

Monetary Foresee Ability of the European Central Bank and its Impact on the French Stock Market Volatility

BEN LTAIEF LEILA

University of Tunis, FSEG - Tunisia, E-mail: benltaiefleila@yahoo.fr

ARFAOUI LAMIA

University of Tunis, FSEG - Tunisia, E-mail: arfaouilamia2000@yahoo.fr

KOUKI SAMIA

University of Tunis, FSEG - Tunisia, E-mail: kouki_samia@yahoo.fr

ABSTRACT

The Central Banks' operations are characterized by a great transparency. Recently, it is the most important change in the conduct of the monetary policy (GERAATS, 2006). Indeed, since the beginning of the years 1990, the majority of the Central banks, especially in the developed countries, took several measures in order to increase the clearness of their policy. By doing this, a great transparency helps the financial markets to determine the information on which the monetary authorities are based to make their decisions of monetary policy. Moreover, the transparency will have to make so that the financial markets adjust their waits of interest rate as of the publication of macroeconomic data, thus preceding the monetary authorities.

In an empirical study, we seek to analyze the transparency impact of the European Central Bank on the stock markets' volatility (IDIER and NARDELLI, 2007). We define the transparency quantitatively, i.e., starting from short rate expectations in the future contracts Euribor. The monetary transparency is deduced from the foreseeability of ECB at horizon three months, corrected by the macroeconomic surprises. We conclude that a raised transparency, measured by the reduction of the error of foreseeability, is accompanied by a reduction of the stock market volatility.

KEY WORDS: Monetary transparency, foresee ability, stock market volatility, EGARCH.

INTRODUCTION

The transparency is regarded as an essential component of the framework of implementation of an efficient monetary policy. Indeed, the communication strategy of the Central banks plays a crucial role in the realization of this desired objective, (SWANSON, 2006) and (CORNAND and HEINEMANN 2007). In this respect, these institutions endeavour, often, to improve the way in which they transmit information to the markets and the public. However, the experiment of many monetary institutions showed that the monetary policy is more effective when its aim is well included, understood and accepted by the public. This is why, when the consumers and the savers, the heads of undertaking and the actors of the financial market include/understand the goal of monetary policy and believe that it is realizable, they can make decisions and make long-term plans (JONES, FLAX, AMANSUR and MASIH, 2005) and (HAHN, 2006). Thus, it helps the economic agents to make better decisions (1). Therefore, the collected information and the analyses carried out within the framework of the functions of the Central banks must be regarded as a public property, except the diffusion for this information is likely to be opposed to the realization of the mandate of the

institution. Admittedly, the transparency contributes to the effectiveness of the monetary policy in three ways:

1. At the beginning, the institution raises its credibility by communicating its objective clearly, particularly, which it intends to implement to reach it like its capacity and its engagement in this respect (FAUST and SVENSSON, 2001);
2. Moreover, the transparency imposes on Central Bank the obligation to return accounts (CARPENTER, 2004). This results in the regular diffusion of its opinions and its appreciation of the current and future economic activity. By doing this, it makes it possible to the public to evaluate the coherence of the actions of the institution and its decision-making process as regards monetary policy compared to its declared objectives;
3. Lastly, the transparency practiced by a Central Bank should help the participants in the markets financier with better including/understanding the function of reaction of the monetary policy, i.e., to anticipate the evolution of the directing rate well (GUEGAN and IELPO, 2006).

However, the Central Bank controls only one short-term interest rate, the aforementioned directing interest rate. Actually, interest rates with short and long-term are bound by the assumption relating to waiting. By doing this, the Central Bank can benefit from its communications to exert a greater influence on long-term interest rates. Right now, it helps the financial markets with better including/understanding its function of reaction like its point of view on the economic outlooks (2). In addition, this category of communication improves the effectiveness of the transmission mechanism of the monetary policy. This means the process by which the awaited changes of the monetary policy come into play the evolution of other financial variables and, thereafter, in the decisions of investment and consumption which influence inflation.

Lastly, much of ambiguity and uncertainty persist on the financial markets when Central Bank modifies the orientation of its monetary policy (ARTUS, 2006). From where, the majority of them decided to fix, for each year, of the dates of advertisement of the directing rate, independently of its changes. This ensured a greater certainty in financial markets (IDIER and NARDELLI, 2007). Moreover, the external observers, easily, formed their own opinion on the economic outlooks. Regularly, the Bank examines the data collected, and thereafter, it gives a progress report on the directives inflation suitable orientation of the monetary policy. Consequently, one witnesses an improvement of the process of decision making. However, the monetary decision makers can always intervene between these dates when exceptional circumstances require it.

The object of this article is to test the impact of the transparency of the European Central Bank charged to lay down the main trends of monetary policies of the euro area and to make the necessary decisions with its implementation, on the volatility of the French stock market. In fact, the originality of this work lies in our quantitative measurement (3) of the monetary transparency. More precisely, one will determine, starting from anticipations of the short rate contained in the future contracts Euribor three months, the foreseeability of the ECB, at horizon three months. Thereafter, will be corrected it macroeconomic surprises (4) in order to obtain a measurement of the transparency. Lastly, one will try to detect the nature of the relation between the transparency of the European Central Bank and the volatility of the Bourse de Paris. Otherwise, will a great transparency, measured by the reduction of the error of foreseeability near the financial markets, be accompanied by a reduction of stock exchange volatility? Will the communication represent a strategic priority in the maintenance of inflation and stock exchange volatility on a bottom, stable and foreseeable grade? Will its effectiveness become vital in the implementation of the European monetary policy?

Section I studies the relation between the transparency of the central banks, foreseeability and the conditionality. More precisely, it is a question of determining the direction of causality between the transparency and foreseeability, on the one hand, and the determinants of the error of foreseeability, on the other hand. Then, one analyzes the importance of the macroeconomic surprises as well as the reaction of the market indexes to this macroeconomic news. Section II described methodology, the empirical model and presents the estimates obtained in the case of the stock market of Paris. Lastly, one concluded and one proposes some widening for our next research.

