Impacts Of Bank Lending And Credit Guarantee Scheme

On SMEs In Algeria

By

BAKHOUCHE, Ouafa

A THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

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Professor Jin Soo, LEE

Professor Young Ki, LEE

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Committee in charge:

Professor Jin Soo LEE, Supervisor ____________________

Professor Young-Ki LEE ____________________

Professor Wook SOHN ____________________

Approval as of August, 2014

ABSTRACT

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BAKHOUCHE, Ouafa

The aim of this paper is to assess the impact of the Algerian bank lending, and credit guarantee scheme on Small and Medium-sized Enterprises through easing their access to bank credits. The study targets all Algerian SMEs and relies on macro-data from 1992 to 2010. The first set of regressions will analyze the impact of bank lending on SMEs in terms of number, share in GDP and contribution in employment. Difference in differences method is used to check the efficiency of credit guarantee scheme to support SMEs.

Key words:

Bank lending, Credit guarantee, SMEs, Access to finance.

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ABBREVIATION

ANGEM: Mutual micro-credit guarantee fund (Agence National de Gestion du Microcrédit)

ANSEJ: Mutual credit fund for young entrepreneurs (Agence Nationale du Soutien à l'Emploi des Jeunes)

CGCI: Guarantee fund of investment credit (Caisse de Garantie des Credits aux Investissements)

CGS: Credit Guarantee Scheme

CNAC: Mutual credit guarantee fund to support unemployed persons (Caisse Nationale d'Assurance chomage)

CNES: National Economic and Social Council (Conseil National Economique et Social)

DD/DID: Difference In differences

FDI: Foreign Direct Investment

FGAR: Credit Guarantee Fund for SMEs (Fond de Garanatie des credits aux PMEs)

GDP: Gross Domestic Product

IMF: International Monetary Fund

IV: Instrumental Variable

LCC: Law on Currency and Credit

MENA: Middle East and North Africa

ONS: National Office of Statistics (Office National des Statistiques)

SMEs: Small and Medium Enterprises

SMIs: Small and Medium Industries

Importance of SMEs:

The current economic power of developed countries is largely due to the big number of SME that provides a considerable part of value added and jobs. In France, around 60% of the manufacturing sector makes the innovation, between 25% and 64% of small businesses (small and micro enterprises) by industry are moderately or highly innovative.[1] Data shows that SMEs represent over 90% of business in the world and attribute to 50% to 60% of jobs. [2] In the USA, this rate increases to 70% and to 81% in France, in the European union, contribution rate of creating jobs reaches 81%. [3] This is to show the importance that SMEs occupy in economic development throughout the world. The flexibility of their structure, and their ability to adapt to the multiple pressures of the economic and social environment, their ability to ensure economic integration and regional development show that their role in economic and social process is crucial.

SMEs are major players in the industrial sphere in most countries, even in countries going through a period of transition towards an open market economy. During such openness period, SMEs become a new alternative to the economic recovery required by trade globalization and enterprises competitiveness.

Despite the interest shown by governments, SMEs in transition countries are still faced by many difficulties related to legal and economic environment, such as, high level of interest rate, inflation, taxation, lack of clear marketing plan, and strong competition by large

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[1]. Julien.P.A, 1997 ,"SMEs, review and prospects", Ed. Economica, Paris, pp 166-167 (information used from this paper have been translated by the Author from French into English)

[2]. Fillion.L.J, 1998, "SMES management, from start-up to growth" , Ed. Pearson Education, Paris, p3

[3] Ibid, p4

companies. Financing difficulties have long been an issue since the lack of funds remains a problem even in industrialized countries. Although governments have created programs to support and ease SMEs funding such as free interest loans, and micro credits, SMEs access to finance is still a challenge.

Several studies, including those of Beck and Demirguç-Kunt (2006), [4] SQW (2005),[5] RAM (2005),[6] and Bukvic and Bartlett (2003)[7] find that these difficulties are a major barrier to the development of SMEs especially in countries in transition, where the financial system is still underdeveloped (Wattanapruttipaisan 2003,[8] Feakins 2004[9]). Cull et al (2006) show that in most countries in transition, more than 50% of total assets of studied SMEs is financed by equity, the average rate of bank financing being only 9.7% [10].

Problem of SMEs Financing In Algeria:

The interest in SMEs is relatively recent in Algeria, compared to other countries such as Morocco and Tunisia,[11] Since late 80s, Algeria came to experience a radical change

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[4] Beck T, Demirgüç- Kunt A. Levine R. and Maksimovic V. , (2006) , "The determinants of financing obstacles", Journal of International Money and Finance, Vol. 25:6, pp 932-952

[5] SQW Limited (2005), "Study on access to finance for SMEs", The London Borough of Southwark, London.

[6] RAM Consultancy Services Sdn Bhd, (2005), "SME access to financing: addressing the supply side of SME financing", REPSF Project no 04/003.

[7] Bukvic, V, Bartlett.W (2003), « Financial barriers to SME growth in Slovenia », Economic and Business Review for Central and South - Eastern Europe, vol. 5, no 3.

[8] Wattanapruttipaisan, T. (2003), « Four proposals for improved financing of SME development in ASEAN », Asian Development Review, vol. 20, pp 1-45.

[9] Feakins, M. (2004), « Commercial bank lending to SMEs in Poland », Small Business Economics, vol. 23, no 1, pp 51-70.

[10] Cull R. Davis L.E, Lamoreaux. N.R and Rosenthal J.L. (2006), « Historical financing of small and medium size enterprises» , Journal of Banking & Finance, vol. 30, n 11.

