Journal of Business and Management Research, 8 (2015) 189-200
p-ISSN : 2356-5756 / e-ISSN: 2356-5764

www.knowledgejournals.com

Research article

Monetary policy's transmission channels in Tunisia: SVAR Model validation

Nidhal Mgadmi[a*], Zouhair Chrigui[b*]

[a] *Faculty of Law, Economics and Management of Jendouba, University of Jendouba, Tunisia, Faculty of Economic Sciences and Management of Tunis, University of sfax Tunisia.*
[b] *Faculty of Law, Economics and Management of Jendouba, University of Jendouba, Faculty of Economic Sciences and Management of Tunis, University of sfax Tunisia.*
**Corresponding authors: E-mail addresses: mgadmi_zina@yahoo.fr (Nidhal Mgadmi); chrigui.zouhair@gmail.com (Chrigui Zouhair)*

Abstract
In this work, we attempt to investigate and compare empirically the role played by different monetary policy transmission mechanism channels in transmitting the impulse of the case of Tunisia. The objective in this paper is to study the transmission of monetary policy transmission channels within a structural vector auto regression and a structural vector error correction model. From the impulse response functions and variance decompositions of forecast errors, we tried, firstly, to identify the possible transmission channels, Secondly, we have already studied in this work, the supply shock expressed by the gross domestic product deflator, the monetary shocks by the money market rate, the nominal exchange rate and the shocks to real balances on a sample from 1967 until 2005 for the case of Tunisia. The results state that this transmission is relatively credible for the two main real balances and is less sensitive to local and global events. In fact, this predicts, the change impact in the money supply on real indicators and the transmission channels of monetary policy.
Keywords: Monetary policy, Transmission channels, Monetary chocks, SVAR model.
Jel classification: E41, C5,C 51

1. Introduction

The interest rate channel's considered as the main mechanism for the monetary policy's transmission in the Keynesian model IS-LM. Thus, an expansionary monetary policy decreases the real interest rate and leads to a reduction in the real interest rate which boosts the investment and increase consequently the product. The nominal interest rate's variation in the short-run drives to the variation of the real interest rate both in the short and the long-run, this fact is explained by prices rigidity. Based on recent studies, Taylor (1995) showed how considerable is the effect of the interest rates on consumption and investment spending. However, this work has been criticized by Fenton and Murchison (2006) who underlined the failure of numerous empirical studies to demonstrate the significance of the interest rate's impact on the real activity. Moreover these authors favor another transmission mechanism which is the credit channel.

2. Literature Review

Hakkio (1992) led a systematic statistical analysis of the effects of financial variables on the real activity. The rate of funds in a predictive power on the real variables which exceeds (overtakes) that of the monetary aggregates M1 or M2. For them, the variations of this rate indicate the inflections of the monetary policy. The rate of funds is not only an indicator of the future real activity, but also that present according to the theorists of the Real Business Cycle. It is also an indicator of the tensions on the monetary policy. To make sure of it, in the first place, the authors test the reaction function, showing that the rate of funds is handled well by the authorities in answer to

the variations of the unemployment and the inflation. Secondly, they showed that this rate is little sensitive at the request of banking reserves, what lets think that his variations result from policies deliberated on the central bank.

Peersman and Smets (2003) made a multivariated analysis, using the VAR model interest rate, money supply, price, production manufacturer, exchange rate and price of raw materials for five big countries of the OECD (the United States, Japan, Germany, France and the United Kingdom). By calculating the answer of these variables to the innovations, he (it) showed that the shocks of the interest rate and the shocks on the currency (change) have well an influence on the activity, what would tend to confirm the model IS-LM with regard to theories of the real cycle.

Kashyap et al. (1992) analyzed empirically the channel (canal) of the credit for the case of the United States. They defined a called variable MIX equals to the sum of banks credits and some commercial papers. These authors verified that this relationship decreases in case of monetary contraction that is the bank credit is lower than the broadcast of the monetary paper. There is no neutrality of external financing for companies. The ratio MIX is used in the equation of investment of companies. So, the increase of credit engenders a decrease of the investment and the impact of the monetary policy is discerned by variables dummy in monetary contraction. These dummy variables were the object of the study of Romer and Romer (1989) for the case of France. Barran et al. (1997) used monthly data going of January, 1975 until September, 1992. These data are collected with YEWS and with the IMF (International Monetary Fund). The authors concluded that all the variables of the benchmark model are integrated by order one from the test of Phillips and Flight of steps (1988). Barran et al. (1997) verified that these variables are cointegrated at the threshold of the risk of 1 % for five countries. The estimation of the model VECM by the technique of the maximum of credibility is necessary for these authors to determine the cointegration relations between these variables in level. The authors fixed an optimal number of lags equal to twelve, following Sims (1988).

Barran et al. (1997) used impulsive functions to detect various shocks of standard deviations on residues. The authors fixed a horizon of 36 months contrary to Sims (1998) who held 48 months. According to these authors, the increase of the horizon engenders an extension of the reliable intervals for the impulsive response and a decrease of the reliability of the results of the answers. So, the authors adopted reliable intervals normalized by standard deviations.

We can explain the emergence of the current of the real cycle during the eighties by the relative failure of the neo-classic in the interpretation of the economic cycle. The neo-classic economists then tried to explain the economic cycle as a purely real phenomenon. Indeed, the current of the real cycle shows that a neo-classic growth model reproduces cyclic properties close to the reality to leave only technological hazards. So, the currency would have no influence on the exchange rate even in the short-run. Furthermore, Sims (1980) does not obtain the result according to which the currency causes in the sense of Granger (1969) the exchange rate within the framework of an autoregressive vectorial model integrating the nominal interest rate, what counters the results of the first works. Á leave the article of Sims, the works within the framework of the methodology the VAR are going to follow one another to try to confirm or to counter a monetary explanation of the economic fluctuations (Blanchard and Quah, on 1989).