SECTION I: TRANSPARENCY, FORESEEABILITY AND CONDITIONALITY

Currently, some Central banks introduced into their official statements of advertisement of the directing rate and into their reports on the monetary policy of the prospective declarations. They are general indications concerning the future directing rates and they are conceived like conditional statements. However, any declaration relating to the future orientation of the monetary policy is founded on the current conjuncture. Therefore, it can be modified following new information, said news (POITRAS, 2004). Within this framework, RUDEBUSCH (2008) showed that the Central Banks have recourse to three types of indices to give an idea of the future orientation of their monetary policy:

1. The first category: Indirect signals. They provide implicit information of the trajectory of the directing rate. This is done thanks to the related information such as the resultant of the risks or with the scenario of risk. This last indicates the extent to which inflation will be able to deviate of its target in the context of an unchanged directing rate.
2. The second category: Direct qualitative signals. They constitute the declarations concerning the projected orientation of the monetary policy. These signals can, in fact, to take the form of sentences describing the orientation aimed on a great number of meetings of monetary policy (5). The objective is to state for example that “the accommodating character of the policy can be maintained for one considerable period” or that it “can be removed at probably measured intervals”.
3. The third category: Direct quantitative signals. They describe best explicit numerical projections of the directing rate published by the Central Banks of New Zealand, of Norway, of Sweden, of the Czech Republic and Iceland.

However, these indices can improve, considerably, the effectiveness of the monetary policy by giving him more influence on the rates in the medium and long term, (KAHN, 2007). They react to the interventions of the Central banks within the framework where they accompany their measurements by disclosure on the trajectory of the future directing rates. The result is that they make more foreseeable the nearest decisions of the decision makers monetary as regards the directing rate (6). Consequently, the degree of uncertainty of the financial markets concerning the future forecast of the monetary policy decreases. By doing this, a fall of the allowances for risk incorporated in interest rates, which cause a drop in the overall costs of the capital, would benefit the economic agents.

Therefore, the monetary transparency acts positively on monetary foreseeability (7). This led to an effectiveness concerning the speed and the precision of the monetary policy. As a matter of fact, it supports, largely, the estimate of the monetary policy, i.e., the responsibility of Central Bank and, thereafter, the credibility of the monetary policy (8). In addition, this foreseeability allows the realization of the precise objectives and verifiable of which primarily quantitative objectives in terms of foreign exchange rate, monetary rate of growth and/or rate of inflation (9), which is associated with a weaker inflation and a less volatile growth (10).

1. COSTS AND ADVANTAGES OF THE FINANCIAL COMMUNICATIONS

Following turbulences, which shook, especially, the American financial market in 2007, the efforts concerning the collection of better information in the financial sector intensified. The objective is, therefore, to reduce uncertainty within this market. Moreover, the economic literature regards the communication and the information disclosure to the investors as a means of reducing the asymmetry of information. From where, a better allowance of the resources and, consequently, an efficiency of the financial system. In this respect, an important transparency organizes and governs the financial markets, and the well managed banks are profited. However, the evil managed are penalized by a rise in the capital and deposits. This is why; the forces of the market encourage the Central Banks to adopt surer practices in order to reduce the disturbances, which are transformed into systemic problem. Hence, the financial institutions will be slightly exposed with the volatile behaviour of the investors who react to false information.

In addition, the effective use of information requires a paramount condition. It is about the need for an operational market which imposes the payments appropriate to the Banks (11). Therefore, the transparency depends on the development of the financial sector (12). Within this framework, the dysfunctions of the market (13) block, enormously, the economic operators to communicate sufficient information. In this case, the solution is to use, wrongfully, the relative information at the Bank to deduce from them those which relate to another Bank. However, the value of their credits is correlated and they have close economic behaviours. Therefore, the publication of negative information by a Bank affects the other establishments which will suffer, thereafter, of the same problems.

Empirically, the results of the impact of the publication on financial stability are still ambiguous. In 1989, the Congress of the United States decided to reinforce the requirements of communication of the related information to the banking supervision. According to JORDAN, PEEK and ROSENGREN (1999), the fact of making public the concerns of the authorities of supervision concerning the solvency of certain Central banks, during the crisis, did not have consequences on the healthy Banks. In 2007, the transparency concerning the diversification of the wallets of credits was in the centre of the various problems. But, there is no relation between the standards of publication in the banking environments of the various countries and the recent falls of the courses of the banking values. Within this framework, the uncertainty and the imperfection of the information of which the lenders and the borrowers suffer play a big role. However, a multitude of work concentrate, currently, on the improvement of the communication of the risks related on the products of securitization and the losses arising from the non-payments of the crisis of the loans subprime of the summer 2007. In this context, the investors, the banks and the markets oppose great difficulties to know how to develop complex positions. However, the communication of fundamental of credit dubious is not enough to restore the confidence of the financial market whereas the communication on the banking liquidity is considered important.

2. SENS OF CAUSALITY BETWEEN TRANSPARENCY AND FORESEEABILITY

In the official communications of the Central Banks, and concerning the publications of the decisions and the future monetary strategies, there is an important difference between the transparency and foreseeability (14). Conceptually, if the actions of Central Bank are more foreseeable, the operators of the financial markets will be able to anticipate, easily, the future monetary decisions without understanding the subjacent reasons. Indeed, a Central Bank transparent is that which with the capacity to know to communicate its function of reaction to financial markets (PEEK, ROSENGREN and TOOTELL, 1998). The latter can anticipate its decisions effectively, where they know more certainly the factors concerned. However, they concentrate on the furnished information. The result is, consequently, an indifference to

update their own knowledge on the function of monetary reaction and to collect and analyze new data. In addition, when the decisions of the Central Bank confirm, often, the indications that it communicated at the beginning, then, the participants get information slightly. For the markets, these publications are less conditional because of the extent of the repetition. Therefore, they will be less reactive with the macroeconomic news, known as news (15). Nevertheless, this behaviour is called “rational carelessness”. This is why; the economic agents and the financial operators choose in an optimal way the information on which they must concentrate by taking account of the limited capacity of an individual to process the data, SIMS (2003).

