



The economic consequences of variations in oil prices on the conduct of the monetary policy of the Bank of Algeria

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Received: 01/10/2021	Accepted: 25/12/2021	Published: 31/12/2021
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Abstract :

The purpose of this article is to produce an economic analysis on the consequences of variations in oil prices on the monetary policy of the Bank of Algeria between 1980 and 2020. The results of this study highlight that there are several periods effectiveness of monetary policy in the face of oil shocks, while this policy is totally ineffective during other periods.

Keywords:

Algeria; Bank; oil shock; money supply; Monetary Policy.

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1. INTRODUCTION:

From independence, Algeria took full monetary and banking powers, with the aim of better management of their economy, in particular the requirement of the Bank of Algeria and financial intermediaries to operate their transactions within the framework of the new Law on Money and Credit (LMC) n ° 90-10 dated 14-04-1990, relating to the new requirements of the transition to the market economy. As a result, the Central Bank becomes primarily responsible for the conduct of monetary policy, which must ensure the role of regulator of monetary markets (BOISSIEU, 1998, p.51). The excess liquidity of money in circulation must be controlled and regulated, by the Central Bank, according to the needs of economic activity through monetary policy. It oscillates between “not too much” and “not too little” (EITONE, 1991, p.142). Thus, the Bank of Algeria is required to clearly define and quantify the objectives, instruments and transmission channels of its monetary policy. In general, the objectives are those of economic policy, simplified by the economist Kaldor in the form of a magic square (BRANA, 2003, p.83).

However, it was from 2003 that the rules of conduct of monetary policy were put in place and implemented by the Bank of Algeria. Among these rules, the adoption of an inflation target where its rate should not exceed 3%. The 2003 report of the Bank of Algeria explains this strategy: "the ultimate objective of monetary policy expressed in terms of medium-term price stability, namely inflation below 3%". This strategy follows the boom of the 2000s which involved a new phenomenon: monetary excess liquidity. Consequently, the fight against inflation and the control of price stability become the ultimate objective and the primary role of a central bank's monetary policy (CAPUL, 1994, p.37).

The empirical literature (JD Hamilton & Herrera, 2001; SPA Brown & Yucel, 2002) has shown that the effects of oil price volatility vary considerably from country to country depending on the current state of a country economy: if the economy is a net importer or exporter of oil, the exchange rate regime and the monetary policy framework and its transmission channels. In this context, the latter element refers to the mechanism by which the effects of changes in interest rates are felt throughout the economy and even on the rate of inflation. This is a complex process and there is an element of uncertainty about when this influence is exerted and about the relative importance of certain influencing relationships at play (Bank of Canada, 2012).

Several studies have focused on the role of macroeconomic policies in the management of oil shocks (evaluation of the reaction of macroeconomic policies to

shocks). Indeed, these are considered to be stabilization policies that can help economies cushion shocks and boost activity. Nevertheless, oil shocks increase the risk of errors in these policies, especially when the reaction function of monetary policy relies on the underlying inflation target. Indeed, if the monetary authorities focus only on cushioning the recessionary effects of the oil shock, this risks fueling domestic inflation. Conversely, a policy aimed at neutralizing any effect of the shock on the price level will lead to a reduction in economic activity while increasing unemployment. Central banks therefore find themselves stuck between two alternatives and it becomes difficult to develop long-term monetary strategies. Thus, the problematic is as follows:

What are the economic consequences of variations in oil prices on the conduct of the Bank's monetary policy?

To answer it, we will deal with the evolution of Algerian monetary policy between 1980 and 2020, according to the evolution of oil prices (oil shock, positive and negative price trends). This development includes the pre-inflation and inflation-targeting monetary policy regimes. In addition, it discusses macroeconomic variables linked to monetary policy in Algeria.