3. Empirical evidence

We obtain our data from the Central Bank of Tunisia and the International Monetary Fund IMF for the period 1960 to 2013. Variables are: both monetary aggregates M1 and M2, deflated gross domestic product (GDPD), nominal exchange rate (NER) and the money market rate (MMR). The transmission of the monetary policy can be studied from both endogenous variables which are: both real cash in hand ((m1r=M1 / CPI) and (m2r=M2 / CPI)) and explanatory variables which are: the deflated gross domestic product, the nominal exchange rate and the money market rate.

To study, the transmission of the monetary policy in Tunisia we estimate both real cash in hand. Traditionally, the demand for money (M1 and M2) is supposed to depend on the volume of transactions, represented by the logarithm of the deflated GDP (GROSS DOMESTIC PRODUCT), the cost of opportunity of detention of M1 and M2. Empirically, the link between the speed of circulation and the cost of opportunity appears very clear throughout the seventies and eighty, and degrades only from 1989. Most of the studies led to the developing countries were based on this type of specification to plan the evolution of the monetary aggregate; Small and Porter (1989), Mehra (1991-1992), Feinman and Porter (1992) and, more recently, Duca (1995).

$$m_{hrt} = \left(\frac{M_h}{IPC} \right)_t = A\left(PIBD_t \right)^{\beta_1} \exp\left(TCN_t \right)^{\beta_2} \exp\left(TMM_t \right)^{\beta_3} \exp\left(\varepsilon_t \right) \ \forall h = 1,2$$

From the Ambler test and Mackinnon hypothesis (1985) and detect the dates of structural changes, we should linearize our theoretical model:

$$Lm_{krt} = \alpha + \beta_1 LGDPD_t + \beta_2 NER_t + \beta_3 MMR_t + \varepsilon_t$$

$$\alpha = Log(A)$$

α : indicates the precautionary motive.

Non explanatory variables have been illustrated in the error term ε_t. First, we test variables stationarity using the unit-root test of Perron (1997) which the results are presented in Table1.

Table 1: Perron Test *

	T-Statistics	Ruptures Dates	Critic Values	Lags number
Lm1r	-3.98371	1979	-5, 59	2
Lm2r	-4, 33363	1979	-5, 59	2
LGDPD	-3.46500	1972	-5, 59	2
MMR	-5.22951	1988	-5, 59	3
NER	-3.66734	1977	-5, 59	3

* Model with constant change and the slope, We used RATS; source: Estima.

The hypothesis H0, of the presence of unit root, is accepted at the level of 5 % for these various variables, which describe the policy of the monetary transmission. But, the optimal number of lags differs for these variables. The stationarity around a constant and around a trend is rejected. These results of conventional tests were not thus biased by a bad specification of the determinist component. The outcomes seem to confirm our intuition. Variables are still in first difference around a trend or around a constant with the existence of a break in the trend. Finally, we can judge that these variables are integrated by order one.

We can study the transmission of the monetary policy expressed by both real cash in hand by the models the VAR, which are $\Delta Lm_{ht}, \Delta GDPD_t, \Delta MMR_t$ and ΔNER_t The differences of the logarithm of the cash in hand of real transaction or the cash in hand of monetary savings and real transaction, the logarithm of the GDPD, the rate of money market and the nominal exchange rate. The long-term and short-term matrix of transaction of the policy appears as follows (* Indicates shocks significativity at the level of 5%) :

$$\Delta X_{1t} = C_{LT} \begin{pmatrix} \varepsilon_{Lm_{1t}} \\ \varepsilon_{LGDPD_t} \\ \varepsilon_{MMR} \\ \varepsilon_{NER} \end{pmatrix} = \begin{pmatrix} 0{,}095^* & 0 & 0 & 0 \\ -0{,}197 & 0{,}201^* & 0 & 0 \\ -0{,}059 & 0{,}0665^* & 0{,}072^* & 0 \\ -0{,}002 & -0{,}001 & -0{,}001 & 0{,}008^* \end{pmatrix} \begin{pmatrix} \varepsilon_{Lm_{ht}} \\ \varepsilon_{LGDPD_t} \\ \varepsilon_{MMR} \\ \varepsilon_{NER} \end{pmatrix}$$

$$\Delta X_{1t} = C_{CT} \begin{pmatrix} \varepsilon_{Lm_{1t}} \\ \varepsilon_{LGDPD_t} \\ \varepsilon_{MMR} \\ \varepsilon_{NER} \end{pmatrix} = \begin{pmatrix} 0{,}047^* & 0{,}038^* & 0{,}01 & 0{,}01 \\ -0{,}037^* & 0{,}048^* & -0{,}011 & -0{,}011 \\ -0{,}035 & 0{,}022 & 0{,}075^* & -0{,}011 \\ -0{,}002 & 0{,}001 & -0{,}001 & 0{,}007^* \end{pmatrix} \begin{pmatrix} \varepsilon_{Lm_{ht}} \\ \varepsilon_{LGDPD_t} \\ \varepsilon_{MMR} \\ \varepsilon_{NER} \end{pmatrix}$$