However, an important foreseeability of Central Bank is not forcing synonymous with a great monetary transparency. On the other hand, a high transparency of the communications of information contributes to a better comprehension of the function of reaction by the financial markets, i.e., a great foreseeability. However, it is not obvious that the Central Banks which publish their targets, their minutes, their vote or any other form of indication of the directing rate are inevitably foreseeable. Actually, this aspect depends much on the perception or the absence of the degree of conditionality of the indications provided by the institutions relative to their directing rate. The Central Banks which give direct quantitative signals of the trajectory of the directing rate, are less foreseeable but more transparent compared to those which provide direct qualitative indices. According to MOESSNER and NELSON (2008), to regularly include the trajectory of the directing rate in the communications of a Central Bank can make them more conditional than those which provide indices with irregular intervals in the form of direct qualitative signals. Indeed, the goal of this last category of Banks is to handle waiting of the financial markets. Consequently, their indications can seem more unconditional. In general, the Central Banks which provide direct qualitative or quantitative indications, by diffusing a prospective declaration or a trajectory of the directing rate, have to do more to support the comprehension of the conditionality related to their communications and to minimize, thereafter, the error of foreseeability.

3. ERROR FORESEEABILITY DETERMINANTS

MORRIS and SHIN (2002) studied on-reaction of the economic agents to the public advertisements. However, they showed that public information can be bad in terms of wellbeing and it will destabilize the economy. This process has a negative effect on the publication of public information. It is described as there were strong strategic complementarities between the private agents (16). However, it rests on two important aspects of public information:

1. In addition to the knowledge brought on the fundamental economic ones, public information informs, also, about the future actions of the other speakers. Within the financial markets, the agents react at the same time to the economic news and the strategic news. This will involve a systematic on-reaction to the public advertisement.
2. The precision of public information is limited by the errors of forecast, the timing of the advertisements in shift by reports with the events, etc. This is why, when the agents neglect their own private sources of information (17), of the not desired disturbances appear. Therefore, if the public signal moves away slightly from the fundamental ones, the agents increase this deviation by coordinating their actions far from the fundamental ones.

On the other hand, PRATI and SBRACIA (2002) showed that the institutionalization of the policies of information circulation can increase, in certain cases, the risks of financial crises. In the same way, CORNAND and HEINEMANN (2007) suggested limited publicity of public information in order to reduce

the negative externalities related to a level that raises transparency too much raises transparency. Lastly, this error of foreseeability of the financial markets rises from two sources. On the one hand, there are the macroeconomic surprises which run out between the moment when the markets form their anticipations and the realization of the current rate after one period.

On another side, there is lack of transparency of Central Bank, known as monetary opacity. Indeed, between the moment when the agents form their anticipations and the rate which prevails indeed period later, macroeconomic news occurs. However, this information is not relating to the Central Bank, which is unaware of the macroeconomic surprises during one future period. As a conclusion, the factors which measure the foreseeability of a Central Bank are summarized, primarily, in the two following points:

- a. The extent to which the institution makes known the date and the orientation of the future changes of the directing rate;
- b. The degree of conditionality of its communications which is, explicitly, inherent in those or, which more important, is implicitly perceived by the financial market.

Right now, KAHN (2007) showed that the Central Banks which limit themselves to declarations on the resultant of the risks, leave at the financial markets interpret any possible implication of these risks for the future directing rates. On the other hand, statements of monetary policy such as the prospective declarations of the Bank of Canada or the indications provided by the American Federal fund can be perceived by the financial operators as being more unconditional. However, the Central Banks which are increasingly foreseeable, without being more transparent, noted that the financial markets make less confidence with the macroeconomic news to envisage the evolution of the monetary policy in the short run. In other words, progress of a Central Bank as regards transparency will have to be translated by an improvement of the capacity of the financial market to envisage the intentions of the Central Bank. It is measured in the majority of the cases by a reduction of the unexpected share of its decisions of monetary policy (18) and by an absence of reduction or an increase in the sensitivity of interest rates of the market in reaction to the macroeconomic news.

4. CONCLUSION

By information that they reveal, the Central Banks coordinate anticipations of the economic agents on a single balance. However, they make their decisions of monetary policy more foreseeable for the financial markets, make it possible to anchor anticipations of long-term inflation and can direct the long rates. At the end, this makes it possible to increase the effectiveness of the monetary policy. Within this framework, literature results from work of Morris and Shin (2002) slackening the assumption of homogeneity of anticipations by supposing that each agent has private information different from that of the other agents. This literature calls upon the total plays and proposes the role of the transparency of the Central Banks to coordinate anticipations of the economic agents.

In addition, within the financial markets, the economic operators answer at the same time the economic news and the strategic news. A systematic on-reaction to the public advertisement is caused. The second aspect amounts admitting that the precision of public information is limited because of inevitable errors of forecast, of timing of the advertisements in shift by reports with the events. Moreover, when the agents neglect their own private sources of information, having an important weight for the modern economies, that creates non desirable distortions. In this article, the transparency is defined starting from the error of foreseeability of the medium-term financial markets, corrected macroeconomic surprises occur between the moment when the financial markets form their anticipations and the realization of short interest

rate one period later. Therefore, a transparent Central Bank is a priori, a foreseeable Central Bank by the financial markets.

SECTION II: REACTION OF STOCK MARKET VOLATILITY TO THE MONETARY TRANSPARENCY: CASE OF THE PARIS STOCK MARKET

In this section, one seeks to test, empirically, the incidence of the transparency of European Central Bank on the prices of credits, in particular, the volatility of the French stock market. In a preceding article (19), the indicator of transparent monetarist was qualitatively given while being based, primarily, on the publications of an explicit target of inflation, minutes, votes, etc. However, the originality of our current step is at the level of a novel method of measurement of the transparency. It is to be acknowledged that EIJJFINGER and GERAATS (2006) and DINCER and EICHENGREEN (2007) did not hold account in their determination of the indicator of transparency in the way in which the financial markets perceive the Central Bank. This is why, it is essential, in what follows, to use a quantitative indicator, starting from anticipations of the interest rates of short term contained in the future contracts Euribor three months (20). However, this indicator reflects the monetary degree of transparency as it is perceived by the financial markets. In this vein, this indicator is defined starting from the error of financial foreseeability, corrected in the medium term of macroeconomic surprises. Otherwise, a transparent foreseeable Central Bank is a priori. Thereafter, the evaluation of its degree of transparency through the foreseeability of the decisions of monetary policy constitutes one of possible measurements of the transparency (21).