2. The period (1986-1996): negative oil shock:

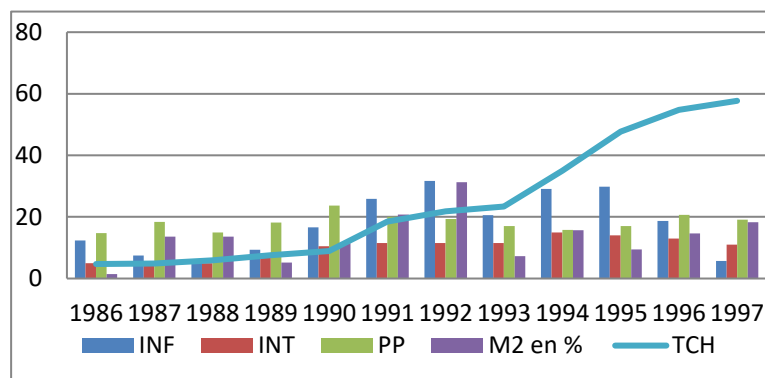
From 1980 to 1985, monetary policy depended on the interventionist mode of financing the economy. This period was thus characterized by the passivity of monetary policy in terms of controlling monetary stability, which resulted in interest rates that were both low and rigid, which prompted the Algerian monetary authorities to systematically resort to the creation of money and to external indebtedness. Consequently, the growth of the money supply (M2) was on average 18%, the level of inflation was high (14% in 1981), while the exchange rate of the dinar against the dollar moved within a range between 3.83 DA and 5.02 DA. The dinar therefore remained relatively stable during this period.

- **M2 money supply:** the fall in oil prices by 46% in 1986 revealed the dependence and fragility of a system built on the performance of the hydrocarbon sector alone. The overall budget deficit had recorded a record level relative to Gross Domestic Product at 13% in 1986 and 13.7% in 1988, financed mainly by monetary creation. The expansion of the broad money supply M2 recorded an increase of 13.6% in 1988 against 1.4% in 1986. From 1989, year of entry into application of the first stand-by, a significant increase in the rate of growth of the money supply M2 was recorded, this rate rose from 5.18% in 1989 to 31.27% in 1992. This increase amounts to the fall in oil prices between 1990 and 1992 (from 23.68 dollars / barrel to 19.02 dollars / barrel) pushing the authorities to return

to inflationary monetary management. The implementation of the SAP (1994-1998) required rigorous financial planning, in return for the resources provided.

- increased at the end of 1995 to 9.46% only then to 18.25% in 1997.

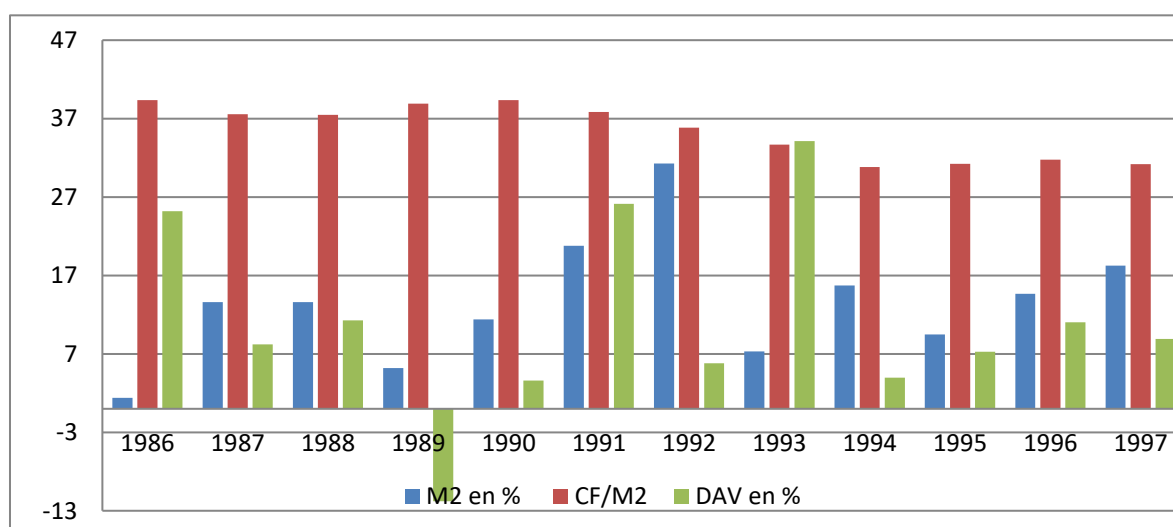
Figure N°01: Evolution of monetary indicators and oil prices over the period 1986-1997



Source: Produced by the authors from World Bank and Bank of Algeria data

Demand deposits in banks showed a converging trend, after a fall in 1989 of 11.8%, a strong increase was recorded in 1991 and 1993, that is to say a rate of 26.11% and 34.14% respectively. Cash holdings, expressed as the ratio of currency in circulation to money supply (M2), shows a downward trend. This ratio fell from 38.9% in 1989 to 33.8% in 1993. The same trend seems to be confirmed until the end of 1997, the ratio stabilized at the end of each of these sub-periods at 31%.

