

Size Estimation of the Informal Economy in Algeria During the Period of 1990-2017

(Using Gutmann's Simple Currency Ratio Approach)

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Abstract

The main purpose of this study is to evaluate the size of informal economy in Algeria using the simple currency ratio method of Gutmann, Thus we started this research paper with analyzing the ratio of currency in circulation to the demand deposits in Algeria during the period 1990-2017.

The empirical results pointed out that the ratio of informal economy to official economy reached around the value of 25% to 30 % during the period of 1990-2003 and follows a decreasing trend during the period 2001-2007, And the general graph trend From 2008 to 2016 seemed increasing to about 25% of the official GDP by the end of 2016.

Keywords: informal economy. Gutmann's method; currency; demand deposits; official GDP.

JEL classification codes: E26, E41, C13, H2.

الملخص

تهدف الورقة البحثية إلى تحديد حجم الاقتصاد غير الرسمي في الجزائر باستخدام منهج نسبة النقود السائلة لغوتمان، وهو الأمر الذي تطلب من الباحثين إجراء تحليل لسلسلة البيانات المتعلقة بنسبة النقود السائلة المتداولة إلى حجم الودائع تحت الطلب في الجزائر خلال الفترة 1990-2017. وأوضحت نتائج الدراسة أن حجم الاقتصاد غير الرسمي كنسبة من الاقتصاد الرسمي كان في حدود 25 % إلى 30 % خلال الفترة 1990-2003 لينخفض بوتيرة منتظمة خلال الفترة 2001-2007،

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أما عن الفترة التي تلت سنة 2008 فقد عرف الاقتصاد غير الرسمي خلالها ارتفاعا ملحوظا جاوز عتبة 25 % من الاقتصاد الرسمي مع نهاية سنة 2016.

كلمات مفتاحية: الاقتصاد غير الرسمي، طريقة غوتمان، السيولة، الودائع تحت الطلب، الناتج المحلي الإجمالي الرسمي.

1. INTRODUCTION

The multiplicity of research about the informal economy since the seventies of the last century contributed to create an academic balance on various aspects related to the informal economy, starting with the labels that launched the phenomenon through the reasons contributing to the growing phenomenon among the economies of the world at different levels of progress to the most difficult element, Assessing the size of informal economic activities.

1.1 The empirical evidences

Many studies indicate that the use of cash in the transactions’ settlement falls within the informal economy activities, in which agents try to keep them hidden from the official records, because it is difficult to trace. As a result, a rise in the currency demand may represent a rise in the informal economy, thus the currency ratio is one of the indicators that may be relied upon much in the estimation of the informal economy size.

Adriana A.DAVIDESCU (Estimating the size of Romanian shadow economy using Gutmann’s simple currency ratio approach,2013) estimated the size of subterranean economy in Romania using the simple currency ratio method of Gutmann for quarterly data covering the period 2000-2010. The results reveal that the ratio of shadow economy to official economy decreased from 21% to about 12% of official GNP during the period 2000-2006. At the end of 2006, the size of subterranean economy decreased until the third quarter of 2008 (year which supposed that the subterranean economy does not exist). In the last years, the size of shadow economy as

ratio of official GNP begin to increase slowly, reaching the value of 9.29% in the second quarter of 2010.

Adriana. D, Vasile .A, Andreea M. Paul (Revisiting The Size of Romanian Informal Economy Using The Gutmann Approach,2015) the paper was estimate the size of informal economy in Romania using Gutmann approach for quarterly data covering the period 2000-2014. Thus, the study analyzed the ratio of currency to overnight deposits in order to estimate the amount of illegal transactions in informal sector .The empirical results pointed out that the ratio of underground economy to official economy reaches the value of 19% at the beginning of 2000 and follows a decreasing trend during the period 2000-2008. From the end of 2008, it begins to increase gradually reaching to about 13% of official GDP in first quarter of 2014. The researchers add in the latest article that the informal economy is characterized by the difficulty of discovery and any empirical results should always be regarded as an approximation and also should be interpreted with due reserve, given the limitations of the method.

Fethi ÖĞÜNÇ, Gökhan YILMAZ (ESTIMATING THE UNDERGROUND ECONOMY IN TURKEY,2000) The researchers attempted to highlight the size of the informal economy by comparing the size of the latter through a several estimation approaches in Turkey, the method was applied for the period between 1960-1998. Data was examined for two different time periods, 1960-1979 and 1980-1998, due to the structural economic changes occurred after 1980. For the period 1960-1979, The average size of the informal economy was about 9.5 percent during the first period and 16.2 percent during second period With a significant increase between the two periods of study.