In this section, one will explain the method used in order to measure in the long term the transparency subjugated on the anticipations contained in the contracts Euribor at horizon three months. One will work on financial series characterized by the alternation of durably volatile periods with other durably calm periods, that is to say variability in time of the variance, is the heteroscedasticity. This is why, the variance of the stock exchange outputs will thereafter be modelled by an approved model EGARCH statistically. In addition, Methodology and the empirical model will be described, and one will finish by the presentation of the estimates obtained and the interpretation of the results.

I. METHODS AND PROCEDURES

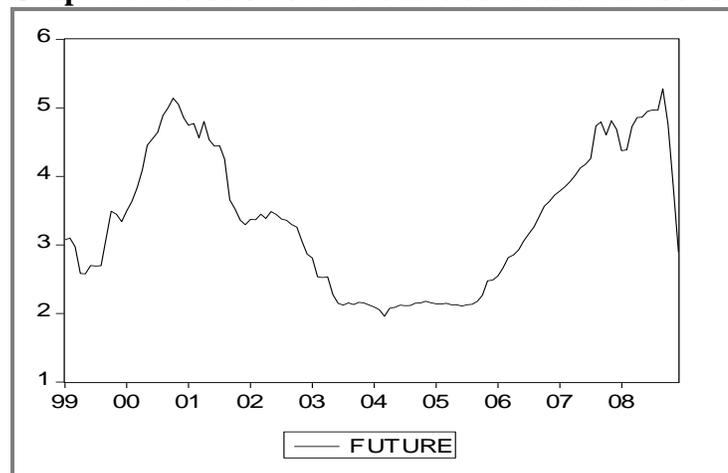
I. 1. DEFINITION AND EURIBOR CONTRACTS CHARACTERISTIC

Among the whole information likely to be extracted the financial markets, the forecast of the movements of rate interest appears essential. From the point of view of the investors, a reliable forecast of the future trajectory of the monetary policy must make it possible to prevent a movement not anticipated of the rates. From the point of view of the Central Bank, a correct appreciation of anticipations of the rate makes it possible to consider the potential degree of surprise of a monetary adjustment. Indeed, many financial instruments can contribute to this diagnosis. Indeed, the contracts in the long term make it possible to the financial agents to fix the interest rate to which they will be able to be involved in debt or lend to various horizons. This is why; they are particularly adapted to the analysis of the forecasts of rate. In addition, this financial credit is characterized by not being subject to any condition, immediacy of the rights or any reciprocal obligations which constitute the contract.

Following the example DURHAM (2003), SACK (2004) highlighted a variable allowance for risk in time and increasing with the horizon considered. GÜRKAYNAK, SACK and SWANSON (2002) showed that at a horizon lower than five months, the future ones constitute the best advanced indicators of the evolutions of the monetary policy. Actually, their capacity of forecast is higher than that of the other

contracts and they contain, then, all the information available in the other instruments. More particularly, during the two periods 1999-2001 and 2005-2009, the future ones on Euribor three months made great strides important (22). Indeed, BERNOTH and VON HAGEN (2003) showed that they constitute efficient advanced indicators where the agents taking part in the market use all information to fix their price. HISSLER (2004) highlighted error of a positive and counter-cyclic forecast. Following the example American case and according to PIAZZESI and SWANSON (2008), this error is correlated with the variations of employment.

Graph 1: Evolution of the future contracts Euribor 3 months



I. 2. QUANTITATIVE MEASUREMENT OF THE MONETARY TRANSPARENCY

In three stages, one will present a quantitative measurement of the transparency of European Central Bank. Initially, one will detail the error analysis of forecast of the markets starting from the Euribor contracts three months. Then, one will specify the technique of calculation of the indicator of the macroeconomic news which constitutes, in addition to the transparency, an important determinant of the error of foreseeability. Lastly, one will examine how to extract a measurement from the transparency by breaking up the error of foreseeability of the markets into two sources: On the one hand, the macroeconomic surprises which take place during the lapse of time when markets form their anticipations and the realization of the current rate three months later and on the other hand, the transparency of European Central Bank.

I. 2. 1. THE FORESEEABILITY ERROR

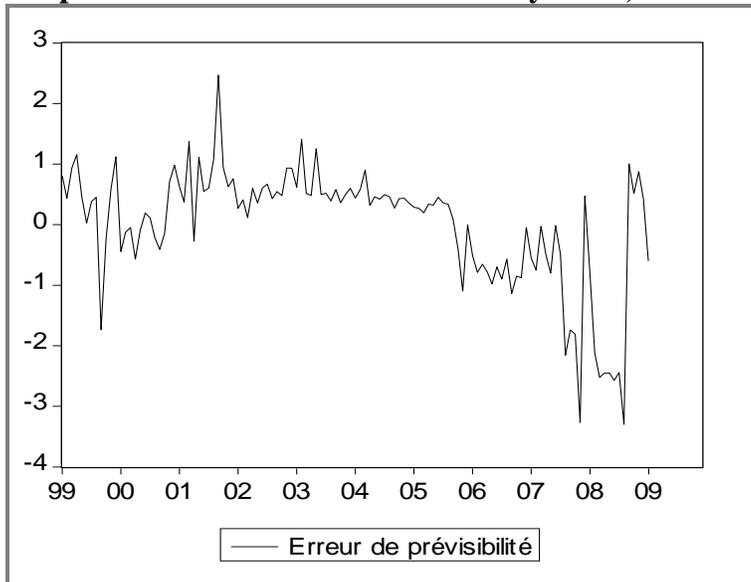
The medium-term foreseeability, in fact, is calculated by the error of anticipation that makes the financial markets at a three months horizon. So, one will in the long term use the anticipations contained in the contracts Euribor three months. By doing this, the error of foreseeability is then calculated in a simple way. It is the difference between the current rate at the period t - noted i_t - and the implicit rate of future at the period $t-h$, for a coming contract in the term at the period t - noted $i^*_{h,t}$. Thereafter, this difference is divided by the standard deviation of the rate spot over the period of three months in order to take into account the variability of the rates. Indeed, this standardization is relevant when there is a comparison of the error of foreseeability average of the euro area with the error of foreseeability of the American monetary policy. For example, an error of five or ten basic points does not have the same importance in an environment where the rates of short term vary little (23) when the ECB did not modify its directing rate for twenty seven months between June 2003 and December 2005, or when they more frequently vary, case of the EDF. The formula of the error of foreseeability is: $e_t = (i_t - i^*_{h,t})/\sigma_t$ where i_t is the current rate or the rate spot, at the moment t . It is

a rate relating to the financial credit emitted at present time and consequently, it is perfectly known. $i^*_{h,t}$ is the implicit rate or the rate forward. It is a future rate, considered as a random variable.