So, the contemporary and long-term matrix of the monetary savings demand and real transaction written below:

$$\Delta X_{2t} = C_{LT}\begin{pmatrix} \varepsilon_{Lm_{2t}} \\ \varepsilon_{LGDPD_t} \\ \varepsilon_{MMR} \\ \varepsilon_{NER} \end{pmatrix} = \begin{pmatrix} 0{,}098* & 0 & 0 & 0 \\ -0{,}06 & 0{,}275* & 0 & 0 \\ -0{,}027 & 0{,}086* & 0{,}075* & 0 \\ -0{,}002 & 0{,}0004 & -0{,}002 & 0{,}008* \end{pmatrix}\begin{pmatrix} \varepsilon_{Lm_{ht}} \\ \varepsilon_{LGDPD_t} \\ \varepsilon_{MMR} \\ \varepsilon_{NER} \end{pmatrix}$$

$$\Delta X_{2t} = C_{CT}\begin{pmatrix} \varepsilon_{Lm_{2t}} \\ \varepsilon_{LGDPD_t} \\ \varepsilon_{MMR} \\ \varepsilon_{NER} \end{pmatrix} = \begin{pmatrix} 0{,}065* & 0{,}028 & 0{,}002 & 0{,}018 \\ -0{,}014 & 0{,}059* & -0{,}011 & -0{,}01 \\ -0{,}018 & 0{,}035 & 0{,}077* & -0{,}01 \\ -0{,}002 & 0{,}002 & -0{,}001 & 0{,}0073* \end{pmatrix}\begin{pmatrix} \varepsilon_{Lm_{ht}} \\ \varepsilon_{LGDPD_t} \\ \varepsilon_{MMR} \\ \varepsilon_{NER} \end{pmatrix}$$

The estimation of the contemporary and long-term matrix by the procedure of Blanchard and Quah (1989), shows that the diagonal shocks are significant for the demands of real transaction and monetary savings and real transaction. On the other hand, the shocks of offer have a negative and not significant effect on both real cash in hand. This impact turns out contradictory with the monetarist theory where the increase of the gross internal production engenders an increase in the demand of the real cash in hand, according to Friedman (1956). We should analyze the monetary policy by four channels of transmission using the impulsive reactions functions and the decompositions of the anticipated variances of the shocks.

3.1 The credit channel

Using the reactions functions, we can identify the short-term impact of the shocks of monetary demands on the other variables. Graphics below represent the impulsive response functions to the shocks of the residues on three variables:

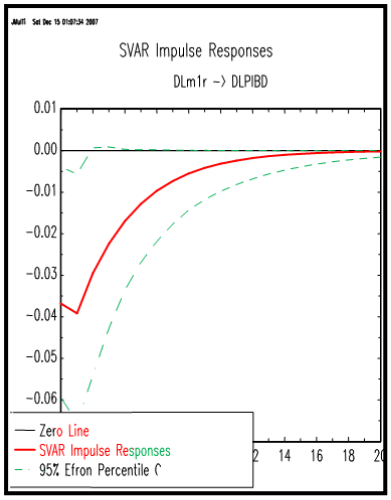

Figure1: ΔLGDPD response to Impulsional shock of ΔLm1r

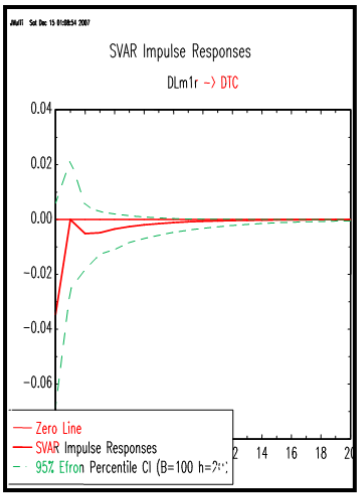

Figure 2: ΔNER response to impulsional shock of ΔLm1r

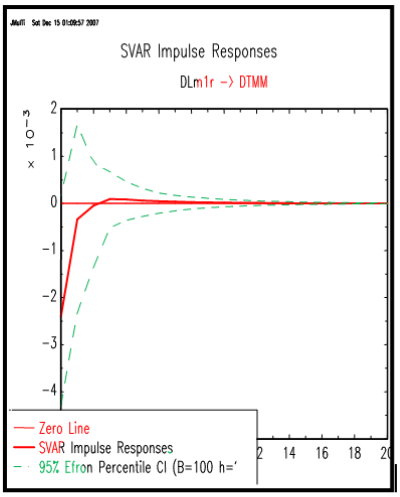

Figure 3: ΔMMR response to impulsional shock of ΔLm1r

Impulsional shock of Δ Lm1r

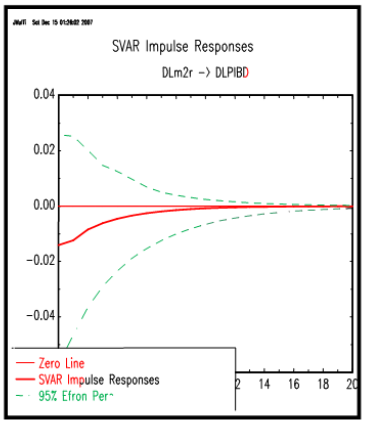

Figure 4: Δ LGDPD response to impulsional shocks of Δ Lm2r

impulsional shock of Δ Lm1r

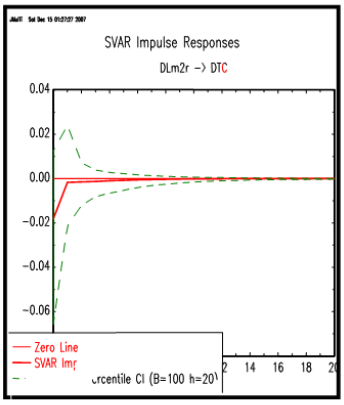

Figure 5: Δ NER response to impulsional shocks of Δ Lm2r

impulsional shock of Δ Lm1r

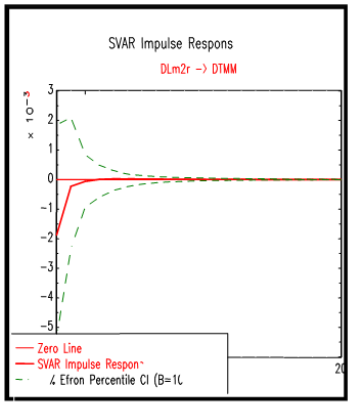

Figure 6: Δ MMR response to impulsional shocks of Δ Lm2r

3.2 Money market rate channel

We make use of the reactions functions of the interest rate residues for identifying the impact of the shocks of the rate of the money market on: the logarithm of the real cash in hand, the log of the deflated gross domestic product and the exchange rate, graphics below show the impulse responses to the shocks of the interest rate, concerning both real cash in hand Lm1r and Lm2r, national wealth and nominal exchange rate.