[11] Noutary. E, (2008), "Funding start-ups and SME innovation: a guide for MEDA countries", Medibtikar Guidebook.

and substantial reforms have been adopted to change to the free market economy. These reforms aimed to enhance the role of private enterprises, including SMEs, in the development process. Many legislations have been enacted to reform banking system and enhance its role in financing private sector, such as, the law on currency and credit of 1990. In addition, the Ministry of small and medium sized enterprises have been established for the first time in Algeria in 1994. As a result of a set of reforms and programs, SMEs in Algeria experienced significant dynamics, their number increased from 179 893 in 2000 to 618 515 on 2010[12].

If easing business regulatory framework allowed private sector to develop, the reform of the administration, business law, and taxation system remains excessively slow to meet the requirements of the new market structure. The complexity of paperwork repels many entrepreneurs from creating their businesses. Between obtaining an inscription in the trade register and home office acquisition, a period of six months is needed to start a business. According to the Doing Business 2012 ranking, Algeria is the 148th out of 183 countries for ease in doing business (5 places down since 2011) and 153th for ease of starting-up a business.[13]

Access to bank financing remains one of the major barriers. The current situation of banking sector formed mainly with State-owned banks and its failure to play its role as an intermediary for the economy. In addition, the limited role of capital market as an alternative to finance SMEs make the problem harder.

The other issue is the legal and administrative framework that made transition to free market economy incomplete, also, the lack of objective conditions to finance private

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[12] Ministry of SMEs and Investment promotion, (2010), newsletter no 2, Algeria (Information used from the newsletter have been translated by the author from Frensh to English)

[13] Economic and social Council (CNES), (2006), National Report on Human Development made in collaboration with UNDP Algeria, Algeria. (used Information have been translated by the author from French to English)

sector tends to the legal side more than the economic side, because banking system in Algeria used to serve the public enterprises and large-scale projects during the socialist regime period. Also, banks prefer to finance large companies rather than SMEs because of the higher risk degree in the latter and the lack of guarantees and information[14].

Credit guarantee scheme to ease SMEs access to finance:

Since 2000, more focus has been given to ease SMEs financing, the government has set up a credit guarantee scheme formed with two main institutions: Credit Guarantee Fund for SMEs (FGAR) and Credit Guarantee Fund for SMEs investments (CGCI). In addition, the government has introduced subsidized interest rate of 3.5% instead of 5.5%. Finance law of 2012 also included a set of measures to support them such as restructuring debts of SMEs in financial difficulty to b supported by National Treasury, exchange risk coverage for all SMEs, and tax exemptions for SMEs located in southern regions.

Banks are usually the favorite external financing source for companies especially in Algeria where financial system is bank-based and the role of capital market is very limited. For SMEs, access to banking system is not that easy because of lack of collaterals.

Credit guarantee scheme is one of the most efficient policies to combat this problem; its main purpose is to improve SMEs access to finance and assist their integration in the formal banking system. This would ultimately improve SMEs performance and their contribution to employment. One of the main objectives of credit guarantee policy is to compensate for the lack of guarantee that hinders SME access to external finance. In addition, this policy calls for a change in the mind-set of bankers, who should consider it as a financial

[14] Levitsky.J, (1997), "Credit guarantee schemes for SMEs: an international review", journal of Small Enterprise Development, Vol8 No 2, P4.

instrument, as it is an opportunity to extend collateral-free credit in support of viable projects requiring higher quantum of loan assistance.[15]

Statement of the problem:

In parallel with the creation of credit guarantee funds, Algerian SMEs experienced an unprecedented dynamics, this leads to wonder whether this dynamics is a result of the credit guarantee policy.

The purpose of the study:

The objective of this study is to examine the impact of bank lending and credit guarantee policy in Algeria on SMEs growth in term of number, contribution in GDP, and employment.

Significance of the study:

SMEs development becomes the most discussed issue among scholars and policy makers in Algeria, regarding to the specificity of the economy mainly based on Hydrocarbons exports. This fact makes SMEs a crucial alternative for the economy and its survival.

The Algerian experience shown that access to finance is the major barrier that faces SMEs, especially in the light of financial system situation distinguished by centralized decision-making related to the process of financing investment project that prompted the

[15] Ibid, P5.

government to adopt policies to face this problem. During the last decade, SMEs experienced a significant shift in terms of dynamics and jobs creation, the interest of this study is to examine the impact of bank lending for private sector and credit guarantee policy adopted to facilitate access to finance on SME growth.

Research question:

To achieve the purpose of this thesis, this study would answer the following questions:

(i) What is the impact of bank lending on SMEs growth?

(ii) Is SMEs growth in terms of number, contribution in GDP, and employment due to credit guarantee scheme?

Hypotheses:

Following the research questions mentioned above, there are two main hypotheses to be tested:

- Bank lending leads to a significant growth in SMEs.
- Credit guarantee policy is responsible of growth of SMEs in term of number, contribution in GDP, and creating jobs.

Thesis structure:

The organization of the paper is as follow: Chapter 1 contains the introduction which reviews the importance of SMEs in the world and Algeria, SMEs access to finance difficulties and credit guarantee scheme as a measure taken to face this problem. Chapter 2 is about issue background and literature review of the problem in Algeria and some other countries as well as a summary of some related studies. Chapter 3 explains the methodology used and data description. Chapter 4 analyzes data and discusses the results. Finally chapter 5 will include a summary of the findings and suggestions that need to be addressed in the near future.