Actually, this error of foreseeability, that it is centred and it is reduced, is calculated over the period 1999-2009 for monthly data. By doing this, the graph hereafter clearly illustrates the various evolutions distinguished during this period. Indeed, one observes that the financial markets tend to underestimate, at three months horizon, the rate runs to euro area over the period 2001 - 2006. This corresponds to a rising cycle of the rates of the ECB. It is, in fact, schematized by an error of positive foreseeability which means that the rate spot at the date t is higher than anticipations of the markets or the implicit rate. On the other hand, during the two under-periods, 1999-2000 and 2007-2009, this error is negative. That is explained by a lack of anticipation of the easing of the monetary policy by the financial markets. More particularly, the fall of the directing rate of the European Central Bank due to the attacks of September eleven, 2001 could not be anticipated three months front, and this is an important error.

In addition, this error of medium-term foreseeability is not only due to the monetary lack of transparency of the Central Banks. Actually, between the moment when the economic agents form their anticipation and the rate which will prevail indeed three months later, there is what is called macroeconomic news, which occurs in the economy (POITRAS, 2004). For example, in January, the markets form anticipation on the level of the rate of three months which will prevail at the beginning of April. However, between January and April, the macroeconomic news occur and can, thereafter, exploit the rate which will take place in April. However, this information is not relating to the Central Bank, but on the contrary, it is private information. However, the monetary authorities are unaware of what will the macroeconomic surprises be between these two dates. For this reason one suggests to correct the error of foreseeability by including, as explanatory variable error of foreseeability the macroeconomic news which occurs between the moment when the markets form their anticipation and the realization of the rate spot of three months later. One will have then as a result an error of foreseeability which is not ascribable to the macroeconomic news of the euro area. But on the other hand, it is ascribable only to the lack of transparency of the European Central Bank or, more precisely, to its monetary opacity. Lastly, we detail further the indicator of the macroeconomic news.

Graph 2: Evolution of the foreseeability error, 1999/2009



I. 2. 2. THE INDICATORS OF THE MACROECONOMIC NEWS

The indicator of the macroeconomic surprises, mentioned previously, is a surprise defined as the variation standardized between the realization of the statistics and its forecast. This indicator is based on the aggregation of the surprises contained in the publications of the macroeconomic statistics in the United States and in the euro area. With the characteristic to retain only variables whose impact on stock exchange volatility, it is at the same time significant and stable in time. It is pointed out that a positive index always represents a good surprise for the markets, and conversely.

With regard to the macroeconomic advertisements of the European zone, one identified some which are relevant, while basing oneself on the review of the literature made in the preceding section. These statistical indicators appear with regular intervals and are programmed in advance. Let us note, moreover, that one will include in this sample some American indicators. Actually, the studies showed that they have a significant effect on the US market like on the other European markets of which the French, prone the stock market of our current study. In this article, one limits oneself to the following macroeconomic news whose choice of the studied advertisements is strongly guided by the availability of the data of good quality:

- a. Indicators of the euro area: They are the consumer price index (IPC_{eu}), the price index to the industrial production (IPP_{eu}) and unemployment rate ($chom_{eu}$). However, quarterly news GDP is not significant, therefore a negligible determinant and does not represent a big part of the error of foreseeability. Their publications are collected with close to the Web site of the ECB.
- b. American indicators: For the American statistics, one has included in the sample the consumer price index (IPC_{us}), the price index to the production (IPP_{us}) and unemployment rate ($chom_{us}$). The exact statistics their publications are collected "Office of Labor Statistics".

I. 2. 3. DECOMPOSITION OF THE ERROR OF FORESEEABILITY

In this paragraph, one seeks to know if the error of foreseeability made by the financial markets is due to the existence of the no ascribable macroeconomic news by European Central Bank or, with the monetary lack of transparency of this institution (24). In this vein, one tests in the first time to consider the following relation $e_t = \hat{e}_t - t_t$. Indeed, it indicates the error of foreseeability calculated previously starting from the difference between the rate spot and the implicit rate for Euribor three months. In addition, the estimate of the equation is representative of the news by OLS. Maybe, $\hat{e}_t = \alpha + \sum_{i=1}^6 (\beta_i N_{i,t})$. Indeed, NR represents the six macroeconomic surprises mentioned above. However, our objective is to explain the error of forecast of the markets made three months in advance. This is why, it is essential to include in the regression three months the macroeconomic news previous. Indeed, the average error of April can be explained by the macroeconomic surprises which have occurred in January, February and March. Finally, the part not explained by the macroeconomic news of the error of foreseeability, $e_t - \hat{e}_t$, is due to the absence of transparency at the European Central Bank. Otherwise, it is due to the opacity of this institution, noted t_t . The idea is that, plus this not explained part either high, less the ECB is transparent.

Moreover, the idea of this regression is that one identifies the two generating determinants of the error of foreseeability. On the one hand, the macroeconomic news influences indeed anticipations of market rates. For example, a negative surprise on unemployment rate (25) can lead the Central Bank to re-examine its future trajectory of short term interest rates. Consequently, it affects the future contracts the day of their advertisement. In addition, the part of the error of foreseeability which cannot be explained by the macroeconomic surprises explains by the monetary absence of transparency. This is why the variable t_t which constitutes in a certain manner the residue of our equation represents monetary opacity. Indeed, more its

weight is important, and less Central Bank in question is transparent insofar as the error of foreseeability is explained by the macroeconomic surprises.