Figure N°02: Evolution of M2 money supply, sight deposits and the ratio of currency in circulation in% between 1986-1997



Source: Produced by the authors from World Bank and Bank of Algeria data

- **Inflation:** following the shock of 1986, the budget deficit represented about 10% of the GDP and the only monetary financing of the Central Bank, about 8% of the GDP.

In an economy where creeping inflation is embedded, this did not help to relieve inflationary pressures, on the contrary, over the period November 1985-November 1986, the consumer price index increased by 14.4%. Potential economic development promises to be quite difficult: in the short term, real GDP growth (at constant 1984 prices) was practically halted in 1986 while investment fell by 25% and imports by 27.6%. The budget balance, strongly compromised, could not do without recourse to large advances from the Central Bank (23.5 billion DA against 1 billion only in 1985).

This has contributed to exacerbating inflationary trends, with the inflation rate now standing above 10% per year. Nevertheless, as soon as the price liberalization process started in 1989, and the strong devaluation of the Algerian dinar that took place to counter the deterioration in the terms of trade which led to an increase in the price of imported products, the rate of inflation fell from 9.30% in 1989 to 25.88% in 1991 to reach a peak of 31.7 in 1992.

This led to a change in monetary policy from an expansionary one to a restrictive one because of the negative effects of inflation which reached its highest level and the shift to use indirect monetary policy instruments, including money market operations. Following this, the Algerian authorities again turned to the IMF and the World Bank in 1994 for a stabilization program.

The new terms of the 1994 standby will lead to an increase in the inflation rate. Inflation, which had hitherto been suppressed, thus experienced a surge, its rate reaching 29.7% in 1995. But it soon fell to 18.67% at the end of 1996 to stabilize around 5% in 1997. At the same time, price liberalization has taken place significantly, reducing the inflation rate to less than 10% after it reached 29.7% in 1995.

- **Discount rate:** what distinguishes the discount rate, after the negative oil shock of 1986, is their upward trend, going from 5% in 1986 to 15% in 1994, the date of the launch of the standby with the IMF. However, as soon as inflationary pressures began to fall from 29% in 1995 to less than 6% in 1997, the monetary authorities had gradually reduced the rediscount rate allowing the latter to be more outstanding. It reached 11% in 1997.

- **The exchange rate:** in a context of a planned economy, Algeria has experienced an administered exchange rate policy and a priori exchange control; from 1974, the dinar was pegged to a basket of currencies in which the dollar occupied an important place, corresponding to its place in hydrocarbon export earnings; the central bank allocated

foreign exchange through an import licensing mechanism. Following the negative oil shock of 1986, the dinar experienced a gradual slide, it is a series of disguised devaluations, operated within the framework of the quotation and that, according to the economic situation.

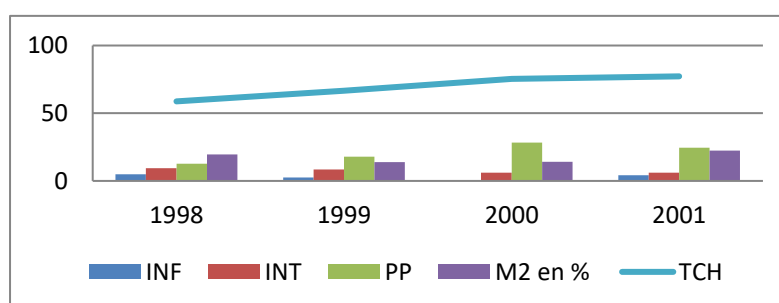
A first frank devaluation will take place at the end of September 1991, as an essential measure of the standby of 1991, to put an end to the inflationary expectations induced by the slide of the dinar. It brings the average value of the dollar from 8.95 DA in 1990 to 18.5 DA in 1991 and to 23.34 DA in 1993. Moreover, with the implementation of the SAP (1994-1998), the monetary policy has targeted the dinar exchange rate to reduce inflationary pressures. Thus, a new devaluation occurs (50.17%) having for object a gradual adjustment of the real value of the Algerian dinar.