1.2 Objectives and potential contribution of this research

Through this research paper we will try to stand on the size of the informal economy in Algeria during the period of 1990-2017 in order to tend the grasp of the interaction and effects of the informal economy activities. In order to do so, We applied a rather simple calculation method which is a *simple currency ratio method (SCR)*.

1.3 The research problem

The main question which comes first is: *If the size of the informal economy depends on the use of cash in the transactions, how can monetary approaches contribute to determining the size of the informal economy in Algeria?*

1.4 Description of the research design

About the structure of this research paper is organized as follows: The article begins with the theoretical considerations concerning definition of informal economy and a brief discussion of its main related activities. This is followed by a concise description of the various measurement methods of informal economy size. The field part provides a brief description of the simple currency ratio method and summarizes the data and methodology and presents the results of the Algerian informal economy estimation during the period of 1990-2017. Finally, the last section offers a summary to the main results and some concluding remarks.

2. Generalities about informal economy

It is commonly known that the first to use the term "informal economy" was **J. Keith Hart** in Ghana when he conducted a study on urban unemployment in Africa in the second half of 1970 at the Institute for Development Studies -Sussex University- It was revised and published in 1973 in the Journal of Modern Studies, prior to the 1972 (International Labour Office) report, known as the Kenya Report, when it conducted a study on Development in Developing Countries.

It is thus clear that the first to be revised and used by the International Bureau of Labour (BTI), in its report on the term "informal sector" in the early 1970s, described the economic reality that prevailed in many low-income countries. The term was later changed to "informal economy" to emphasize that it describes a different phenomenon from the general economy. The informal economy as a concept goes beyond the "informal sector" which includes a variety of workers and economic entities of various sectors in the urban and rural contexts.

2.1 The concept of the informal economy

The phenomenon of informal economy is defined under various names in the literature, indicating various aspects of it such as: underground economy, informal economy, unobserved economy, shadow economy, second economy, parallel economy, hidden economy, illegal economy, unrecorded economy, marginal economy, unreported economy, unofficial economy, dual economy etc. This variation makes it difficult to develop a common definition. In academic studies the term “underground economy” is considered as the most comprehensive definition, as it includes the illegality (Erdinç, 2016, p. 5).

- **J. Keith Hart** The informal sector is one way of carrying out activities characterized by: A) a facility of entry, B) the use of indigenous resources, C) the family ownership of businesses, D) small scale operations, E) flexible, labor-intensive technology, F) Knowledge developed away from the formal school system, G) Free and competitive markets(Noiseux, 2000, p. 16).

-**Schneider and Enste** the informal sector comprises activities, which are not part of national income accounting. These include, apart from regular activities such as helping neighbors, irregular and criminal activities. The shadow economy is defined by irregular activities (e.g. illicit labor), and the underground economy is defined by criminal activities (Joras Ferwerda, 2010, p. 2).

Through previous studies, the informal economy is divided into legal and illegal activities. In addition, **Gourévitch** proposes, for example, to distinguish three main forms of informal economy: black, gray and pink, each of these forms refers to various types of activities(Sylvain & Fendt, 2010, p. 6).

2.2 Activities related to the informal economy

Through the above, the term "informal economy" has been chosen by many international institutions, which has a broader impact than the "informal sector", we can distinguish activities related to the informal economy by legitimacy-criteria basis of these activities, which are classified as legitimate activities that can be incorporated into the formal economy through the disclosure of tax and regulatory institutions which are called parallel or shadow economy, however the other activities are illegal that

the authorities seek to combat.

The following table shows the various activities related to the informal economy including criminal activities, although most of them have not been integrated into the estimation process, with the exception of tax evasion that many economists (as V. Tantzis) consider it to be one of the most important indicators of appreciation.