Right now, one extracts the residues from this regression that they are centred, the tiny room and one transforms them into absolute value. This series is noted T, for designer the degree of opacity. It is stationary. Actually, an increase in T means that the error of foreseeability due to the lack of transparency increases, which is interpreted as a fall of the degree of transparency. Lastly, the econometric results are summarized in the following table:

Estimate of the equation (26): $\alpha + \sum_{i=1}^6 \beta_i N_{i,t}$

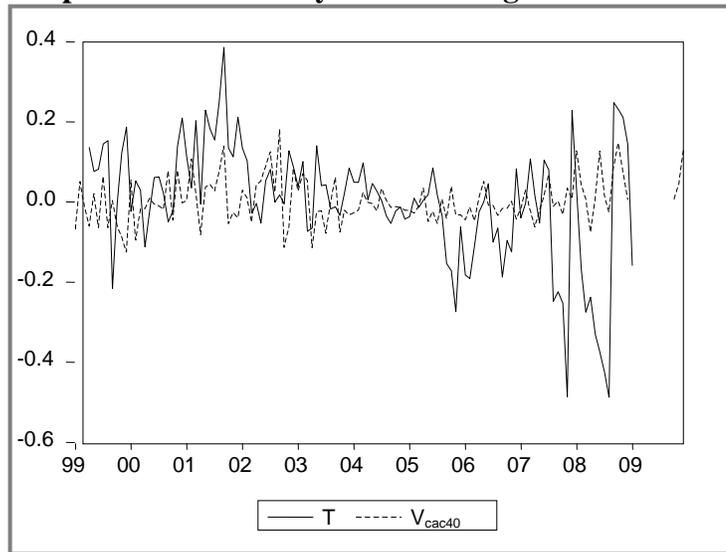
Endogenous variable: Error of foreseeability			
Variables	Coefficients	Std-Error	t-Stat
C	0.722751	0.34104	3.25232*
IPP _{us}	0.022419	0.11741	2.31124*
IPP _{eu}	0.052474	0.02318	0.27441
IPC _{us}	0.017527	0.10235	1.98520*
IPC _{eu}	-0.037411	0.42775	-2.11412*
Chom _{us}	0.117581	0.35440	1.99044*
Chom _{eu}	-0.429555	0.82664	-0.78002

I. 3. MEASURE OF STOCK MARKET VOLATILITY

In order to measure the variability of the price of the financial credits, one is located within the framework of the markets of actions where one retains the criterion of stock exchange volatility. However, our study is devoted to the French stock market, this is why, we chose the CAC₄₀ and the DOW-JONES for the American zone. However, one will use monthly data of these two indices over the period going of the 1999: M1 at 2009: M3, is a total of 1229 quotations over the period in question. The courses were extracted from data bank DATASTREAM. One chose to retain the opening price for each quotation.

In addition, the graph hereafter simultaneously described the evolution of the volatility of the CAC₄₀ and the measurement of the monetary opacity of Central Bank European, noted T. From half of the year 2004, one notes that T tends to be reduced considerably except for two peaks at the beginning of 2008 and 2009. It seems to release a positive relation between the evolution from volatility and the evolution of the error of foreseeability due to the lack of transparency. Otherwise, a high degree of transparency seems correlated with a reduction of volatility, these five last years. It is what one suggests to test it in what follows.

Graph 3: Foreseeability Error average and stock market volatility (27)



II. EMPIRICAL EVALUATIONS: EFFECT OF THE MONETARY TRANSPARENCY ON STOCK MARKET VOLATILITY

In this part, one tries, initially, to release the fundamental properties relating to the variables used. Moreover, it is essential to test the presence of effect ARCH starting from an ARCH-LM test (28). The latter enables us to know if the variance of the errors of the regression car-is not correlated. Thereafter, it is essential to consider the conditional equations of the average and the variance of system GARCH given by:

$$V_{cac40,t} = \alpha + \beta_1 T_t + \beta_2 IPC_{eu,t} + \beta_3 IPP_{eu,t} + \beta_4 Chom_{eu,t} + \beta_5 V_{dj,t} + \varepsilon_t \quad (1)$$

with $\varepsilon_t \rightarrow N(0, ht)$

$V_{cac40,t}$ and $V_{dj,t}$ are respectively volatilities (29) of the French market indexes, CAC₄₀, and American, DOW-JONES. One added the volatility of the American market index to take account of the incidence of the American news on the volatility of the CAC₄₀.

II. 1. ARCH MODELLING

II. 1. 1. Order of the ARMA processes

Actually, is the question which installation is how has one to make to determine the most reliable model which explains the volatility of the CAC₄₀? The determination of this kind is done by the examination of the functions of autocorrelation and partial autocorrelation. Indeed, one carried out the estimate of the processes ARMA according to the diagnosis of the residues through test LM-ARCH. Indeed, one estimated several models AR (1), MA(1), ARMA (1, 1), ARMA (1, 2), ARMA (2, 1) and ARMA (2, 2). One retained that which maximizes the statistics R² and which minimize the criteria of information AKAIKE and SCHWARZ, that is to say the model AR (1). The results of the table, hereafter, clarify this conclusion more.

Estimate of the process ARMA: Results of LM-ARCH test

Selection criteria	AR(1)	MA(1)	ARMA(1,1)	ARMA(2,2)	ARMA(1,2)	ARMA(2,1)
Probabilities	0.0000	0.0000	AR(1) = 0.0000 MA(1) = 0.9654	AR(2) = 0.0000 MA(2) = 0.1728	AR(1) = 0.0000 MA(2) = 0.9409	AR(2) = 0.0000 MA(2) = 0.0000
R ²	0.651967	0.450945	0.651970	0.427287	0.651974	0.653812
Akaike	-11.23078	-10.77612	-11.22194	-10.72424	-11.22196	-11.22764
Schwarz	-11.20051	-10.74595	-11.17654	-10.67869	-11.17655	-11.18210

II. 1. 2. Test of ARCH effect

It should be noted that the diagnosis of the residues shows the presence or not effect ARCH which justifies, thereafter, the follow-up or not of the normal law. In addition, these reports are also validated by the curves of the conditional variance. Thus, the use of this type of modelling does not give us a clear way for the adjustment of the volatility of the CAC₄₀. With this intention, one must pass to the models to long memory which make it possible to envisage the persistence of the long-term shocks. For our study, one notices that the probability is equal to 0.6785% < to 5%. Therefore, there is an effect ARCH and, thereafter, modelling ARCH-GARCH will be possible. One will estimate a model GARCH (1, 1) – (30) instead of a model ARCH (1, 1).