Background information of the problem

1- Historical background :

Private Sector Financing in Algeria

From 1962 to 1988:

After its independence, and during the two decades of 1960s and 1970s, Algeria considered public companies the basis of national development. They were financed by the state budget, while the private sector was marginalized and completely ousted by the government during this period. The introduction of the investment code in 1966, although its contents encouraged private investment, it provided a strict control over this type of investment which prevented private sector development.[16]

In 1982, the financial restructuring of public enterprises was initiated, and this mechanism helped create some momentum in the management of companies, but the financial restructuring did not prevent public companies falling into serious financial imbalances. [17]

In 1986, a change in the economic environment appears following the sharp fall in oil prices accompanied with banks insolvency. This situation gave birth to a new reform that

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[16] Ghanem. Y, (2011), " Banking System Development in Algeria: assessment of its impact on private sector ", International Seminar: fifty years of development experience- State- Economy- Society, Algeria, p.4 (Used information from this paper have been translated by the author from French to English)

[17] Bia. C, (2006) « Monetary and financial reforms and their impact on the Algerian entreprise. », Review of Economics and Applied statistics, National Institute of Planning and statistics, Algiers. (Used information from this paper have been translated by the author from French to English)

brought about a significant change in the structure and power of banking system.[18] It aimed for an intensive involvement of banks in economy financing, giving it a degree of autonomy. This autonomy was of no value because the law did not confer autonomy to public enterprises. Thus, despite its substantial theoretical contribution, this law has not been implemented. Overall, during the period of 1962 to 1988 the banking system was not playing its role as financial intermediaries, it responded to the needs of public enterprises and the private sector was marginalized.

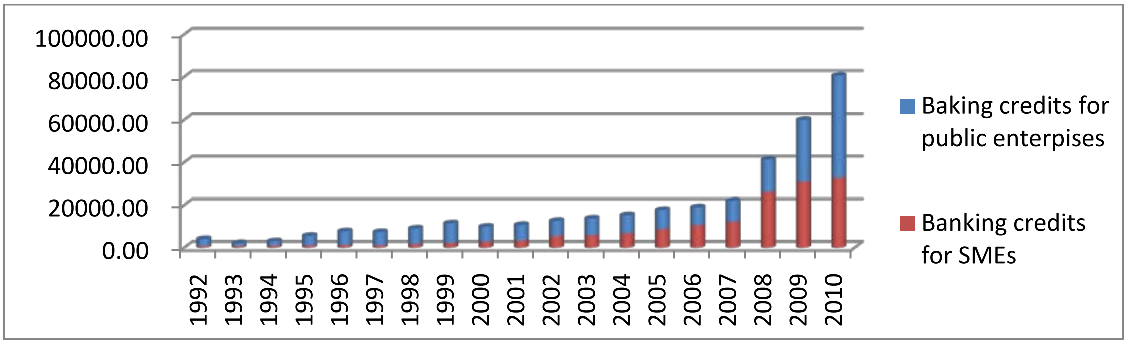
After 1989:

Regarding the aforementioned failures, the government turned to the IMF for help, as the latter was conditioned by economic openness and market economy. Thus, the law on currency and credit of 1990 was enacted. It is considered the cornerstone of all economic reforms in Algeria because its main objective was financial liberalization and the introduction of market rules and it did not only focus on monetary and financial issues, but it also open the way for private sector and its position in the economy. Following LCC, many laws were introduced focusing on private sector promotion, especially small and medium businesses, through greater banks' involvement in their financing. The new legal framework which aims to revive the private sector is rich in benefits for SMEs in particular. These benefits are mainly in term sof financial support for SMEs.[19]

[18] Bouzar. C, (2002), «Algerian Banking System : Changes and Prospects»; PhD thesis not published, Algiers (Used information from this paper have been translated by the author from French to English)

[19] Ghanem. Y, (2011), " Banking System Development in Algeria: assessment of its impact on private sector ", International Seminar: fifty years of development experience- State- Economy- Society, Algeria, p.6 (Used information from this paper have been translated by the author from French to English)

Figure 01. The evolution of bank lending for SMEs in Algeria:



Source: made by the author using data provided by Bank of Algeria reports (1992-2010)

2. SMEs contribution to Algerian economy

In Algeria, SMEs are not only the core part of economic and social development, they are the major alternative for the economy to grow away from price fluctuations of hydrocarbons in the world market.

Table 1. SMEs definition in Algeria

Enterprise	Number of Employees	Turnover (Algerian Dinar)	Total assets (Algerian Dinar)
Micro-enterprise	1 – 9	< 20 millions	< 10 millions
Small enterprise	10 – 49	< 200 millions	< 100 millions
Medium enterprise	50 – 250	200 millions – 2 billions	(100 – 500) millions

Source: Act on SMEs and SMIs promotion of December 2011

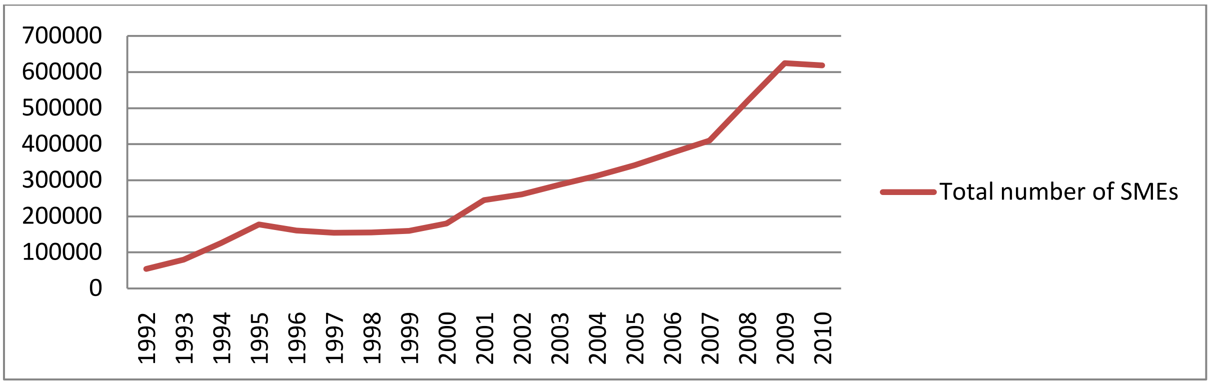
Evolution of SMEs number:

Since 2000, the number of SMEs significantly increased. Their number has doubled, and their density almost quadrupled. Available data indicate more than half of SMEs were created between 2001 and 2007. In contrast, the number of public SMEs decreased.[20]

[20] Ibid, p.1

In terms of density, SMEs sector recorded a rate of ten SMEs per thousand (10/ 1000), which is far from international standards of forty-five SMEs per thousand (45/1000) .[21]

Figure 02. Evolution of SMEs number from 1992 to 2000



Source: made by the author using data provided by National economic census, report of preliminary results, National Office of Statistics (2011), Algeria.