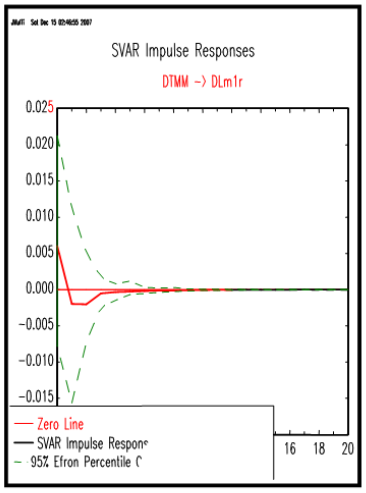

Figure 7: Δ Lm1r response to impulsional shock of Δ MMR

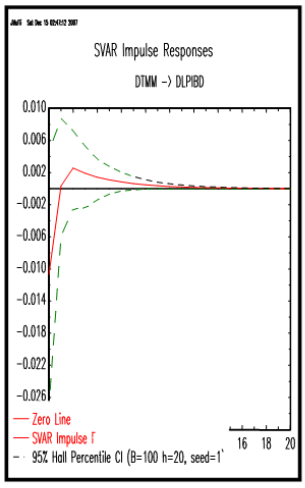

Figure 8: Δ LPIBD response to impulsional shock of Δ MMR

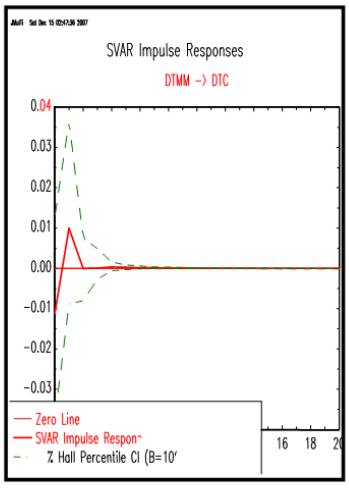

Figure 9: Δ NER response to impulsional shock of Δ MMR

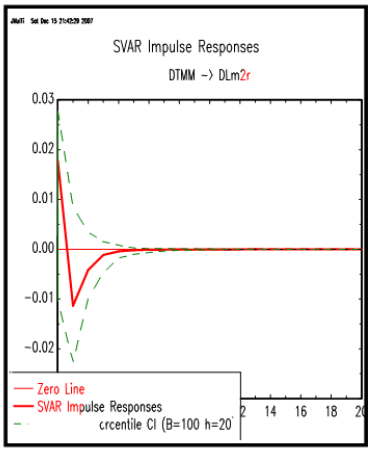

Figure 10: Δ Lm2r response to impulsional shocks of Δ MMR

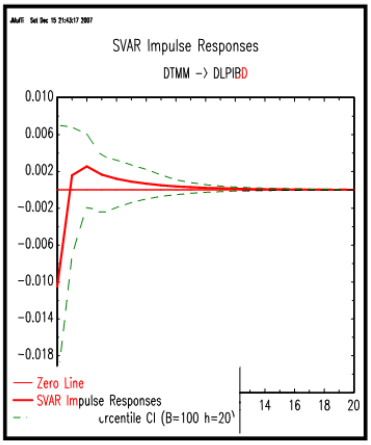

Figure 11: Δ LGDPD response to impulsional shocks of Δ MMR

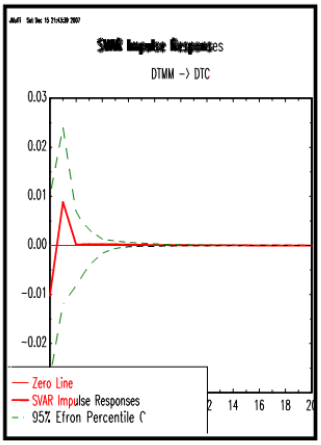

Figure 12: Δ NER response to impulsional shocks of Δ MMR

Within the structural VAR, the impact of the interest rate on the rest of variables is negligible. This effect is explained by the abstraction between the real and monetary spheres, because this rate balances the offer and the demand for money and not the rate of savings. These graphs are in accordance with the monetarist postulate where the national wealth came true independently of the monetary sphere. So, graphs below decompositions of the variance of the shocks of the monetary interest rate, allows us to supply an idea on the parts of these decompositions on both real cash in hand, national wealth and nominal exchange rate.

Table 2: Error variance decomposition for the interest rate

periodes	$\Delta Lm1r$	$\Delta LGDPD$	ΔMMR	ΔNER	$\Delta Lm2r$	$\Delta LGDPD$	ΔMMR	ΔNER
1	0.09	0.02	0.88	0.01	**0.06**	**0.07**	**0.86**	**0.01**
10	0.09	0.04	0.85	0.02	**0.06**	**0.07**	**0.85**	**0.02**
20	0.09	0.04	0.85	0.02	**0.06**	**0.07**	**0.85**	**0.02**

The residues variance decomposition of the interest rate on the rest of variables is very low. This decomposition is in accordance with the Friedman's theory thought where the monetary sphere has no influence on the national wealth in the long term. This thought of Friedman also asserts the neutrality, in the long term, of the change. Since, the balance rate of money market does not modify the production and even the exchange rate because of the exports of Tunisia, in this case, which are inelastic with compared to the exchange rate. This decomposition whether it is for the demand of transaction or monetary savings and real transaction represents itself as follows:

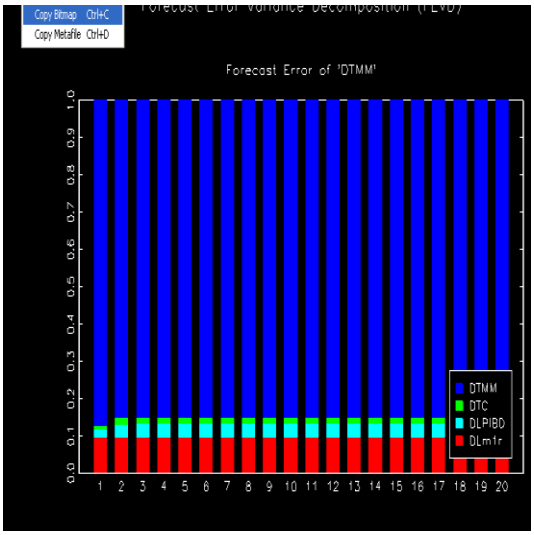

Figure 1: Anticipated variances decomposition of Δ MMR on variables

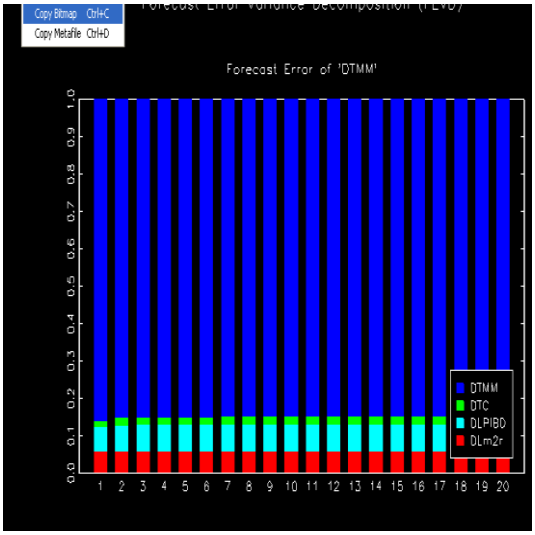

Figure 2: Anticipated variance decomposition of Δ MMR on variables

The graphics above show that the shocks of the monetary interest rate can improve both real cash in hand and especially cash in hand of transaction in the future. This observation is in accordance with the inter-temporal choice theory; the increase of the interest rate favors the savings to the detriment of the consumption. The accumulation of these savings revitalizes the production and the consumption. For that purpose, the increase of the interest rate increases the cash in hand of real transaction and also the savings, because equity prices or bonds fall and the speculators anticipate a rise in prices of these shares in the future.

3.3 The Gross Domestic Product Channel

We are making use of the responses functions and the decompositions of the variance to identify the impact of the shocks of supply on both real cash in hand, interest rate and nominal exchange rate. For that purpose, graphics below describe the reaction functions within the structural VAR:

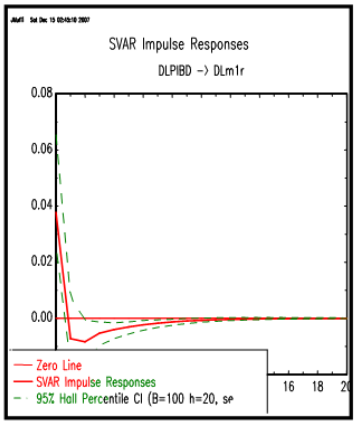

Figure 15: Δ Lm1r response to impulsional shock of Δ LGDPD

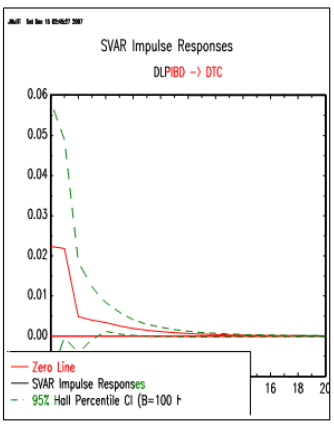

Figure 16: Δ TCN response to impulsional shock of Δ LGDPD

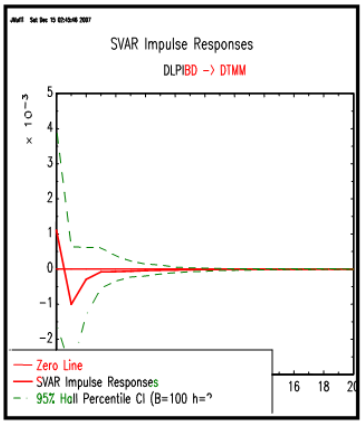

Figure 17: Δ MMR response impulsional shock of Δ LGDPD

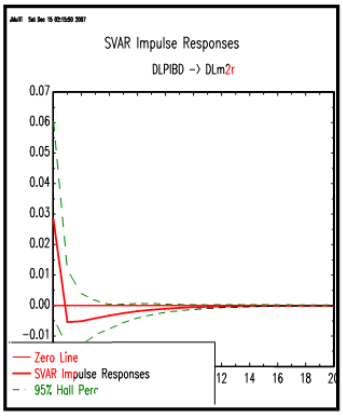

Figure 18: ΔLm2r response to impulsional shocks of ΔLGDPD

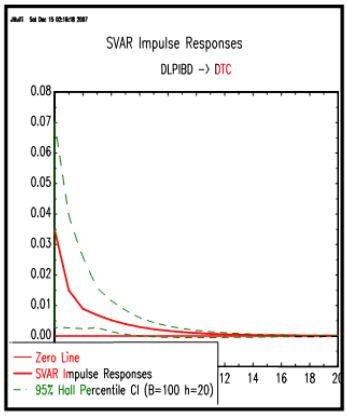

Figure 19: ΔNER response to impulsional shocks of ΔLGDPD

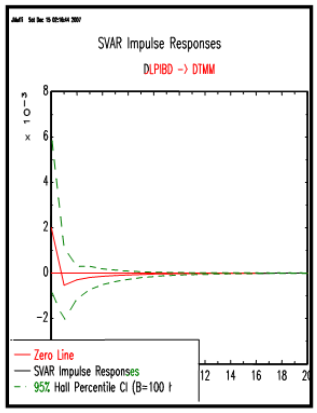

Figure 20: ΔMMR response to impulsional shocks of ΔLGDPD

The supply shock engenders, in the short term, an increase of the exchange which becomes weak by the time. Thus, this shock is neutral towards the monetary interest rate and both real cash in hand. We can anticipate from these reaction functions that the future contributions of those shocks besides variables are very low.

Table 3: Previsions errors variance decomposition of the supply shock

Periods	$\Delta Lm1r$	$\Delta LGDPD$	ΔMMR	ΔNER	$\Delta Lm2r$	$\Delta LGDPD$	ΔMMR	ΔNER
1	0.35	0.59	0.03	0.03	**0.05**	**0.89**	**0.03**	**0.03**
10	0.46	0.52	0.01	0.02	**0.05**	**0.93**	**0.01**	**0.02**
20	0.46	0.52	0.01	0.02	**0.05**	**0.93**	**0.01**	**0.02**

Using those tables we can conclude that the money in this context is neutral and exercises only intermediary role of exchange. The concept of money neutrality is of classic and neo-classic origin. So, Friedman postulates that the money is idle long-term even if it exercises an effect current assets. The money neutrality is due to the adaptive anticipation of Friedman. Besides, we can assert this neutrality by the weak part of the shock of offer on the cash of transaction. This shock influences positively the demand of real transaction. So, the impact of the shock of supply is unimportant for both rates. The weak variance of the supply shock contribution of the variance in the other variables is essentially explained by the strong dichotomy of the Tunisian economy. We can identify the part of every variable in the variance of the supply shock anticipated from these following two graphics

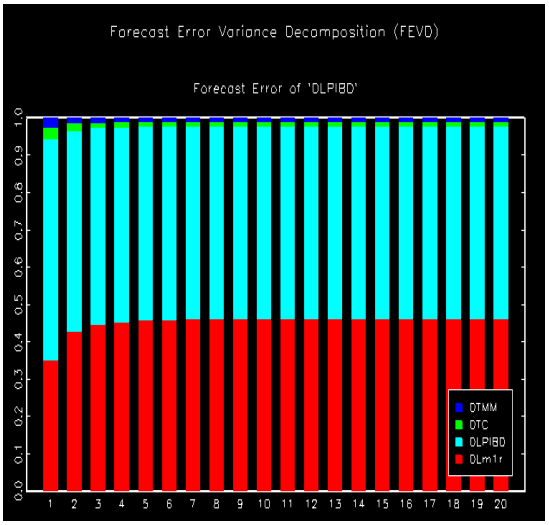

Figure 3: Anticipated variance decomposition of Δ LGDPD on variables

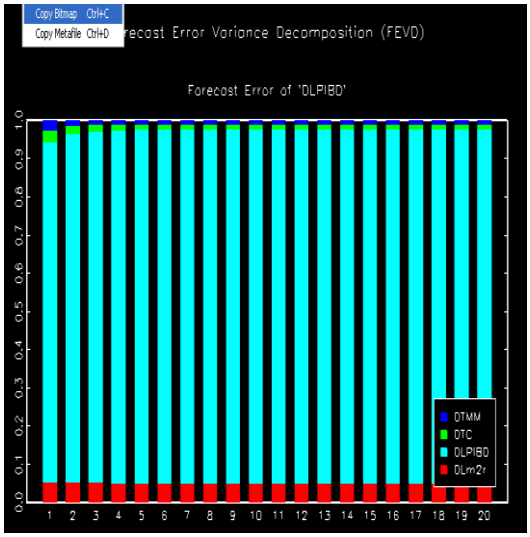

Figure 4 Anticipated variance decomposition of Δ LGDPD on variables

Both graphics are showing the high part of both real cash in hand and especially cash in hand of real transaction in the supply shock. However, in comparison with the monetarist theory where the production shock engenders an increase of the real cash in hand, the graphics show that the future responses of these shocks on both rates remain modest.

3.4 The nominal exchange rate channel

In a Mundelle-Fluming model, the nominal exchange rate has a positive impact on the economic growth. This impact is beneficial especially when, this rate will increase in an uncertain exchange regime. The increase of the exchange rate causes a depreciation of the national money compared to currencies. We attend a competitiveness of the prices taken advantage by Tunisia. This competitiveness leads towards an increase of the exports and the production. So, the weakness of the interest rate encourages the foreign investment and thus to increase the national demands for money. On the other hand, the real cash in hand decrease, because the increase in consumer price index engenders an increase of the inflation rate. The unique inconvenience of Mundelle-Fluming model is that this depreciation engenders a rise in prices of the imports. In this context, we shall use the functions (offices) of the reactions and the decompositions of the variance of forecasts of the shock of the nominal exchange rate to validate the determinist effect of this shock within the

structural VAR and later, we shall identify this long-term shock within a structural VECM.