II. 2. ESTIMATE OF EGARCH MODEL AND ECONOMIC RESULTS

Our estimates provide new arguments in favor of a greater medium-term foreseeability of the decisions of European monetary policy. Indeed, using a modelling EGARCH, we can identify an asymmetrical effect of the shocks of volatility on its conditional variance. One uses, then, a model EGARCH, introduced by NELSON (1991) in order to test if there is an asymmetry of the relation between the conditional variance and the sign of the innovation. However, we must determine the number of delays of this model. Indeed, the analysis of the autocorrelations of the residues and the squares of the residues of the equation of the average enables us to suggest the models following candidates: EGARCH (1, 1), EGARCH (2, 1) and EGARCH (1, 2). The model EGARCH (1, 1) presents the lowest values. This is why, EGARCH (1, 1) will be the model more adapted for volatility of index CAC₄₀. In what follows, we will consider model EGARCH (1, 1) suitable, consisted the following equations and whose results are presented in the table hereafter:

$$V_{cac40,t} = \alpha + \beta_1 T_t + \beta_2 IPCfr_t + \beta_3 IPPfr_t + \beta_4 IPPu_t + \beta_5 IPCus_t + \beta_6 V_{dj,t} + \varepsilon_t$$

Where $\varepsilon_t \rightarrow N(0, h_t)$ and $\ln(h_t) = \omega + \delta|\xi_{t-1}| + \gamma\xi_{t-1} + \theta\ln(h_{t-1})$

Estimate Results of EGARCH (1, 1) model.

Variables	Coefficients	Std. Error	z-Statistic	Prob.
	Average equation			
C	0.043842	0.010554	0.141124	0.8742
IPC _{eu}	-0.204965	0.0472210	-4.289002	0.0000*
IPP _{eu}	-0.054124	0.048845	-1.225655	0.3300
T	0.224548	0.078113	2.684659	0.0003*
V _{dj,t}	1.053327	0.003541	19.014998	0.0000*
IPP _{us}	-0.871145	0.254066	-2.197278	0.0264*
IPC _{us}	0.450069	0.054701	2.100580	0.0325*
Variance equation				
Ω	-1.722241	0.453450	-2.454421	0.0322*
Δ	0.720133	0.425559	1.883294	0.0620*
Γ	-0.278124	0.245561	-1.628962	0.1233
Θ	0.325540	0.325477	1.888401	0.1072*

* The variable is significant to 5%.

II. 3. CONCLUSION

These estimates clearly highlighted the beneficial effects that the transparency of European Central Bank exerted on stock exchange volatility. Indeed, the results presented in the preceding table show, that in the equation of the average, the variable T indicating the lack of transparency of the ECB exerts a positive and significant effect on volatility of the French market index, CAC₄₀. However, it is noted that our measurement of foreseeability is significant. Moreover, the coefficient is positive, which means that rise of the error of foreseeability due to monetary opacity involves a rise of stock exchange volatility. Otherwise, a rise of the degree of transparency is accompanied by a reduction of the volatility of the CAC₄₀. Moreover, that wants to say that a greater transparency on the level of the European Central Bank effectively contributes to absorb the effervescence of the CAC₄₀ and to install it in modes of weak nervousness.

However, it is to be announced that the consumer price index in the euro area and the American index of the industrial production act significantly, but, negatively on the French stock exchange volatility. In addition, the American consumer price index acts positively and significantly on the CAC₄₀. Indeed, our study confirms that these two American and foreign advertisements are awaited by the European operators. In addition, unemployment, some is its country of origin, is omitted of this estimate. Thereafter, it does not affect the stability of the French stock market. However, its presence deteriorates the determinants of the estimate. Moreover, one notices that the sensitivity of the French stock market is strongly correlated to its American counterpart, i.e., two stock exchange volatilities of the DOW-JONES and the CAC₄₀ move in the same direction.

As a conclusion, it would also seem that a share of discretion, punctually reintroduced in the monetary policy, could decrease the variance of volatility in these modes. This last concept appears all the more relevant as, on the assumption or volatility would settle durably in modes known as “quiet”, the apprehension of the risk in the models of choice of wallet will rest more and more on the volatility of volatility.

FINAL CONCLUSION

Since the beginning of the years 1990, the majority of the Central Banks, especially in the developed countries, took several measures to the goal to increase the transparency of their monetary policy. By doing this, a great transparency helps the financial markets to determine information on which the monetary authorities are based to make their decisions of monetary policy. Moreover, the transparency will have, therefore, to make so that the financial markets adjust their waiting of interest rate as of the publication of macroeconomic data, thus preceding the monetary authorities. However, the faults of monetary transparency are due primarily to the presence of an asymmetry of information between the monetary authorities and the public. This situation is translated, imperatively, by an uncertainty of this last on the level of the true preferences of Central Bank. But, it is important to know the origin of the asymmetry of information and uncertainty. In fact, the answer is that these last come from a defect of communication of the monetary authorities as for their objective truths, like with truths weights allotted for them. This returns, consequently, their less credible monetary policy. Moreover, for this reason we can corroborate that the communication plays a central role. From where, the monetary decision makers are brought to inform the markets as for their evaluation of the prospects for price stability and to prepare them with the future changes of their policy.

In this vein, the transparency of the Central Banks based on a better communication will raise ambiguities on the level of the public. The objective is to follow a foreseeable monetary policy and to avoid, thereafter, the volatility of the prices on the various markets. This means that less opaque environment of monetary policy makes it possible to improve operation of the financial markets, since the objective of inflation is clarified and that information is easily available. Indeed, the empirical literature showed that a better foreseeability of the monetary policy does not increase the volatility of the financial markets and that in the speeches of the central bankers, the transparency of the monetary policy is often justified by its favorable effects on financial stability.

Thus, this article with the ambition to contribute to this literature on the transparency of the monetary policy while introducing, explicitly, the monetary disclosure with close to the financial market and more precisely to the French stock market like the determination of the transmission system of the monetary policy. In addition, the originality of this analysis is in the step followed to measure the degree of the transparency of the European Central Bank. Paradoxically with work of EIJJFINGER and GERAATS (2006) and DINCER and EICHENGREEN (2007), one suggested a quantitative indicator. It is given starting from the anticipations of rate short contained in the future contracts Euribor three months, reflecting the degree of transparency such as it is perceived by the financial markets.