SMEs contribution in Employment:

In recent years, unemployment in Algeria registered an overall downward due to the contribution of SMEs in creating jobs. Unemployment rate went down from 15.3% in 2005 to 12.3% in 2006.[22] According to the report of preliminary results of 2011 issued by National office of statistics, unemployment rate in Algeria reached 10.2% in 2010.

[21] Ministry of Small and Medium Sized Enterprises, (2009), statistics newsletter No. 15, Algeria. (Used information from this paper have been translated by the author from French to English)

[22] United Nations Economic Commission for Africa, Office for North Africa, 23th meeting of the Intergovernmental Committee of Experts (ICE), Rabat (Morocco), 10-13 March 2008.

Table 2. SMEs contribution in employment from 2004 to 2010

Year	2004	2005	2006	2007	2008	2009	2010
Jobs created by private SMEs	592758	888829	977942	1064983	1540209	1756964	2026308
Jobs created by public SMEs	778	874	739	666	626	598	560

Source: Ministry of SMEs, Division of Information systems and statistics, 2010.

3. Importance of guarantee scheme for SMEs:

Most SMEs managers say that the high credit administrative costs is not the only barrier to banks' lending to these enterprises, but it is also access to credit because lending to SMEs is regarded as highly risky and such borrowers are unable to offer required collateral.[23]

Therefore, the interest in credit guarantees is justified by its functions in compensating the lender for much of the risk. Vogel and Adams (1997) found that guarantees policy does less damage than other forms of subsidies, such as that of lowering interest rate.[24]

"Regardless of moral hazard issue that may threaten credit guarantee schemes by weakening borrowers' commitment to repay the loan, when they know that a guarantee fund will reimburse the lending institution, in addition to less incentive by lending banks to supervise the loan properly or to pursue vigorously the collection of repayments, the other important role that CGS should play is to provide (under conditions of reduced risk) an opportunity for banks to learn more about SMEs, their problems and their operations, to help improve their handling of SME loan portfolios. The lenders will gradually learn how to lend

[23] Levitsky . J., (1997), "Credit guarantee scheme for SMEs: an international review",Small Enterprise Development, Vol 8, No 2, p4.

[24] Robert C.Vogel. R.C and Adams. D.W., (1997), "The benefits and costs of loan guarantee program", The Financier, Vol.4

profitably to SMEs without guarantees."[25] This can also help in mitigating information asymmetry problem between lenders and borrowers.

4. Credit Guarantee scheme in Algeria

The lack of collateral and absence of financial records are the major barriers for SMEs access to finance which weigh heavily on their ability to grow, regarding their limited equity base and narrow access to credit markets. Algerian government set up a credit guarantee scheme for SMEs in 2004 to overcome such difficulties, the purpose is to encourage bank lending to SMEs through sharing risk mechanism.

- *The mutual micro-credit guarantee fund*

It aims to guarantee micro-loans issued by banks and financial institutions within the micro credit institution ANGEM.[26]

- *Mutual credit guarantee fund for young entrepreneurs*

The Fund was created to further strengthen banks in taking risks related to financing micro-business created within national agency for youth employment and support (ANSEJ).[27]

- *Mutual credit guarantee fund to support unemployed persons between 35 to 50 years*

[25] Levitsky . J, (1997), "Credit guarantee scheme for SMEs: an international review",Small Enterprise Development, Vol 8, No 2, p5.

[26] www.angem.dz

[27] www.ansej.dz

The fund was created to further strengthen banks in taking risks in the financing of businesses created within employed insurance and protection agency (CNAC).[28]

- *Credit Guarantee Fund for SMEs (FGAR):*

A public institution designed to facilitate SMEs' access to bank financing .[29]

- *Guarantee fund of investment credit (CGCI)*

It is a public institution established to support the creation and development of SMEs by facilitating their access to credit for investment only[30].

Literature Review:

1. **In Algeria :**

Impact of public policies in financing private sector:

Ghanem (2011), analyzed bank lending to the private sector in Algeria since 1964, and the correlations between level of banking development and SMEs number. She found that banking system contribution in financing private sector had positively evolved and had reached significant levels in 1996. The findings indicate that private companies growth in

[28] www.cnac.dz

[29] www.fgar.dz

[30] www.cgci.dz

number is not due to bank lending improvement over time, but it is rather due to government policies undertaken to support private sector financing.[31]

Madouche (2008) used surveys to study a sample of 34 bankers from 6 public banks who made decisions in terms of granting credits to SMEs in the central region of Algeria, he found that information asymmetry is a major barrier for banks to finance SMEs even though bank lending is still the favorite external financing means for SMEs compared with other funding alternatives such as capital-risk and microcredit.[32]

2. In other countries:

Credit guarantee scheme and SMEs in Italy:

Zecchini (2006) tested the role of guarantee credit funds in expanding credit access and financial costs reduction for SMEs using financial data about a sample of SMEs. This sample includes enterprises that received the guarantee and enterprises that did not, the latter firms had successively been broken down into two large groups: SMEs eligible for credit guarantee (potential suppliers) and non-eligible SMEs (non-potential suppliers). He applied two econometric techniques: instrumental variable (IV) and difference-in-difference (DID) estimation to study the effects of guarantee funds on financial costs among studied SMEs and then, he used difference-in-difference (DID) estimation to test whether the fund of guarantee

