence, the estimates obtained are optimal.

7.4Auto correlation test

The auto-correlation test is applied to see if the errors are not auto-correlated.

Table 9: Results of the autocorrelation test

Breusch-GodfreySerialCorrelationLMTest			
F-statistic	0,751192	ProbF(2,22)	0,4835
Ops*R-carré	1,853817	Prob.Chi-Square(2)	0,3958

Source:compiled by us from Eviews10

The probability associated with the F-statistic is greater than 0.05. Therefore, we accept the hypothesis that there is no autocorrelation of errors.

Analysis of the study's results

The results of the statistical study show that the number of SMEs has increased steadily and significantly, from 261,863 enterprises in 2002 to 1,231,073 enterprises at the end of 2020, a variation of 370.12%. This growth is mainly attributable to the notable expansion of private enterprises, which increased from 189 562 in 2002 to 942 120 in 2020 thanks to specific relationships between the primary variables of the study, namely the number of SMEs created with value added and non-hydrocarbon exports.

Contrary to the private SMEs, those of the public sector knew a proportional stagnation from 2002 to 2004 when their figure was attached to 778 companies, then a slight increase in 2005 due to the modification of certain companies and their reissue in order to facilitate their privatisation. From that date onwards, their figure declined to 229 enterprises in 2020.

The empirical study is divided into two parts: the first part is called Causality, and the second is called Model Validation.

For the first part The empirical study; The variables retained in the econometric modelling: the total number of SMEs (NUMBR_SME) as an endogenous variable (or variable to be explained), the Gross Domestic Product (GDP), the total number of jobs (NUMBR_EMPLOYMENT), the value added (V_ADDED) and the exports excluding hydrocarbons (X_H_HYDRO) as exogenous variables.

And for the stationarity test; The study shows that all the series have no trend except the LOG(NOMBR_PME) series. Therefore, it can be assumed that the series are stationary except for LOG(NUMBR_PME).

After testing the stationarity of the different variables included in this study, it turns out that all the variables are stationary either in level or after the first differentiation. Consequently, the ARDL model can be applied to estimate a possible cointegration relationship between the non-hydrocarbon Gross Domestic Product and the explanatory variables (NAME_EMPLOYMENT, GDP, V_AJUST and X_H_HYDRO).

Then it is also remarkable that the ARDL model (2.0.0) is the best model because the SIC value is the lowest.

We found that the coefficient of determination R2 was high, in the order of 99.80%, which means that the equilibrium differential of the model was 99.80% explained by its variables. Therefore, the model was absolutely accurate and stable over time. Furthermore, the results of the evaluation of the short- and long-term relationship

revealed a consistent causal relationship between SMEs and this development through an economic analysis from the years 2000 to 2020.

Before going to the last step of the empirical study of causality; the results of the co-integration test, we find that the Fisher statistic (F=-1.574030) is above the upper bound for the different levels of significance of 1%, 5% and 10%. This result leads us to reject the hypothesis of the absence of a long term relationship, and we note the existence of a co-integration relationship between the different variables.

As a last step, the estimation of the long and short term relationship using the ARDL model shows the existence of a positive and significant long term relationship between the total number of SMEs and non-hydrocarbon exports, thus, a 1% increase in non-hydrocarbon exports leads to an increase of 70.90% in the total number of SMEs (NOMBR_SME). The non-significant positive effect of value added on the total number of SMEs suggests that a 1% increase in value added leads, all else being equal, to a 29.79% increase in the total number of SMEs in the long run.

The results of the causality test show that the explanatory variables retained for the empirical study, namely non-hydrocarbon exports (LOGX_H_HYDRO), have a significant effect in the Granger sense on the dependent variable (LOGNOMBR_PME), the total number of SMEs, at the 5% threshold.

In addition, the normality test of the residuals showed that the probability associated with the Jarque-Bera statistic 0.41 is greater than 0.05. The hypothesis of normality of the residuals is therefore verified.

We therefore accept the hypothesis of homoscedasticity of the errors at the 5% threshold, since the probabilities are greater than 0.05. The estimates obtained are therefore optimal, following the Heteroscedasticity Test.

And the last test of the Model Validation is the Autocorrelation Test where the probability associated with the F-statistic is greater than 0.05. Therefore, we accept the hypothesis that there is no autocorrelation of errors.