Table.1 Informal (or Grey) Activities

Tax avoidance (legal)	Infringement of copyrights
-fringe benefits	-production of counterfeit goods
-legal tax planning, e.g. trusts	-Internet fraud
Tax evasion (illegal)	-social security fraud, etc
-underreporting/non reporting of income.	Work by illegal immigrants Production, distribution and sale of narcotics
- non-issuance of receipts	
-illegal tax schemes	
Double jobbing/moonlighting	Corruption
-e.g. civil servants	- e.g. bribes
Home production/services	Illegal arms trading
-baby sitting , cleaning	Money laundering
- home hairdressing , etc	Unauthorised gambling
Petty unregulated/unreported trading & production Benefits in kind	Trafficking of humans
	Unauthorised prostitution
	Extortion
-e.g. use of company facilities for personal gain	Smuggling & Piracy of the seas
	Theft

Source: George Georgiou, Measuring the Size of the Informal Economy: A Critical Review, Working paper Series of Central bank of Cyprus, p5, May 2007.

3. Methods of Estimating the Size of the Informal Economy

Although the term "informal economy" appeared in the 1970s, this did not prevent the emergence of an assessment of the size of the informal economy, there have been many attempts to measure the size of the informal economy despite difficulties and problems, especially since these activities are characterized by secrecy and concealment.

There are a number of methods used to measure the size of the informal economy, but in general there are two main trends in the estimation. The first is the direct trend, which is based on the calculation of the output of the sub-economic activities that are related to the informal economy. The second is the indirect trend, which is based on tracking the implications of the existence of informal activities (Echavarria, 2015, p. 10).

3.1 Direct Approaches

These methods rely on surveys, samples based on voluntary replies, tax audits and other compliance methods. The problem is that the results depend directly to the questions asked by the survey, and few surveys are alike. As a result, it is very difficult to use the same parameters to measure and compare the informal economy in different countries. Usually, what ends up happening is that the definition that is used has to be very simple and contain only one parameter. For example, the informal sector may be defined as those people who do not have the right to a pension when they retire (Echavarria, 2015, p. 11).

3.2 Indirect Approaches

These Methods of measurement are based on macroeconomic indicators, which are often linked to the informal economy as a proxy for its size or growth, We mention the following methods :

Discrepancy between the National Expenditure and Income Statistics

This method allocates the difference between income and expenditure, theoretically these two measures should be equal, However, Income from informal activities will increase the expenditure measurement but not in the income measurement. This is because the income side is measured through the value added of registered firms (the formal economy),

Discrepancy between Official and Actual Labor Force:

The labor input approach, which is based on the labor input matrix and assumes a stable relationship between the potential working population (based on age) not incorporated in the informal sector and production by the informal sector (Echavarria, 2015, p. 11).

The Currency Demand Approach

The various monetary approaches that assume stable relationships between transaction activity and monetary variables, moreover activities in the informal economy use cash flow in settling the various transactions so not to leave any traces.

Multiple Indicators, Multiple Causes (MIMIC) Approach

This approach is one of the most used methods of estimating the size of the informal economy, which is widely known among economists and is known as the model of non-measurable variables associated with measurable variables which takes both the causes (input) and indicators (output) associated with the informal economy.

4. Analysis of the reality of the informal economy in Algeria

4.1 Currency ratio method

in this study, we will try to use the method of the cash money ratio to money supply, it is derived from The classic currency demand approach to estimate the size of the informal economy in Algeria and the percentage of the latter's contribution to the gross domestic product through the data related to appendix (01).

In the category of monetary approaches, there are three methods namely simple currency ratio (SCR) method of Gutmann (1977), the transaction method of Feige (1979) and the currency demand method of Tanzi (1983), based on the work of Cagan (1958)(DAVIDESCU, 2013, p. 34).

The *currency demand approach* is used for measuring the underground economy and hence tax evasion. This approach was first employed by Cagan (1958) to estimating the size of the underground economy for the Unites States over the period 1919 – 1955. Twenty years later, Gutmann (1977) and then Feige (1979) used the same approach but without any statistical procedures. Cagan's approach was further adopted and developed by Tanzi (1980, 1983) to determine the size of the underground economy for the United States by estimating econometrically a currency demand function for the country over the period 1929-1980.(Ademola & Bekoe,

2011, p. 137).

In 1980 Tanzi (1980) constructed an estimate of the money demand, using the model of Feige (1979), and compared it to the recorded money supply in the US, using yearly data from 1929 to 1980. In his seminal paper, Tanzi (1980) suggests that one of the main factors that deter individuals from legally transacting in the US is that they have to give away part of these transactions in the form of taxes. Tanzi (1983) started to examine the view of Cagan (1958) who had previously argued that, although cash does not pay interest, it is and will be used as a means to avoid paying taxes, focusing thus on tax evasion, Tanzi (1983) builds a model where the ratio of cash to non-cash money supply is generated by the ratio of personal income tax to total adjusted income, the ratio of legal cash remuneration to total personal income, the interest rate, and real income per capita (Joras, Deleanu, & Unger, 2010, p. 6).