[31] Ghanem. Y, (2011), " Banking System Development in Algeria: assessment of its impact on private sector ", International Seminar: fifty years of development experience- State- Economy- Society, Algeria, (Used information from this paper have been translated by the author from French to English)

[32] Madouche. Y, (2008), "Problem of assessing credit risk for SMEs by the bank in Algeria", Master thesis. Not published, university of Tizi Ouzou, Algeria. (Used information from this paper have been translated by the author from French to English)

allowed the firm to receive a bank credit amount larger than what would otherwise be the case. The findings showed that the public guarantee diminishes the borrowing costs for SMEs and have a positive and significant effect on banking credits received by SMEs, for the latter result, the effect is too small which means it is limited.[33]

3. Relevant Studies :

According to a report of European Commission (February 2006) about "Access to finance for SMEs in Middle East and North Africa region," the optimal solution to promote SME financing is to fill the information gap and reduce costs of loans. As this goal is difficult to achieve in practice, especially in MENA region countries, the provision of guarantees is important to facilitate SME access to finance.[34]

Financial development and firm growth:

The literature affirms that through allocating and aggregating savings and investment financial system significantly contributes to economic growth. Thus, financial development is compulsory in any development process through accumulation and diversification of assets as well as the facilitation of the access to financial services. Funding SMEs is an efficient microeconomic channel for financial sector to generate growth. Rajan and Zingales (1998) used microeconomic data to examine the relationship between finance and economic growth. They hypothesized that financial development affects economic growth

[33] Zecchini. S, (2006), "Credit Guarantee and SMEs Finance in Italy", Working Paper N. 73, Tor Vergata University, Rome, Italy.

[34] Experts Group, (February 2006), "Access to finance for SMEs in Middle East and North Africa region", report of European Commission, Brussels, Belguim.

by diminishing firm's external financing costs, according to their study financial development has more impact on dependent firms on external financial resources. This affirmation is considered as a proof of causality relationship between financial development and economic growth. Their paper contributes to the breaking down of industrial growth to two components; growth in enterprises number (which means enterprises newly established), and growth in size of already existing businesses. The findings of this study affirm that financial development affects more growth in enterprises number.[35]

Regarding the impact of financial development on enterprises, many economists claim that financial structure has no impact on economic growth nor on entrepreneurial dynamic, but rather on the financial system over all (Beck Demerguç-Kunt, Levine and Maksimovic,2001 [36]; Beck and Levine, 1999 [37]).

The impact of financial development on entrepreneurial growth has also been discussed by two other papers about barriers and constraints for entrepreneurship; Klapper, Laeven and Rajan (2004)[38] and Klapper, Amit and Gullèn, (2010).[39] The findings show that financial development diminishes access to financial system constraints, thus entrepreneurship faces less barriers.

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[35] Rajan R. and Zingales L., (1998), "Financial Dependence and Growth", Journal of American Economic Review, Volume 88, pp 559- 86.

[36] Beck T, Demirgüç- Kunt A. Levine R. and Maksimovic V. , (2001) , "Financial Structure and Economic Development: Firm, Industry, and Country Evidence", In, Financial Structure and Economic Growth, A cross Country - comparison of banks, Markets and Development, Ed. Massachusetts Institute of Technology, pp 189- 241.

[37] Beck T & Levine R., (1999), "New Firm Formation and Industry Growth: Does Having a Market or Bank Based System Matter?" , World Bank working paper n°2383.

[38] Klapper L. Leven L. and Rajan R., (2004), « Barriers to Entrepreneurship », Journal of Financial Economics.

[39] Klapper L. Amit R. and Gullèn M. F., (2010), "Entrepreneurship and Firm Formation across Countries". NBER Volume on International Differences in Entrepreneurship, Joshua Lerner and Antoineete Shoar, ed, University of Chicago Press.

SME access to finance:

Aghion et Al (2007) when they analyzed the credit as a constraint for businesses establishment and for their growth after establishment, they found that financial development is more efficient for small enterprises than large ones.[40]

In Algeria, the literature says the most important constraint for private sector is the access to financial system as Bouzar (2010)[41] and Henni.A (1996)[42] in their findings.

[40] Aghion P. Fally T. & Scarpetta S., (2007), "Credit constraints as a barrier to entry and post-entry growth of Firms", Journal of Economic policy, Volume 22, Issue 52, pp 731–779.

[41] Bouzar C., (2010), « Financial Systems : Financial and Banking change and crise », Ed. El-Amel, Algeria. (Used information from this paper have been translated by the author from French to English)

[42] Henni A., (1996), « Algerian Market Constraints », Entreprises' Start-up in Africa, Universités Francophones Collection, Ed. EDICEF/AUPELF. (Used information from this paper have been translated by the author from French to English)

Chapter 3: Methodology and Data description:

Target population:

Population used for the study is all Algerian Small and medium sized enterprises. Private sector is represented by SMEs. According to the National Office of Statistics (ONS), Algerian economy is composed of 96% of private companies that includes 90% of micro enterprises, more than 80% of large scale firms are state owned (mainly in hydrocarbons' industry).

Only data about Credit Guarantee Fund For SMEs (FGAR) is used to study the impact of credit guarantee scheme on SMEs, as data about the other guarantee institutions is unavailable.

Specifications of the model:

The study will cover the period from 1992 to 2010, in part we start by running a basic regression to test the first hypothesis. Difference In Difference (DD) method was used for the second hypothesis.

The first Hypothesis:

The focus is given to examine the impact of bank lending at time *i* on SMEs number, SMEs share in GDP, and SMEs share in jobs created.