8.Conclusion

The objective of this study was to highlight the contribution of SMEs to Algeria's economic development. The growing importance of SMEs in the productive fabric of contemporary economies has led the Algerian public authorities to set up a vast programme aimed at developing and supporting these entities (RAHMANI & BENYAHIA-TAIBI, 2020). The results of the statistical study show that the number of SMEs has experienced a very significant continuous increase from 261,863 enterprises in 2002 to 1,231,073 enterprises by the end of 2020, a variation of 370.12%. This increase is mainly due to the sustained increase of private enterprises from 189,562 enterprises in 2002 to 942,120 in 2020.

In the empirical study, which aims at analysing the relationship between the promotion of SMEs in Algeria and economic growth in general, many tests were carried out, including the estimation of an ARDL process. Therefore, our analysis started with the study of the choice of variables and the graphical study of each series, we also used the unit root test (ADF) which demonstrated that the variables are stationary either at the I(0) level or after the first differentiation I(1). This is to be able to estimate an ARDL model, passing the Bounds-test. From the results, we found that the coefficient of determination R^2 is high, and it is of the order of 99.80%, implying

that the equilibrium differential explained by the model variables is 99.80%and, hence, the model is globally good. The CUSUM SQ test based on the recursive residuals reveals that the model is relatively stable over time. In addition, the estimation results of the short- and long-term relationship revealed a positive relationship between the dependent variable the total number of SMEs (NUMBR_SME) and the independent variables of value added (V_ADDED) and non-hydrocarbon exports (X_H_HYDRO).

9.Bibliography List

ABDELLAH, R. (2021, Mars). La promotion de la PME et de l'entrepreneuriat en Algérie : deux décennies d'efforts pour quels résultats. Cahiers du MECAS , pp. 242-253.

BOUYAKOUB, L., & BENCHIKH, H. (2020). Caractéristiques et spécificités des Petites et Moyennes Entreprises en Algérie. Revue algérienne d'économie et gestion , pp. 204-229.

DJORFI, Z., & RAHMANI, M. (2019). Le rôle des PME dans la création des postes d'emploi : une étude économétrique sur la période 2000 – 2018. Revue des Sciences Economiques, de Gestion et des Sciences Commerciales , pp. 66-76.

DRIDICHE, A. (2018, Décembre). Le rôle des petites et moyennes entreprises dans le développement de l'économie nationale : une étude statiqtique sur la période 2002-2016. Annales de l'Université d'Alger , pp. 395-419.

HASAINE, Y., & BADRI, A. (2021). L'impact des réformes économiques sur la croissance des PME en Algérie. revue Organisation et Travail , pp. PP 156-173.

KADI, M. (2017). Quelle place pour la PME algérienne dans le processus du développement économique. revue des Sciences Economiques, de Gestion et des Sciences Commerciales.

Loi n°01-18 du 12 décembre 2001 portant loi d'orientation sur la promotion de la petite et moyenne entreprise (PME).

Loi n°01-18 du 12 décembre 2001 portant loi d'orientation sur la promotion de la petite et moyenne entreprise (PME).

Loi n°17-02 du 10 janvier 2017, portant loi d'orientation sur le développement de la petite et moyenne entreprise (PME).

MERZOUK, F. (2009, Octobre). PME et compétitivité en Algérie. Revue Economie et Management , pp. 279-296.

Ministère de l'industrie et des mines : Bulletins d'informations statistiques de la PME (2002 à 2020).

NAOUI, N. (2016). دراسة تحليلية لدورمؤسسات التمويل المتخصصة في تمويل المؤسسات الصغيرة والمتوسطة في الجزائرللفترة2000-2013. Revue de Gestion et d'Economie , pp. 319-335.

ONS, « Rétrospective des comptes économiques de 1963 à 2019 », collections statistiques n°221/2021, Série E, statistiques économiques n°108, Aout 2021.

(2000). Organisation de Coopération et de Développement Economique (OCDE).

RAHMANI, Y., & BENYAHIA-TAIBI, G. (2020). « Les PME privées ; Un levier pour le développement économique en Algérie . Journal of Economics and Management , PP.16-29.

SILEKHAL, K., GABOUSSA, A., & KORICHI, Y. (2013). Les PME en Algérie : Etat des lieux, contraintes et perspectives. Algerian Business Perfermance , pp. 29-49.