Gutman thinks that over time, as a result of the use of checks and credit cards, demand for the currency decreases, and he argued that the ratio of currency to narrow money supply M1, has consistently grown in the US since 1961.

Briefly, this approach presented several ideas, the most important of which rise in currency stocks and payments is likely a good indicator of transactions which are carried out in secret far from the eyes of the government authorities, **DAVIDESCU** added that transactions in currency are anonymous while those involving checks leave an identifiable trace, participants in the underground sector have an incentive to use cash to hide the source of income from tax or authorities. In this sense, a rise in the currency ratio, other things equal, could signify an increase in underground activity (DAVIDESCU, 2013, p. 39).

Following Cagan (1958) and Guttman (1977), the specifications of SCR method can be expressed as below:

$$C = C_U + C_o \dots\dots\dots (01)$$

$$D = D_U + D_o \dots\dots\dots (02)$$

$$K_o = C_o / D_o \dots\dots\dots (03)$$

$$K_u = C_u / D_u \dots\dots\dots (04)$$

$$V_o = \frac{Y_o}{C_o + D_o} \dots\dots\dots (05)$$

$$V_u = \frac{Y_u}{C_u + D_u} \dots\dots\dots (06)$$

$$\beta = \frac{V_o}{V_u} \dots\dots\dots (07)$$

Where:

C - actual currency stock;

D- actual stock of demand deposits;

Y_o - observed income;

u -subscript to denote unobserved sector;

o -subscript to denote observed sector;

k_o - ratio of currency to demand deposits in observed sector;

k_u - ratio of currency to demand deposits in unobserved sector;

v_u - unobserved sector income velocity;

v_o - observed sector income velocity.

In spite of the advantages offered by the model in estimating the size of the informal economy it did not escape the criticism that we mention:

- Uncertainty of the use of money alone in settling transactions in the informal economy.
- A rise in currency demand deposits is usually due in large degree to a slowdown in demand deposits and not to a rise in currency due to informal economic activity (Echavarria, 2015, p. 10).
- The impossibility of having a base year in which the informal economy is non-existent
- Assuming equal speed of money circulation in the formal and informal economies, which is totally contrary to reality
- Most of the studies related to the money approach focus on one factor that causes the growing phenomenon of the informal economy, namely, the burden of taxation and the neglect of other influential factors such as the multiplicity of regulations and procedures.

4.2 Estimating the size of informal economy using Gutmann's method: Data Description

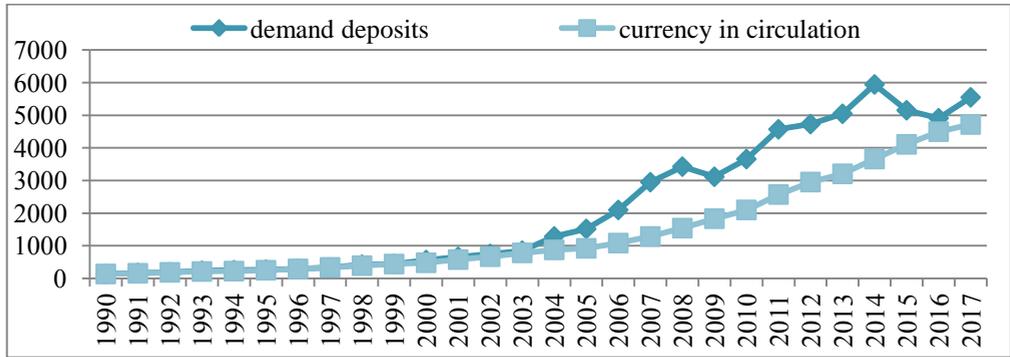
The monetary approach is based on the assumption that cash is used to make transactions that informal economy actors want to keep hidden from official records. Transactions made using cash are difficult to trace, while those made with other assets, registered in financial institutions, can be easily inspected. In order to estimate the size of informal economy using currency ratio method, annual data series covering the period 1990-2017 were used. The study analyzes the currency ratio to demand deposits in order to estimate the size of economic activity in the informal economy in Algeria. The main sources used to collect the data were obtained from:

- National Bureau of Statistics (Algeria), - Central Bank of Algeria.
- IMF (International Financial Statistics) ,- World Bank database.