Starting from a model EGARCH (1, 1), one established the relation between the degree of the ECB opacity and the stock exchange volatility of the CAC₄₀, in the presence of some European and American surprises as well as the variability of the DOW-JONES. This analysis implies that the transparency of the monetary policy on the level of the ECB exerts a negative influence on the French stock exchange volatility. Indeed, following the mode adoption of the macroeconomic data publication, this last had an incidence increased on the volatility of the CAC₄₀. This observation encourages thinking that the financial actors have, now, a better comprehension of the elements which enter in account the control of the European monetary policy. Moreover, the efforts made by the ECB with an aim of increasing its transparency, gave the results sought to the level of the French stock market. Ultimately, it is not enough to recognize in the increase in the quantity of currency the immediate cause of inflation, it is also necessary to discover the political clouts and economic subjacent which dictate, finally, the monetary growth and, thereafter, the economic growth. Consequently, the communication represents a strategic priority in the continuation of the objective consisting in maintaining the inflation respectively and the stock exchange volatility on a bottom, stable and foreseeable grade and its effectiveness became vital in the implementation of the monetary policy. It is, then,

the case for the other markets of credits (bond market, foreign exchange market, market of options), by using nonlinear econometric approaches of type Switching ARCH or Markov Switching, making it possible more rigorously to consider the regime changes of the financial variables.

ENDNOTES

- (1) In certain countries, Central Bank is a public institution financed by the taxpayers, to whom it must give an account of his acts.
- (2) MORRIS S. and SHIN, H. S. (2002), « Social Value of Public Information », *American Economic Review* 92(5), pp. 1521–1534.
- (3) EIJJFINGER and GERAATS (2004, 2006) and EICHENGREEN and DINCER (2007) built a qualitative indicator of the monetary transparency. For the latter, it is the sum of several scores of answers deduced from fifteen questions.
- (4) POITRAS M., (2004), « The impact of macroeconomic announcements on stock prices: In search of state dependence », *Southern Economic Journal* 70(3), pp. 549-565.
- (5) The American Federal fund between 2003 and 2006.
- (6) SWANSON E. (2006), « Have increases in federal reserve transparency improved private sector interest rate forecasts? », *Journal of Money, Credit, and Banking* 38(3), pp. 791–819.
- (7) PÉREZ-QUIRÓS et SICILIA, (2002).
- (8) FAUST J. et SVENSSON, L. E. O. (2001), « Transparency and credibility: Monetary policy with unobservable goals », *International Economic Review* 42(2), pp. 369 – 397.
- (9) The main objective of the ECB is to maintain, within the euro area, annual inflation “with the lower part” but on a level close to 2%, on medium term.
- (10) FATÁS, MIHOV et ROSE (2004).
- (11) Case of Central Bank European with respect to the National Central banks.
- (12) RATNOVSKI (2007).
- (13) One refers, especially, with the informational externalities.
- (14) MOESSNER, GRAVELLE and SINCLAIR (2005) and JEN (2007).
- (15) CONNOLLY R. and STIVERS C., (2005), « Macroeconomic news, stock turnover, and volatility clustering in daily stock returns », *The Journal of Financial Research* N°2, pp. 235-259.
- (16) It is the case for the stock markets where the speculative component is very strong.
- (17) They can be of great quality for the modern societies.
- (18) POOLE et RASCHE, (2003).
- (19) LEILA BEN LTAIEF (2010), “transparency of the Central Banks and its contribution in the implementation of the monetary policy”, *Financial forum/ Banking and Financial review*, 2010/N° 2-3, pp. 148-162.
- (20) It is pointed out that Euribor, Euro Interbank Offered Rate, is a reference rate of the European money market since 1999. However, it is a rate to which a sample of fifty seven large banks established in Europe lends in white (i.e. without the loan not being guaranteed by titles) at other large banks.
- (21) One is conscious that foreseeability is not forcing a requirement with the transparency of the Central banks. Indeed, the foreseeability of the decisions of monetary policy can be quasi-perfect if Central Bank preannounce, during interviews or of declarations, its decision of monetary policy the days preceding the meeting by the council of monetary policy without however this same Central Bank having a strategy of clear monetary policy, included/understood by the whole of the economic agents.
- (22) See graphic according to.
- (23) Case of the euro area.
- (24) It is to be announced that the monetary lack of transparency is synonymous with a monetary opacity.

- (25) The effective statistics of unemployment are lower than the expectations of the market.
- (26) It is to be announced that one respected the tests of autocorrelation of the errors and heteroscedasticity, in order to avoid skewed results. * The variable is significant with 5%, F-stat = 8.177241.
- (27) In this graphic, French stock market volatility is indicated by the V_{cac40} .
- (28) Lagrange Multiplier.
- (29) They are given through a model of the type ARCH.
- (30) We then use a model EGARCH (1, 1), introduced by Nelson (1991) in order to test if there is an asymmetry of the relation between the conditional variance and the sign of the innovation.

REFERENCES

- ARTUS P. (2006), « Transparence des banques centrales, coordination et anticipations prix actifs », Flash du Service de la Recherche d'Ixis CIB (244).
- BAUER A., EISENBEIS, R. A., WAGGONER, D. F. and ZHA, T. (2006), « Transparency, expectations and forecasts », *Economic Review (Q 1)*, pp. 1–25.
- CORNAND C. and HEINEMANN, F. (2007), « Optimal Degree of Public Information Dissemination », *Economic Journal*.
- EIJFFINGER S. C. and GERAATS, P. M. (2006), « How Transparent are Central Banks? », *European Journal of Political Economy* 22(1), pp. 1–21.
- GERAATS P. (2005), « Transparency and reputation: The publication of central bank forecasts », *Topics in Macroeconomics* 5(1), pp.1277 – 1277.
- GERAATS P. M. (2006), « The mystique of central bank speak », *Revision of Cambridge Working Papers in Economics* 0543, Faculty of Economics (DAE), University of Cambridge.
- GUÉGAN D. and IELPO F. (2006), « Some further evidence on the impact of economic news on interest rates », *Journée d'économétrie UPX*, Novembre 2006
- IDIER J. and NARDELLI S. (2007), « Probability of informed trading: an empirical application to the euro overnight market rate, » *NBER Working papers* September 2007.
- PARTOUCHE H. (2007), « Time-Varying Coefficients in a GMM Framework: Estimation of a Forward Looking TAYLOR Rule for the Federal Reserve », September 2007.
- SWANSON E. (2006), « Have increases in federal reserve transparency improved private sector interest rate forecasts? », *Journal of Money, Credit, and Banking* 38(3), pp.791–819.