Bank lending and SMEs number:

$$\text{Growth in SMEs' total number} = \beta_{i0} + \beta_{i1}(\text{bank lending for SMEs\%}) + \beta_{i2}(\text{Interest rate}) + \beta_{i3}(\text{Inflation rate}) + \beta_{i4}(\text{GDP growth rate}) + \beta_{i5}(\log FDI) + t_i + \varepsilon_i$$

Bank lending and SMEs' share in GDP:

$$\text{SMEs' share in GDP} = \beta_{i0} + \beta_{i1}(\text{bank lending for SMEs\%}) + \beta_{i2}(\text{Interest rate}) + \beta_{i3}(\text{Inflation rate}) + \beta_{i4}(\text{GDP growth rate}) + \beta_{i5}(\log FDI) + t_i + \varepsilon_i$$

Bank lending and SMEs' share in total jobs:

$$\text{SMEs' share in total jobs} = \beta_{i0} + \beta_{i1}(\text{bank lending for SMEs\%}) + \beta_{i2}(\text{Interest rate}) + \beta_{i3}(\text{Inflation rate}) + \beta_{i4}(\text{GDP growth rate}) + \beta_{i5}(\log FDI) + t_i + \varepsilon_i$$

The Second Hypothesis:

Difference-in-Difference (DD) method will be applied to estimate the credit guarantee scheme impact on SMEs before and after 2004.[43]

[43] Credit Guarantee Fund for SMEs (FGAR) which is the policy of interest has been established in 2004 (www.fgar.dz)

Theoretical Information about Difference in Difference Method:

What is the DD Estimation?

A linear regression aims to estimate the impact of a policy when there is a treatment and a control group and two time periods before and after.

Basic Econometric Model:

$$Y_{it} = \beta_0 + \beta_1 T_{it} + \beta_2 A_{it} + \beta_3 T_{it} A_{it} + \text{other factors} + \varepsilon_{it}$$

Y_{it} : Outcome

I : State/Firm

t : Time

T_{it} : a dummy variable = 1 if observation I belongs in the state that will eventually be treated (treatment group), = 0 if observation I belongs in Control group.

A_{it} : a dummy variable = 1 in the periods when treatment occurs (post policy), = 0 before treatment (pre-policy).

$T_{it}A_{it}$: interaction term, treatment states after the intervention.

In this paper the control group is all SMEs ineligible to receive credit guarantee from the FGAR while the treatment group is all SMES eligible to receive credit guarantee from the FGAR.

According to the Credit Guarantee Fund for SMEs (FGAR), the ineligible SMEs are:[44]

- Financial institutions including insurance companies and banks;
- SMEs operating in import/export industry;

[44] www.fgar.dz

- SMEs operating in real-estate industry;
- Commercial SMEs.

Control group represent all SMEs excluding ineligible SMEs mentioned above.

Model Specifications:

(Growth in eligible/ineligible SMEs number%) = $\beta_0 + \beta_1 T_{it} + \beta_2 A_{it} + \beta_3 T_{it} A_{it}$

$+ \beta_4$(Bank lending for eligible/ineligible SMEs%) + β_5(GDP growth rate%)

$+ \beta_6$ (lending interest rate%)+ β_7 (Inflation rate%)+ β_8 (log FDI)+ $t + \varepsilon_{it}$

(Share of eligible/ineligible SMEs in GDP) = $\beta_0 + \beta_1 T_{it} + \beta_2 A_{it} + \beta_3 T_{it} A_{it}$

$+ \beta_4$(Bank lending for eligible/ineligible SMEs%) + β_5(GDP growth rate%)

$+ \beta_6$ (lending interest rate%)+ β_7 (Inflation rate%)+ β_8 (log FDI)+ $t + \varepsilon_{it}$

(Share of eligible/ineligible SMEs in Jobs) = $\beta_0 + \beta_1 T_{it} + \beta_2 A_{it} + \beta_3 T_{it} A_{it}$

$+ \beta_4$(Bank lending for eligible/ineligible SMEs%) + β_5(GDP growth rate%)

$+ \beta_6$ (lending interest rate%)+ β_7 (Inflation rate%)+ β_8 (log FDI)+ $t + \varepsilon_{it}$

Table 03: DID Summary

	Before 2004	After 2004	Difference
(Treatment Group) Eligible SMEs	$\beta_0 + \beta_1$	$\beta_0 + \beta_1 + \beta_2 + \beta_3$	$\Delta Y_t = \beta_2 + \beta_3$
(Control Group) Ineligible SMEs	β_0	$\beta_0 + \beta_2$	$\Delta Y_c = \beta_2$

Difference		$\Delta\Delta Y = \beta_3$

Variables Description and Data sources:

The first hypothesis:

Growth in SMEs total number: a dependent variable, it refers to the annual growth rate in total number of SMEs. Most of data is collected from the Ministry of SMEs and Investment Promotion newsletters. Early years data (1992 to 1997) is provided in the general economic census report 2011 of National Office of Statistics.

SMEs share in GDP: a dependent variable computed by the author as a percentage of GDP amount created by all SMEs in the year *i* relative to the annual total amount of GDP in US dollar. Data about GDP share created by SMEs is collected from the newsletters of the Ministry of SMEs and Investment Promotion. Total GDP data is provided by World Bank database from 1992 to 2010.

SMEs share in job created: a dependent variable computed as a percentage of number of jobs created by all SMEs in the year *i* relative to the total jobs created in the same year. For number of jobs created by all SMEs, data collected from the newsletters of the Ministry of SMEs and Investment Promotion, Data about total jobs is provided by the National Social and Economic Council (CNES), report of 2011.

Bank lending for SMEs %: it is the variable of interest for the first hypothesis, and an explanatory variable before the second hypothesis. It refers to the share of bank lending amount for SMEs in total bank lending amount for private sector, in US dollar at time *i*, it is computed by the author using data collected from annual reports of Bank of Algeria from 1992 to 2010.

GDP growth rate: used as an explanatory variable in all specifications as it affects the overall the macroeconomic environment where SMEs operate. Data is collected from World Bank database for the period 1992 to 2010.