Empirical results

Gutman sees that the adoption of a base year in which the size of the informal economy does not exist is a crucial subject in this approach; this base year is also related to the minimum value of the ratio of currency in circulation to deposits (C/D). In order to quantify the size of the informal economy as a percentage of GDP (% of GDP), we selected 2007 as the base year to estimate the volume of informal economy. It was adopted as a base year on the grounds that the currency in circulation ratio is the lowest among those in the rest of years. Since the results are fairly sensitive to the choice, different base year selection results various conclusions.

Fig 1. Currency in circulation versus demand deposits in Algeria during the period 1990-2017

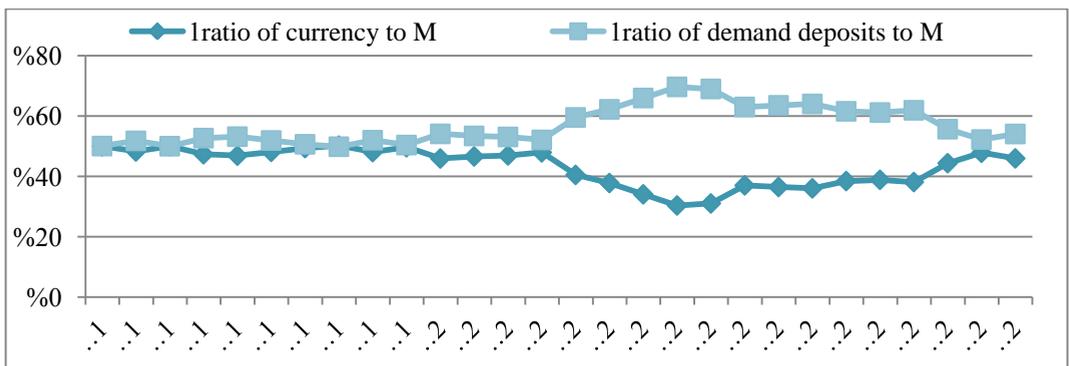


Source: World Bank database & National Bureau of Statistics in Algeria.

Through the representation of the two series (**Fig 1**), we can highlight the presence of a common increasing trend with the mention of the high demand deposits increased more rapidly than the currency.

Both series developed in the same way during 1990-2004, and the currency in circulation series followed the same steps of progressing during all the successive period (2005-2017), however, the demand deposits series witnessed a remarkable increase at the beginning of 2005, achieving record demand rates in 2008 and in 2014(it can be said that the increase in demand for deposits during 2008 is due to the crisis of the recession witnessed by the world, in addition, the collapse of oil prices in 2014).

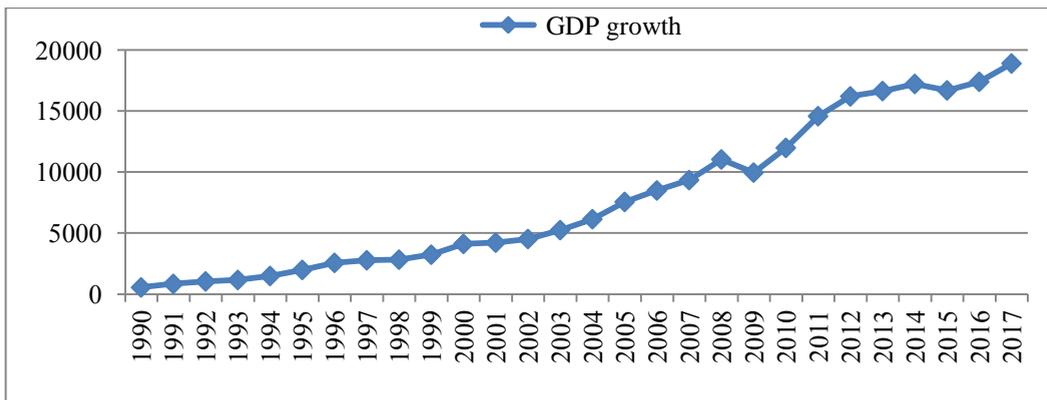
Fig 2. Evolution of currency ratio and demand deposits ratio in Algeria during the period 1990-2017



Source: World Bank database & National Bureau of Statistics in Algeria.