3. The period (1998-2001): Unfavorable evolution of oil prices:

In 1998, the oil market experienced another crisis which again resulted in an imbalance of supply and demand. Oil prices fell sharply by 33% and hit less than \$ 10 a barrel. The impact of this decline materialized in a large overall deficit in the balance of payments again eroding foreign exchange reserves despite adjustment programs. Strict measures to balance the public accounts (non-consumption of part of the capital budget, etc.) and the necessary correction of the exchange rate made it possible to balance the budget in 1999.

- **M2 money supply:** analysis of the monetary situation shows that after having declined in 1999 by 5.6 percentage points (the growth rate of the broad money supply M2 starts to rise again from the year 2000, it goes from 14.13% in 2000 to 22.3% in 2001.

Figure N°03: Evolution of monetary indicators and oil prices over the period 1998-2001

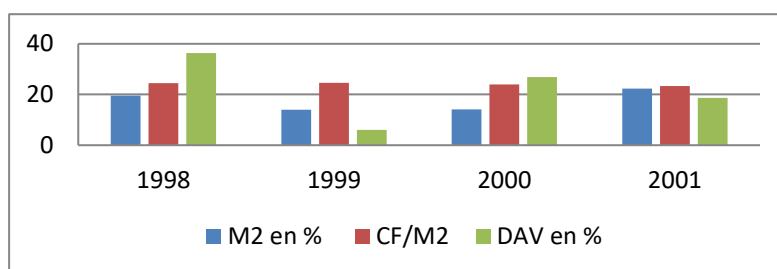


Source: Produced by the authors from World Bank and Bank of Algeria data

Likewise, despite the external shock, the relative share of currency in circulation in M2 money supply remains stable (24% on average). Regarding sight deposits, they suffered

a significant drop to 30% in 1999 followed by an increase of 26.9% and 18.7% in 2000 and 2001 respectively. The expansion of monetary liquidity, since 2001, stems from the increased evolution of the aggregate net foreign assets which emerges since this year as the almost sole source of monetary creation by the banking system, as its domestic assets dwindle net.

Figure N°04: Evolution of M2 money supply, sight deposits and the ratio of currency in circulation in% between 1998-2001



Source: Produced by the authors from World Bank and Bank of Algeria data

- **Inflation:** in 1998, the end of the structural adjustment program allowed the inflation rate to stabilize around 5% then 2.64% in 1999 and again 0.34% in 2000. In 2001, following the context of excess liquidity that characterized the banking system, the inflation rate soared to 4.22%.

- **The discount rate:** the rediscount rate, which stood at 9.5% in 1998, has since been gradually reduced to 6% in 2000.

- **The exchange rate:** after the external shock of 1998-1999, foreign exchange reserves fell, which led to a depreciation of the dinar exchange rate. This depreciation continued until the beginning of 2001 when it reached 77.21 dollars / dinar against 58.74 dollars / dinar in 1998, ie a depreciation of 31.46% of the value of the dinar.

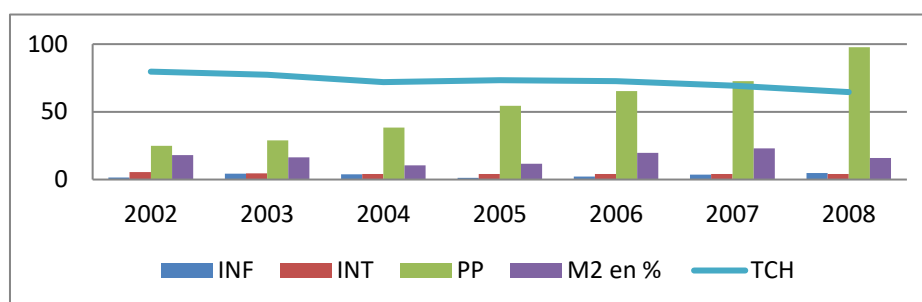
4. The period (2002-2008): Favorable evolution of oil prices

The 2001-2008 period represents a turnaround in monetary policy since the authorities adopted an expansionary policy coinciding with the application of the Economic Recovery Support Program which runs from April 2001 to April 2004.