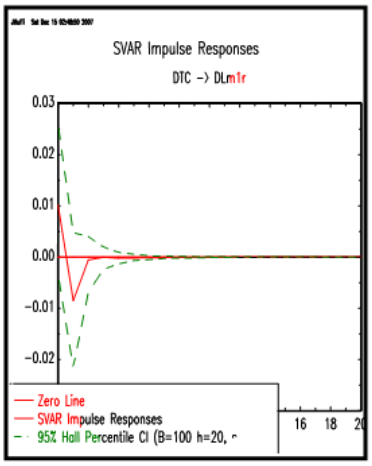

Figure 23: Δ Lm1r response to shock Δ NER

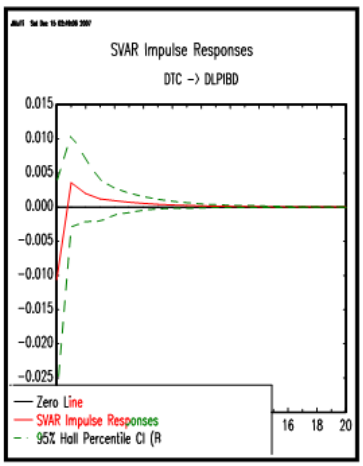

Figure 24: Δ LGDPD response to impulsional shock Δ NER

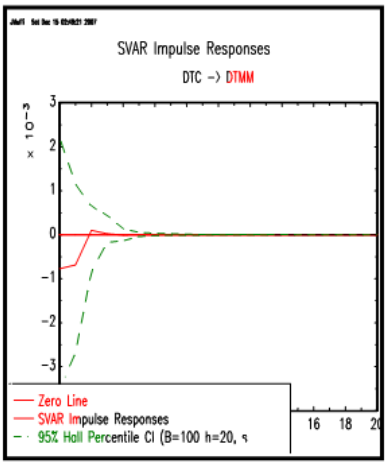

Figure 25: Δ MMR response to impulsional impulsional shock Δ NER

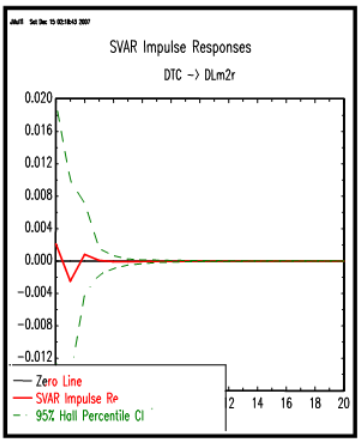

Figure 26: Δ Lm2r response to impulsional shocks of Δ NER

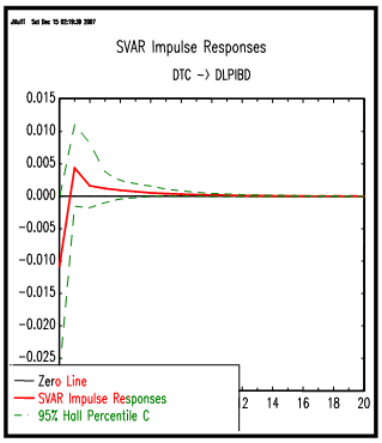

Figure 27: Δ LGDPD response to impulsional shocks of Δ NER

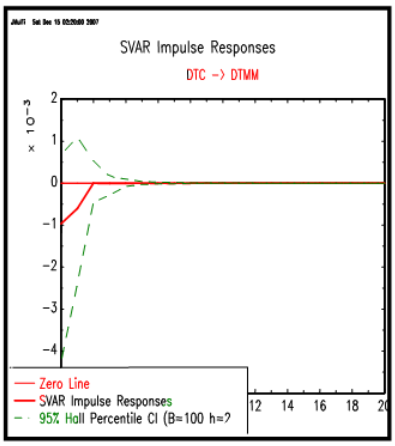

Figure 28: Δ MMR response to impulsional shocks of Δ NER

The figures above show that the shock of the exchange rate pulls engenders an increase of demands for money. To avoid the inflation, the central bank intervenes to buy the national currency and inject the currencies. This intervention stabilizes both real cash in hand always, in the short term. On the other hand, the answers of the national wealth and the monetary interest rate to the impulses of this shock are very weak. Generally, the impact of the exchange rate on the other variables remains very weak. This can be explained by the total not flexibility of the exchange rate, increased by the punctual intervention of the Central Bank of Tunisia in the exchange market.

4. Conclusion

We were interested in this work in the study of the transmission of the monetary policy in Tunisia during period 1960-2013. We concentrated at first on the fundamental monetarist hypothesis, the constancy of the money demand, which allowed us to clear the importance of this stability in the achievement of the intermediate objectives of the monetary policy. This stability allows facilitating the transmission of the monetary policy through the channels of transmission namely: the channel of the interest rate, the channel of

the deflated gross domestic product, the channel of the exchange rate and the channel of the real cash in hand.

Based to these econometric results, we can conclude that the monetary policy transmission in Tunisia is relatively credible for two main cash in hand and that it is less sensitive to events. This makes a crucial way of information during the driving of a monetary policy, allows planning the impact of a

- domestic product, the monetary shocks by the money market rate or by the nominal exchange rate and finally, the shocks of the real cash in hand. The identification of the shocks susceptible to have a permanent effect at money demand which leads us to make the following results: Using the error variance decomposition, we can notice that the demand of the real cash in hand of transaction and monetary savings and transaction are quasi-endogenous compared with the other variables. The demand of cash in hand of monetary savings and real transaction is explained in the long term by the gross domestic product, the exchange rate and the money market rate. Although, the demand of cash in hand of real transaction is explained in the short term by the gross internal wealth, the money market rate and the nominal exchange rate. Besides, the exchange rate is explained in the short term by the gross internal production and the nominal and long-term exchange rate by the logarithm of cash in hand of monetary savings and real transaction.
- Using the response functions, we can notice that the shocks of both cash in hand have positive and significant responses on the gross domestic product and the exchange rate. These shocks affect negatively the money market rate. Besides, the money market rate has negative and significant effects on both cash in hand and gross domestic product. On the other hand, this shock influenced positively the nominal exchange rate. Besides, the shock of the exchange rate has negative responses on the money market rate, the gross domestic product and both real cash in hand. Finally, the shock produced on the gross domestic income has positive and significant responses on these variables except, the exchange rat.

modification of the money supply on the real indicators and on monetary policy transmission channels.