The figure shows that the components of the M1 (includes cash & checking deposits or currency & demand deposits) had the same percentage of the monetary mass from 1990 until 2004 where liquidity rates outside the banking system began to decline to about 30 % of the volume of M1, in return, demand deposits raised and maintained that rise until 2016, when currency becomes around 48 % and the demand deposits becomes around 52 %.

Fig 3. Evolution of GDP



Source: World Bank database & National Bureau of Statistics in Algeria.

GDP is one of the most important macroeconomic indicators that reflect the effectiveness of economic performance because it reflects the sum of gross value added by resident economic agents plus any product taxes minus all aids not included in the value of the products. Through the **Fig 3** GDP increased during the years of study at a constant rate except for the years 2009 and 2015 Which experienced a slight decline due to the global financial crisis in 2008 and the oil crisis in 2014 especially since the Algerian economy is one of the global economies being affected by international variables related to the hydrocarbon market.

The empirical results of informal economy based on (SCR) Simple Currency Ratio are presented in Table 2 & 3.

Table 2. Simplified explanation of calculation

	C	D	K= C/D	I C	L C	V= GDP/M1	IE = IC * V	IE(%) = IE/PG D
2007	1284,5	2949,10	0,44	0,00	1284,50	2,21	0,00	0,00
2017	4716,9	5549,19	0,85	2299,9	2416,99	1,84	4235,6	22,40

Source: own calculation.

C: Currency in circulation , **D:** demand deposits, **M1:**money & quasi money (C+D)

$$IC_t = D_t \times (K_t - K_{\min}) = 5549.19 \times (0.85 - 0.44) = 2299,92$$

$$LC_t = D_t \times K_{\min} = 5549.19 \times (0.44) = 2416,99$$

$$IE = IC \times V = 2299,92 \times 1,84 = 4235,65$$

Table 3. Simple currency ratio approach for the period 1990-2017

(base year = 2007)

(in billions of local currency)

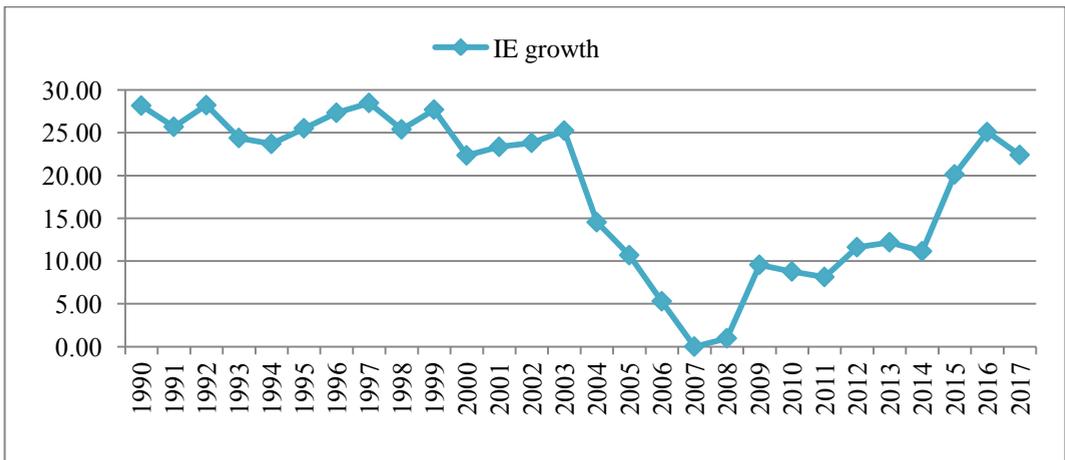
	C	D	K= C/D	GDP	Illegal currency	Legal currency	velocity of money	Informal economy	informal economy (% of
1990	134,94	135,16	1,00	555,80	76,07	58,87	2,06	156,53	28,16
1991	157,20	168,70	0,93	844,50	83,72	73,48	2,59	216,95	25,69
1992	184,85	184,85	1,00	1048,20	104,3	80,51	2,84	295,82	28,22
1993	211,31	235,19	0,90	1166,00	108,8	102,44	2,61	284,31	24,38
1994	222,99	253,01	0,88	1491,50	112,7	110,20	3,13	353,42	23,70
1995	249,77	269,33	0,93	1990,60	132,4	117,31	3,83	507,95	25,52
1996	290,88	298,22	0,98	2570,00	160,9	129,89	4,36	702,33	27,33
1997	337,62	335,18	1,01	2780,20	191,6	145,99	4,13	791,87	28,48
1998	390,80	422,90	0,92	2830,50	206,6	184,20	3,48	718,68	25,39
1999	439,50	446,00	0,99	3238,20	245,2	194,26	3,66	896,83	27,70
2000	478,10	563,30	0,85	4123,51	232,7	245,35	3,96	921,60	22,35
2001	577,20	661,30	0,87	4227,11	289,1	288,03	3,41	986,95	23,35
2002	664,70	751,60	0,88	4522,77	337,3	327,36	3,19	1077,24	23,82
2003	781,40	849,00	0,92	5252,32	411,6	369,79	3,22	1326,01	25,25
2004	874,30	1286,20	0,68	6149,12	314,0	560,21	2,85	893,94	14,54
2005	921,00	1516,50	0,61	7561,98	260,4	660,52	3,10	808,10	10,69