- **M2 money supply:** analysis of the monetary situation shows a sharp increase in the money supply, driven mainly by the strong expansion of the aggregate net foreign assets. Indeed, net foreign assets have exceeded monetary and quasi-monetary liquidity in the national economy since 2005. Nevertheless, this upward character of the pace of M2

expansion has been somewhat attenuated by the extent of the early repayment of the external debt between 2005 and 2006.

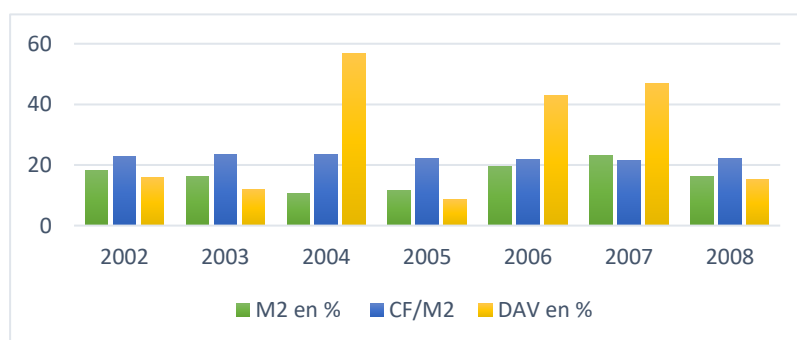
Figure N°05: Evolution of monetary indicators and oil prices over the period 2002-2008



Source: Produced by the authors from World Bank and Bank of Algeria data

Likewise, the money supply increased by 16.04% in 2008, i.e. at a slower pace than the growth rates of 2007 and 2006, which were 23.09% and 19.64% respectively fiat money / M2 remained stable at around 23% until 2004. After registering a downward trend (2005-2007), it increased slightly in 2008, going from 21.4% at the end of 2007 to 22.1% at the end of 2008. Demand deposits, for their part, have seen inconsistent trends. In fact, after a downward trend, sight deposits experienced a surge, ie an increase of 56% in 2004 against 15% and 12% in 2002 and 2003 respectively.

Figure N°06: Evolution of M2 money supply, sight deposits and the ratio of currency in circulation in% between 2002-2008



Source: Produced by the authors from World Bank and Bank of Algeria data

- **Inflation:** faced with the excess liquidity in the money market which appeared at the beginning of the same year, the monetary authorities have strengthened the indirect instruments of monetary policy. From the compulsory reserve (reactivated from February

2001), to the recovery of liquidity (introduced in April 2002) and up to the interest-bearing deposit facility (introduced in June 2005), the major concern was to absorb the excess liquidity in the interbank money market to prevent a resurgence of inflation. This made it possible to control the inflation rate around the announced target (3%), including by 2008, year of sharp rise in world prices for raw materials and food products.

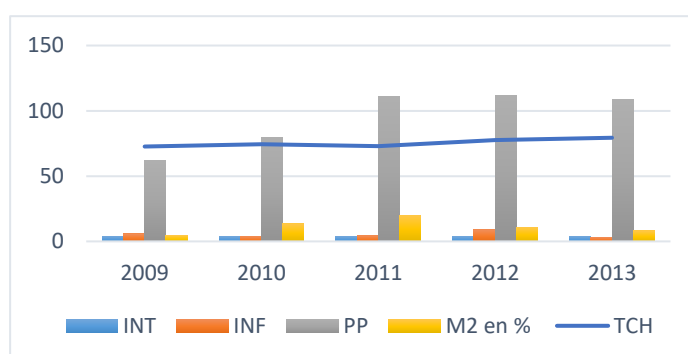
- **Discount rate:** the rediscount rate continued to decline until 2008. This rate therefore fell from 5.5% to 4.5%, ie a historically low level and lower than that of 1986. This reduction corresponds to an easing of monetary policy corresponding to a consolidation of macro-financial stability, after the reduction of half a point of the rediscount rate in 2002. In 2004, it was further reduced by half a point and remains at this rate until 2008.