- The transmission of the monetary policy by propagation channels was analyzed within a structural and vector autoregressive. Á leave functions of impulse responses and the decompositions of the variances of the shocks, we identified the transmission channels. We analyzed in this work, the shock of supply expressed by the deflated gross

References

Ambler S. and McKinnon R. (1985), "U.S. Monetary Policy and the Exchange Rate: Comment", American Economic Review, 75, 557-559.

Bernanke & Blinder (2008), "The credit channel of monetary policy: Evidence from the housing market", Journal of Macroeconomics, Volume 30, Issue 1, March 2008, Pages 69-96.

Bîlbîe, F. O. (2000), "An Attempt to Identify Monetary Policy Shocks in Romania: Some Time Series Stylised Facts – Evidence from VAR and VEC Models", The University of Warwick Press.

Blanchard O. J., (1989), "A traditional interpretation of economic fluctuations", American Economic Review, 79 (5): 1146-1164, December.

Blanchard, O.J. and D. Quah (1989), "The dynamic affects of aggregate demand and supply disturbances", American Economic Review, 79, 655–673.

Blanchard, O.J. and D. Quah (1989), "The Dynamic Effects of Aggregate Demand and Supply Disturbances". American Economic Review 79, pp655-673.

Coudert V. et Mojon B. (1997), "Asymétries financières et transmission de la politique monétaire en Europe", Economie et Prévision, n° 128, pp. 41-60.

Dedola, L. et F. Lippi (2005), "The Monetary Transmission Mechanism: Evidence from the industries of five OECD countries", European Economic Review 49, 1543-1569.

Diagne A., Doucoure F. (2000), "Les canaux de transmission de la politique monétaire dans les pays de l'UEMOA", Mimeo, CREA et FASEG, Université Cheikh Anta DIOP, Dakar, SENEGAL, July 2000, 33 P.

Duca J.V. (1995), "Should Bond Funds Be Added to M2 ? ", Journal of Banking and Finance, 19 (1), p. 131-152.

Feinman J.N., Porter RD. (1992), "The Continuing Weakness in M2", Board of Governors of the Federal Reserve Board Finance and Economics Discussion Series, n° 209.

Fenton, P., et S. Murchison (2006), "TOTEM, le nouveau modèle de projection et d'analyse de politiques de la Banque du Canada", Revue de la Banque du Canada (présente livraison), p. 5-20.

Friedman, M. 1956. The Quantity Theory of Money: A Restatement. In Friedman, M, (Ed.), Studies in the Quantity Theory of Money. University of Chicago Press, Chicago, 1956.

Gourieroux C, Monfort A. et Renault E., (1987), "Kullback causality measures", Annales d'Economie et de Statistiques, 6/7 : 369-410, April- september.

Granger C. W. J., (1969), "Investigating causal relations by econometric models and cross spectral methods", Econometrica, 424 – 438.

Haug, Alfred A. & Karagedikli, Ozer & Ranchhod, Satish, (2005), "Monetary policy transmission mechanisms and currency unions: A vector error correction approach to a Trans-Tasman currency union", Journal of Policy Modeling, Elsevier, vol. 27(1), pages 55-74, February.

Kashyap A.K, Stein J.C et Wilcox D.W (1992), "Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance", NBER Working Paper, 4015, March.

King S.R. (1986), "Monetary Transmission: Trough Bank Loans or Bank Liabilities? ", Journal of Money Credit and Banking, 18, p. 290-303.

Madd ALA et Nelson (1974), "Maximum Likehood Methods for Models of Markets in Disequilibrium", Econometrica, 42, November, p. 1013-1030.

Craig S. Hakkio (1992), "Monetary transmission in Major Foreign Industrial Countries: a Comment", FRBKC, WP, December.

Mehra Y.P. (1992), "Has M2 Demand Become Unstable? ", Federal Reserve Bank of Richmond Economic Review, 78 (5), p. 27-35.

Peersman G., Smets F (2003), "The Monetary Transmission Mechanism in the Euro Area: Evidence from var Analysis", .

Perron P. (2007), "Dealing with structural breaks", chap 8, in Palgrave Handbook of Econometrics, vol. 1, p. 278-352.

Phillips, P.C.B et P. Perron (1988), "Testing for a Unit Root in Time Series Regression", Biometrika, 75, p.347-353.

Rochet J-C. (2003), "Réglementation prudentielle et discipline du marché", Revue Française d'Économie Financière, n° 73, pp. 201-212.

Romer CD, Romer D. H (1989), "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz", NBER WP, n° 2966, May.

Barran, F Coudert V et Mojon B (1997), "La transmission des politiques monétaires dans les pays européens", Revue française d'économie. Volume 12 N°2. pp. 133-158.

Sims C, (1980), "Macroeconomics and reality", Econometrica, 48 (1): 1-48, January.

Sims, C.A (1998), "Comment on Glenn Rudebuseh's "Do measures of monetary poliey in a VAR make sense?", International Economies Review. vo1.39, n04, pp 933-941, November

Small D.H., Porter RD. (1989), "Understanding the Behavior of M2 and V2", Federal Reserve Bulletin, 75 (4), p. 244-254.

Taylor, John B (1993),"Macroeconomic Policy in a World Economy: From Econometric Design to Practical Operation", New York: W. W. Norton, 1993.

Taylor, John B (1995),"The Monetary Transmission Mechanism: An Empirical Framework", Journal of Economic Perspectives, Fall 1995, n° 9, p. 11-25.