2006	1081,40	2096,40	0,52	8501,64	168,3	913,10	2,68	450,25	5,30
2007	1284,50	2949,10	0,44	9352,89	0,00	1284,5	2,21	0,00	0,00
2008	1540,00	3424,90	0,45	11043,70	48,26	1491,7	2,22	107,35	0,97
2009	1829,40	3114,80	0,59	9968,03	472,7	1356,6	2,02	953,07	9,56
2010	2098,60	3657,80	0,57	11991,56	505,4	1593,1	2,08	1052,88	8,78
2011	2571,50	4570,20	0,56	14588,97	580,9	1990,5	2,04	1186,69	8,13
2012	2952,30	4729,20	0,62	16209,60	892,4	2059,8	2,11	1883,29	11,62
2013	3204,00	5045,80	0,63	16647,92	1006,	2197,7	2,02	2030,63	12,20
2014	3658,90	5944,10	0,62	17228,60	1069,9	2588,99	1,79	1919,51	11,14
2015	4108,00	5153,10	0,80	16702,12	1863,53	2244,47	1,80	3360,83	20,12
2016	4497,20	4909,80	0,92	17406,83	2358,70	2138,50	1,85	4364,57	25,07
2017	4716,91	5549,19	0,85	18906,56	2299,92	2416,99	1,84	4235,65	22,40

Source: own calculation.

According to **Table 3** using of simple currency ratio approach, informal economic activities are not stable during the period of study, and we mentioned that the volume of activities related to the informal economy remained constant between 25 and 30 % during the period 1990-2004. During the period 2009-2017, informal economic activities follow an upward path reaching 25 % of official GDP at the end of 2016.

Fig 4. The ratio of informal economy to official economy for the period 1990-2017



Source: own calculation.

As a result, the period of 1990-2003, informal economic activities followed a slow upward trend until the end of 2003, in which the size of informal economy reaches the value of 25.25 % of official GDP, in the beginning of 2004, the amount of illegal activities as % of official GDP began to decrease until the end of 2007 which is the base year in which is supposed no informal economy to exist, the increase of illegal activities as % of official GDP during the period of 2003-2007 was the result of the financial situation improvement of the Algerian economy and the adoption of the development plans policies, by the beginning of the year 2000 and the end of 2003 results of the economic recovery plan began to appear, especially the period of 2001/2004 which contributed to the creation of many permanent and temporary jobs.

And for the last period, the ratio of informal economy to official economy increased slowly during 2008-2014, reaching about 12 % in the end of 2014, while the period 2015-2016 has seen a rapid rise in the ratio of the latter to reach 25 % by the end of 2016.

Note: the informal economy data for the years neighboring 2007 (base year) can't be considered in our analysis, because it was assumed equal to zero in the beginning of our study.

4.3 Causes of the Informal Economy in Algeria

Vito Tanzi pointed to the diversity of factors that contribute to the growth of the phenomenon and its ramifications, and was able to limit them in four main groups which are: **1) taxes, 2) regulations, 3) prohibitions, 4) bribery**, and he gave great importance to the weight of the taxes burden (Vito, March 2002, p. 2), economy of Algeria suffers from a large deficit due to tax evasion and avoid taxes. Empirical studies and theoretical models using data drawn from several countries conclude that in general the key factors that cause the informal economy growth are: taxes and social security contributions (SSC), composition of the labor force (e.g. unemployment and self employment rate) and the quality of governance (Roberto & Helen, 2008, p. 2543). Algeria is not very different from the rest of the world in terms of the reasons behind the growth of activities related to the informal economy, among the factors that contribute to it.