- **Exchange rate:** since 2003 the exchange rate has recorded a gradual appreciation of the dinar against the dollar. The good behavior of the differential in the level of inflation with those of the main partner countries has made it possible to stabilize the real effective exchange rate at its fundamental equilibrium level. The price rose from 79.7 dinars per dollar on average in 2002 to 64.6 dinars per dollar on average in 2008, ie an appreciation of 19% over the period.

5. The period (2009-2013): The negative oil shock :

The year 2009, under the effect of the external shock inherent in the severe global economic crisis, was characterized by moderate growth rates of money aggregates.

Figure N°07: Evolution of monetary indicators and oil prices over the period
2009-2013



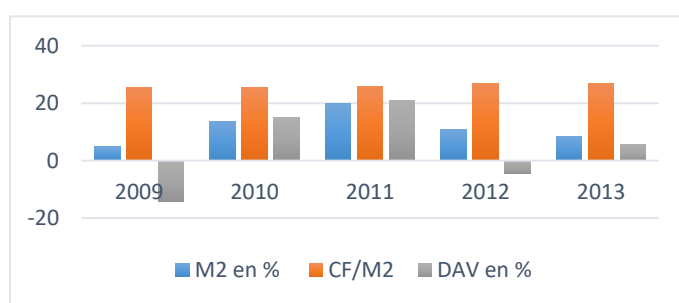
Source: Produced by the authors from World Bank and Bank of Algeria data

- **M2 money supply:** 2009 saw weak monetary growth (4.8%) as well as a drop in demand deposits of around 14.3% compared to 2008. This drop is directly attributed to the fall in oil revenues which significantly affected the deposits of public banks.

Nevertheless, despite this relative contraction, the year 2010 was marked by the return to monetary expansion, but at a rate lower than the high rate of the years 2005 to 2007, going from an increase of 13.5% in 2010 to 19.9% in 2011. Likewise, sight deposits in banks increased by 21% against 14.9% in 2010.

Until 2013, the expansion of the money supply was closely correlated with the price level hydrocarbons as shown in recent years by the evolution of the rate of monetary creation within the meaning of M2. In addition, the fiat currency in circulation continued to grow significantly, its share in the money supply reached 26.8% in 2013 against 25.5% in 2009, a sign of the existence and persistence of demand for related cash mainly to the phenomenon of informal market expansion and hoarding.

Figure N°08: Evolution of M2 money supply, sight deposits and the ratio of currency in circulation in% between 2009-2013



Source: Produced by the authors from World Bank and Bank of Algeria data

- **Inflation:** in terms of inflation, its rate rose between 2009 and 2012, while it fell almost everywhere in developed countries, or even reached negative rates, especially in Algeria's main trading partner countries. The determinants of inflation have changed, as endogenous inflation in Algeria has taken over from imported inflation, in a context of weak growth in the money supply. It was therefore the increases in the prices of food products, and especially fresh agricultural products, which generated the bulk of the increase in the price index.

The inflation rate nevertheless remains within the announced target (3 to 4%), except in 2012. Despite the deceleration in the rate of expansion of the money supply, the year was marked by a peak in the inflation rate (8.89%), namely the historically highest level of the last fifteen years.

- **The discount rate:** between 2009 and 2013, the discount rate policy remained unchanged. However, prior to 2004, the policy rate was found to have a significant impact on bank lending and savings rates. In the future, excess liquidity conditions are

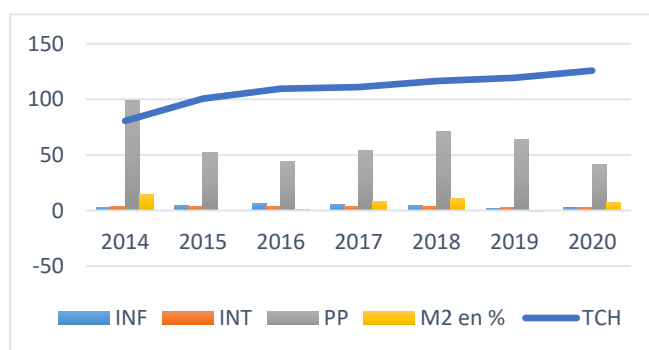
expected to turn into structural refinancing needs, offering the BA the opportunity to re-establish its control over domestic liquidity conditions and short-term interest rates.