Log FDI: Natural logarithm of annual Foreign Direct Investment flows to the economy in US dollar at time *i*. It is used to control dependent variables as FDI may lead to more SMEs (complementary relationship) or less SMEs (substitutional relationship). Data from 1992 to 2006 is collected from diverse papers. [45] Data from 2007 to 2010 collected from National office of Statistics reports 2011.

Interest rate: it refers to the national lending interest rate applied for public and private enterprises, SMEs and large scale firms. Data is collected from World Bank database, missed data is collected from other papers.[46]

[45] Data from 2000 to 2006 is collected from (Reggad .S.,"Foreign Direct Investment: The Growth Engine to Algeria ", Korean review of international studies.)

[46] Missed data is provided by Central Bank of Algeria's reports from 1992 to 2010.

Inflation rate: Data collected from world Bank data base, missed data is collected from other papers.

t: a specific variable that controls for shocks and changes over time.

ε: standard error.

The second hypothesis:

Growth in eligible/ineligible *SMEs number*: refers to the annual growth rate in total number of eligible/ineligible SMEs. Most of data about total number of SMEs is collected from the Ministry of SMEs and Investment Promotion newsletters, early years data (1992 to 1997) is provided in the general economic census report of 2011 by the National Office of Statistics. Data about eligible SMEs is computed by the author by deducting the number of ineligible SMEs cited in the MSMEs newsletters from the total number.

Eligible/Ineligible SMEs share in GDP: Computed by the author as a share of GDP amount created by either eligible/ineligible SMEs at time *t* relative to the annual total amount of GDP in US dollar. Data about GDP share created by SMEs is collected from the newsletters of the Ministry of SMEs and Investment Promotion. Total GDP data is provided by World Bank database from 1992 to 2010.

Eligible/Ineligible SMEs share in jobs created: a dependent variable computed as a percentage of number of jobs created by either eligible/ineligible SMEs at time *t* relative to the total jobs created at the same period. For number of jobs created by eligible and ineligible SMEs, data is provided by industry in the newsletters of the Ministry of SMEs and Investment

Promotion. Data about total jobs is provided by the National Social and Economic Council (CNES), report of 2011.

Bank lending for eligible/ineligible *SMEs %:* it refers to the share of bank lending amount for either eligible/ineligible SMEs in total bank lending amount for private sector in US dollar at time *t*. It is computed by the author by summing and deducting when necessary the bank lending to SMEs by industry using data collected from annual reports of Bank of Algeria from 1992 to 2010.

T_{it} : a dummy variable = 1 if SME *I* is eligible (treatment group), $T_{it} = 0$ if SME *I* is ineligible (belongs in Control group).

A_{it} : a dummy variable =1 after 2004, if: $t>=2004$, (post policy), $A_{it} = 0$ before 2004, if: $t<2004$ (pre-policy).

$T_{it}A_{it}$: interaction term, refers to eligible SMEs after 2004 (after the establishment of the FGAR).

GDP growth rate: used as an explanatory variable in all specifications as it affects the overall macroeconomic environment where SMEs operate. Data is collected from World Bank database for the period 1992 to 2010.

Log FDI: Natural logarithm of annual Foreign Direct Investment flows to the economy in US dollar at time *i*, it is used to control dependent variables as FDI may lead to more SMEs (complementary relationship) or less SMEs (substitutional relationship). Data from 1992 to 2006 is collected from diverse papers. [47] Data from 2007 to 2010 collected from National office of Statistics reports 2011.

Interest rate: it refers to the national lending interest rate applied for public and private enterprises, SMEs, and large scale firms. Data is collected from World Bank database, missed data is collected from other papers. [48]

Inflation rate: Data collected from World Bank database, missed data is collected from other papers.

ε: standard error.

i: eligible/ineligible SME

t: time, year from 1992 to 2010

[47] Data from 2000 to 2006 is collected from (Reggad .S.,"Foreign Direct Investment: The Growth Engine to Algeria ", Korean review of international studies.)

[48] Missed data is provided by Central Bank of Algeria's reports from 1992 to 2010.

The first hypothesis:

Table 04: Data analysis of bank lending impact on SMEs

Variables	SMEs number%	SMEs share in GDP%	SMEs share in Jobs%
Bank lending for SMEs as % of total bank lending for the economy	0.850 (0.032)**	-0.180 (0.024)**	-0.105 (0.015)**
GDP growth rate%	-1.31 (0.469)	0.857 (0.030)**	-0.266 (0.175)
Lending interest rate%	0.048 (0.984)	-0.482 (0.324)	0.717 (0.014)**
Inflation rate%	-0.114 (0.751)	-0.0905 (0.221)	-0.025 (0.497)
Log FDI	-11.07 (0.128)	-3.047 (0.043)**	-0.533 (0.469)
T	-0.209 (0.899)	0.9049 (0.016)**	1.607 (0.000)***
R-Squared	0.719	0.708	0.948
Number of observations	19	19	19

* Significant (at 10%) ** very significant (at 5%) *** highly significant (at 1%)

According the results above, bank lending has a positive impact on SMEs number and is very significant at 5%. For SMEs share in GDP and share in total jobs, it has a negative effect and it is very significant at 5% for SMEs share in GDP and SMEs share in total jobs.

This means as much as SMEs receive fund, their number increases but their share in GDP and employment decreases. This may be explained by the following reasons:

- Bank lending joint with different government policies to support SMEs financing are focused on creating new SMEs rather than financing existing SMEs investment.[49]
- There is no efficient policies to assist and follow up the SME after it start-up. Business climate where SMEs operate doesn't encourage them to grow and expand their investment. According to the Doing Business 2012, Algeria is the 148th out of 183 countries in easing doing business (5 places down since 2011) and 153th for ease of starting-up a business. [50]
- Lack of real entrepreneurship mind set within Algerian Entrepreneurs and their fears from expanding their investment within same industry; most of SMEs owners tend to invest in different industries rather than expanding the initial activity of their SMEs.[51]

The current composition of SMEs in Algeria confirms this result, according to the national office of statistics, 96% of SMEs are micro enterprises.