About the other causes (Bouanani, 2013/2014, p. 95) explained through her experimental study the main causes were derived through the MIMIC model which were as follows:

Unemployment, inflation rate, government expenditures and minimum wages are variables the most affecting the rise of the hidden economic activities size.

Consequently, the raise of inflation rate by 1 % implicates a rise of 0.42 % of the I.E. and the raise of unemployment by 1% implicates the rise of 0.97 % of the IE, a raise of government expenditures by one unit implicates a rise of (1.46E-08%) of the IE and the decrease of minimum wages by one unit implicates an increase of 0.07% of the IE. And basing on statistical tests, she found that inflation rate affect greatly the size of the IE by 0.84 %, while unemployment rate come in the second place by 0.83 %.

5. CONCLUSION

In this paper the researchers used simple currency ratio method (SCR) to take out the size of informality in Algeria from 1990 until 2017, With considering that 2007 represents the base year (the informal economy was assumed equal to zero), so velocity of money was the lowest during the period of 1990-2017.

To sum up, from the results of this paper the informal economy followed a slow upward trend during 1990-2003 where the size of informal economy reaches the percentage of 25.25 % of official GDP, at the end of 2003 the results reveal that the ratio of informal economy to the formal economy decreased until 2007, for which we have supposed that the subterranean economy does not exist, In the last years, the size of informal economy as ratio of formal economy begins to increase slowly during 2008-2014, reaching about 12 % by the end of 2014, while the period 2015-2016 has seen a rapid rise in the ratio of the latter to reach 25 % by the end of 2016.

Finally we conclude with the following suggesting :

1. To come closer to the informal economy size true value we need to use different measurement methods and to compare the results with

those issued from micro-informal economy research.

2. Monetary methods used in informal economy size measurement are not very reliable in countries with underdeveloped monetary system.
3. Because of the high percentage of informal economy in Algeria, the government should consider some procedures concerning taxation system and make use of electronic government and raise awareness of tax evasion risks on national economy.

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7. Appendices

Appendix 01. Macroeconomic Aggregates

	Currency in circulation C	Demand deposits (D)	M1	M2	GDP
1990	134,94	135,16	270,10	343,00	555,80
1991	157,20	168,70	325,90	416,19	844,50
1992	184,85	184,85	369,70	519,89	1048,20
1993	211,31	235,19	446,50	627,42	1166,00
1994	222,99	253,01	476,00	723,49	1491,50
1995	249,77	269,33	519,10	799,60	1990,60
1996	290,88	298,22	589,10	915,10	2570,00
1997	337,62	335,18	672,80	1085,49	2780,20
1998	390,80	422,90	813,70	1287,90	2830,50
1999	439,50	446,00	885,50	1463,40	3238,20
2000	478,10	563,30	1041,40	1659,20	4123,51
2001	577,20	661,30	1238,50	2473,50	4227,11
2002	664,70	751,60	1416,30	2901,50	4522,77
2003	781,40	849,00	1630,40	3354,30	5252,32
2004	874,30	1286,20	2160,50	3738,00	6149,12
2005	921,00	1516,50	2437,50	4070,40	7561,98
2006	1081,40	2096,40	3177,80	4827,60	8501,64
2007	1284,50	2949,10	4233,60	5994,60	9352,89
2008	1540,00	3424,90	4964,90	6955,90	11043,70
2009	1829,40	3114,80	4944,20	7173,10	9968,03
2010	2098,60	3657,80	5756,40	8280,70	11991,56
2011	2571,50	4570,20	7141,70	9929,20	14588,97

2012	2952,30	4729,20	7681,50	11015,10	16209,60
2013	3204,00	5045,80	8249,80	11941,50	16647,92
2014	3658,90	5944,10	9603,00	13686,70	17228,60
2015	4108,00	5153,10	9261,10	13704,50	16702,12
2016	4497,20	4909,80	9407,00	13816,30	17406,83
2017	4716,91	5549,19	10266,10	14974,60	18906,56

Source: - C , D National Bureau of Statistics.

- M1 , M2 Central Bank of Algeria.
- GDP World Bank database.