- **The exchange rate:** as for the dinar rate over the period 2009-2013, it depreciated on average, going from 72 dollars / dinar to 79 dollars / dinar. Note that in 2011, the price of the dinar appreciated slightly compared to 2010 by 1.4%. This performance is due to the increase in export revenues from hydrocarbons which, thanks to the rise in prices on the international market (110.94 dollars / barrel against 79.63 dollars / barrel in 2010) increased from 74.38 dollars / dinar in 2010 to 72.94 dollars / dinar in 2011. This appreciation is the second after that of 2006-2008 which followed a depreciation of 8.06% in 2009, a year of shock. Large-scale external for the Algerian economy, judging by the fall in the price of oil (-35.77%).

6. The period (2014-2020): The negative oil shock :

In 2014, the price of a barrel began to slide by more than 50% (the IMF, 2015) reaching its lowest level since the beginning of 2009. The country is thus in the midst of a crisis: collapse in the value of exports, fall in revenues oil companies, a very large budget deficit and a sharp drop in the revenue regulation fund.

Figure N°09: Evolution of monetary indicators and oil prices over the period 2014-2020



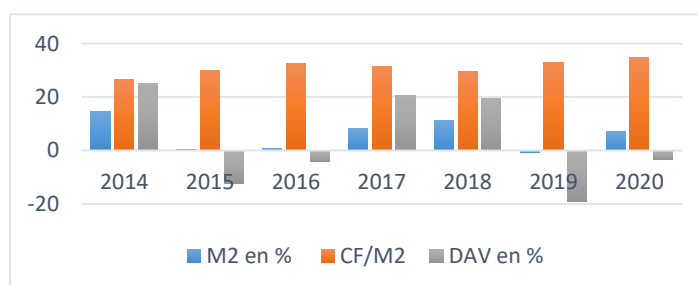
Source: Produced by the authors from World Bank and Bank of Algeria data

- **M2 money supply:** in the monetary sphere, the negative oil shock of 2014 marked a turning point in the evolution of certain aggregates compared to the long period 2001-2014, characterized by the gradual reduction in excess liquidity banking and, correlatively, less recourse to its absorption in the context of the conduct of monetary policy. Thus, the growth of the broad money supply M2 was insignificant or almost zero in 2015 (0.29%) as in 2016 (0.81%), then became positive in 2017 at 8.4% and 11.1% in 2017 and 2018 respectively.

This increase is mainly due to the increase in sight deposits in banks (20.5% against -4.14% in 2016 and -12.38% in 2015), in correlation, in particular, with the repayment, speak Treasury, of part of its debt to the national hydrocarbon company, following the implementation of unconventional financing. The expansion continues in 2020 at 7.12% after registering a decline of 0.75% at the end of 2019 under the impact of the economic crisis caused by the COVID-19 pandemic.

That same year saw a significant drop in liquidity. Indeed, the completion of the monetary financing program of the Bank of Algeria (2017-2019), combined with the withdrawal of liquidity in the accounts of public enterprises to finance the budget deficit and the increase in bank reserve requirement rates from 4% in January 2018 to 10% in the summer of 2019, led to a decrease in bank deposits included in the currency in broad sense M2 (the World Bank, 2020), they fell by 19.23% and 3.22% in 2019 and 2020 respectively against 19.36% in 2018, i.e. more than five points of difference compared to 2015 and 2009.

Figure N°10: Evolution of M2 money supply, sight deposits and the ratio of currency in circulation in% between 2014-2020



Source: Produced by the authors from World Bank and Bank of Algeria data

From the point of view of the components of the money supply, despite the sharp drop in the money supply, currency circulation recorded an increase of 9.5% in 2015 (the Bank of Algeria) and represents 30% of the money supply against 26.7% only in 2014. Despite a decrease of two points in 2018, the volume of fiat money in the money supply remains significant and the trend increase in the share relative fiat currency in M2 continued to reach 31.5% in 2017 and 34.73% in 2020. This indicates that a significant part of the savings of economic agents (between 1500 and 2000 billion dinars) is hoarded and out of banking circuits.