GD growth rate has a positive impact on SMEs share in GDP, level of significance is 5%, that means as the economy grows, as all industries including SMEs grow as well.

Lending interest rate has a positive impact on SMEs share in total jobs, the result is very significant at 5%. This may be explained as follow:

SMEs share in total job is computed as number of jobs created by SMEs divided by total number of jobs. When lending interest rate increases, costs increase, as a result, jobs to be created decrease.

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[49] Ghanem. Y, (2011), " Banking System Development in Algeria: assessment of its impact on private sector ", International Seminar: fifty years of development experience- State- Economy- Society, Algeria, p.6 (Used information from this paper have been translated by the author from French to English)

[50] Economic and social Council (CNES), (2006), National Report on Human Development made in collaboration with UNDP Algeria, Algeria. (used Information have been translated by the author from French to English)

[51] Camille S, (2011), " Algeria and Morocco : what economic Convergences? ", Carberra Editions and France Editions, Paris. (used Information have been translated by the author from French to English)

On the other hand, jobs are created by the government and companies including large enterprises and SMEs alike, in Algeria [52] number of jobs created by SMEs is much less that jobs created by government and large companies, rising interest rate will decrease number of jobs created by both sector but in different degrees, as a result, rising the lending interest rate will increase SMEs share in total jobs because change that may happen in total job in greater.

FDI has negative impact on SMEs share in GDP, it is very significant at 5%, this means as FDI flows to the country as SMEs industry shrinks, because FDI doesn't promote SMEs, in other words, the relationship between FDI and SMEs industry is not complementary, it is rather substitutional.

The second Hypothesis:

Table 05: Impact of credit guarantee policy on SMEs

Explanatory Variables	SMEs number%	SMEs share in GDP%	SMEs share in Jobs%
Eligible SMEs	-3.106703 (0.502)	-0.5598916 (0.868)	9.369861 (0.035)**
After credit guarantee policy	4.124345 (0.478)	-0.0349355 (0.993)	-1.293594 (0.810)
Interaction term (Eligible SMEs group * After credit guarantee policy)	3.512951 (0.722)	-9.407843 (0.198)	-5.723595 (0.533)
Banking credit for eligible/ineligible SMEs as % of total bank lending for the economy	-0.0960131 (0.692)	-0.4203787 (0.023)**	-0.138785 (0.537)
GDP growth rate%	-0.6852068 (0.084)*	0.2738404 (0.337)	0.3580208 (0.322)
Lending interest rate%	1.141899 (0.068)*	1.138647 (0.015)**	0.5008707 (0.377)
Inflation rate%	-2.687794 (0.836)	-0.4048666 (0.119)	0.2214817 (0.495)

[52] www.ons.dz

Log FDI	-0.0718685 (0.103)	2.197306 (0.070)	2.885771 (0.061)*
R-Squared	0.3125	0.6322	0.4077
Number of observations	38	38	38

* Significant (at 10%) ** very significant (at 5%) *** highly significant (at 1%)

The table above gives the followings results:

The dummy variable representing eligible SMEs for credit guarantee has a positive impact on SMEs share in jobs, and this impact is very significant at 5%. This means eligible SMEs has greater contribution in employment compared to ineligible SMEs.

Bank lending still has a negative and very significant effect on SMEs share in GDP.

The interaction term (variable of interest) representing eligible SMEs after 2004 has no significant impact on SMEs, which means that there is no significant change in SMEs number, share in GDP, and share in employment due to the guarantee policy adopted in 2004. This can be explained by the following reasons:

- FGAR as a fund for credit guarantee for SMEs is newly created (in 2004), its coverage and its activity (guarantees granted to SMEs in terms of number and amount) still low compared with the number of SMEs.

Table 6. FGAR Credit Guarantee for SMEs Coverage from 2005 to 2010 [53]

Year	Total number of SMEs	Credits for private sector (millions USD	Garantees (amount)/ million USD	garantee (number)	amount of credits 39uaranteed/million USD
2005	341 914,00	8 816,15	22,57	102,00	68,52
2006	376 028,00	10 570,00	35,55	146,00	88,52

[53] Table made by the author using Data provided in ONS and FGAR websites (www.fgar.dz and www.ons.dz)

2007	410 293,00	12 160,00	47,51	191,00	108,04
2008	518 900,00	26 155,00	87,66	329,00	236,48
2009	624 478,00	30 865,00	93,04	356,00	245,96
2010	618 515,00	32 681,00	123,03	391,00	309,88

Chapter 5: Concluding remarks:

The main challenge for Algeria has always been to reach good levels of economy diversification and to reduce high levels of unemployment within youth. High productive investment is crucial particularly in manufacturing industries and services other than retail trade and transportation. In Algeria as in many countries these sectors are anchored by SMEs that compose the main job suppliers and value added makers.

The Economic survey conducted in 2012 by the National Office of Statistics shows that the Algerian private sector is essentially composed of micro-enterprises, most of them operate in trade industry. Banking system can play a crucial role in meeting SMEs financing needs and gear them more towards productive sectors and to support them to transform into small and medium enterprises.

This paper tried to study the impact of bank lending and credit guarantee on small and medium-sized enterprises, the results indicates that although the positive improvement in bank lending towards private sector, only SMEs number has increased as financing policies give priority for creating more SMEs rather that expanding the existing investment. The business climate, as well as, the entrepreneurship spirit within Algeria still a barrier for SMEs industry.

Credit guarantee scheme as one of the government tools to ease bank financing for SMEs couldn't play its role because of its small size and low coverage as it operates in its early stages.

More efforts towards better SMEs financing are required, the establishment of specialized bodies are needed to help not only creating new SMEs but also to guide and support them in expanding their existing investments particularly in productive industries.

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