- **Inflation:** in terms of inflation and after its return, in 2013, to the target rate set by the Currency and Credit Council, its rate started to rise again, to stand at 4.78% in 2015,

against 2.91% in 2014 (3.25% in 2013), then it rose to 6.39% in 2016. The trend in 2017 was to decelerate, the inflation rate slowed to 5 , 6% in 2017, 4.26% in 2018 and 1.95% in 2019.

Unlike the period (2014-2015) when the inflation rate accelerated despite the weakness of monetary expansion, the decline of inflation that characterized the years 2017 and 2018 took place against a backdrop of a significant upturn in monetary expansion (8.4% in 2017 and 11% in 2018) (BA, 2018).

These atypical developments can be explained, in large part, by the frequent occurrence of unreasonable inflationary expectations, favored by the persistence of imperfections in regulation and dominant positions in most consumer goods markets. Inflation moderated in 2019 thanks to stable prices for food, transport, real estate and communications.

The moderate level of inflation recorded in 2020, although it is slightly higher than that recorded in 2019, remains in line with the objectives of monetary policy, it reached 2.4% at the end of December 2020 against 1.9% in 2019.

- **Discount rate:** Between 2014-2015, the key rate of the Bank of Algeria remained constant (4%), the interest rate channel remained silent and not very responsive to changes in monetary conditions, due to excess liquidity and insufficient development of the financial system (IMF, 2016).

A new rediscount rate (2016) of 3.5%, the previous one (4%) having been reduced by half a percentage point. Through this shift, the monetary authority intends to improve the financing of investments, within a prudential framework of controlling inflationary surges. During the second half of 2017, the rediscount was replaced by the implementation of liquidity injection open-market operations and the introduction of a key rate (interest rate for open-market operations at seven (07) days, fixed at 3.5%, targeted as the main channel for transmitting monetary policy).

In 2019 and 2020, the Bank of Algeria decided to lower the key rate applicable to the main refinancing operations, to set it at 3%, this decision aimed to free up additional liquidity margins for the banking system, and to make additional means of support for financing the national economy available to banks and financial institutions at a reasonable cost.

- **The exchange rate:** as for the evolution of the exchange rate, from June 2014, date of the occurrence of the external shock, until 2016, the depreciation of the dinar against the dollar was of the order of 35% (monthly average). This action was taken with the aim of moderating import demand and reducing the pressure on reserves (the Bank of Algeria).

Thus, the exchange rate having served as the first shock absorber as an adjustment lever in the face of the effects of the crisis. The price of the dinar stabilizes between 2016 and 2017 around 110 dinars / dollar, then depreciates slightly, going from 116.6 dinars / dollar in 2018 to 125.82 dinars / dollar in 2020. The purpose of this intervention is "to adjust the price of the dinar in relation to the movements of the main reference currencies, the dollar and the euro, explains the Bank of Algeria.

7. Conclusion:

The objective of this article is to analyze the reaction of the monetary indicators of the Algerian economy to fluctuations in oil prices, in the context of a global economy characterized by unpredictable and violent fluctuations in oil prices. By focusing on shocks related to oil prices, we have shown the sensitivity of the monetary sphere in Algeria based on the criteria quantitative. This large producer and exporter of oil is directly exposed to exogenous oil price shocks. Indeed, we have been able to demonstrate that a change in oil prices has a significant effect on monetary aggregates.

Like other sectors of the Algerian economy, the monetary sphere is strongly affected by the impact of oil shocks. During the planning period, one cannot speak of a monetary policy worthy of its name. Following the budget deficit caused by the oil shock of 1986, the country's authorities were led to adopt monetary reforms from 1990.

Consequently, the new monetary policy implemented took place in a context of volatility in hydrocarbon revenues. Nonetheless, monetary indicators remain vulnerable to the situation of the international oil market and fluctuations in its price, due to the Algerian economy's heavy dependence on revenues from hydrocarbon exports. Changes in the price of oil have thus emerged as a determining factor in the programming and adjustment of the conduct of monetary policy.

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