



LINK BETWEEN THE DEFAULT RATE AND THE ECONOMIC SITUATION

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ABSTRACT

This paper aims to explain the evolution of default rate through macro-economic factors which highlight the fragility of enterprises facing the extreme macroeconomic shocks for the case of France by using descriptive analysis and the econometric modeling by making use of a Vector Error Correction Model (VECM) with exogenous variables. Mains findings reveal that in short term, the default rates in the finalities of development, creation and financial restructuring can be explained by worsening of defaults in those same finalities but, at long term, the effects of contagion between finalities are noticed. Therefore, it is necessary to set up, a structural policy to boost economic activity, a circumstantial policy to create employment to stimulate domestic demand and competitiveness. Finally, to bring down average rate of interest on the monetary market so as not to harm the banks.

Keywords: Default, Finality, VECM, Macroeconomic

1. INTRODUCTION

The central banks have always known the importance of financial stability for a good macroeconomic performance. However, one of most pertinent tool is the default rate which defines itself as the quotient of the total number of the defaults occurred during a specific period on whole firms which didn't in defaults at the beginning of the period. The financial situation of the firms determines, in great part, those of credit institutions. Indeed, in the major case, the firms take out the lending with the banks, the organisms, or profit of the subventions by coming from of state to ensure their activity of production. The previous studies based on the probability of the default and the business situation showed that the number of the default increases in case of the recession. It is under this aspect that the investigators have evoked the existence of the link with the economic situation. Thus, the situation of the firms can reflect that of financial sector through the default rate. In the countries of Euro zone, the study of default rate is the object of a particular attention in the definition of news economic policies to assess the effects of different macroeconomic shocks. For instance, France considered as the second economy (in 2011) of the European Union after German, works a lot in this direction in order to underline the key economic factors which can characterize the fragility of firm sectors or banking system. Then, the business and national macroeconomic situation will be probably affected by the behavior of default rate. The relationship between the default rate and the economic situation will permit to insert in the macroeconomic analysis and has captured increasing attention of academic researcher such as Wilson (1997), Vlieghe (2001), Benito, Whitley and Young (2001), Boss (2002), Virolainen (2004), Jacobson and al (2005), Figlewski and al (2006), Sammar and Shahnazarian (2008), Hoggarth, Sorensen, and

Zicchino (2005), Can Lau (2006) and others. There are great deals of researchers on the relationship between an indicator of credit risk as the default rate and the macroeconomic variables after the macroeconomic crises and the turbulence of the markets. The seminal work has been done by Wilson (1997), who firstly build macroeconomic model of risk of credit which connects explicitly the macroeconomic factor and firms sectors through the default rate. The idea is to model the relation between the default rate and the macroeconomic factors and at last to simulate default rate evolution during the time in provoking the macroeconomic shock on the system. Vlieghe (2001) has made a series of contribution by estimating a model for the default rate of the global firms at United Kingdom and argue that the DGP, the debt of firm, the interest rate and the real income are the significant determinatives at the long term. Benito, Whitley and Young (2001) are used the empirical model of the Vlieghe (2001) for the prevision of the evolution of the failure of the company and firms. Boss (2002) has estimated a macroeconomic model of the credit risk for the default rate of the global enterprises to analyze the scenario of stress of the Austrian banking sector and find that the industrial production, the inflation, the average, the nominal interest rate at short term, and the price of the petrol are the important determinatives of the default rate of the firms.

Some researches investigate in order to enhance the importance to know the elements of explanation of default rate through the new macroeconomic model for the analysis of the link between the default rate and the macroeconomic variables. Virolainen (2004) has estimated the macroeconomic model of credit risk for the firms and find a significant relation between the default rate of the firms and the principal macroeconomic factors such that the DGP, interest rate and debt of firms. Besides, their document presents some examples of the application of the macro test model of effort, it means the analysis of the undesirable effects of diverse macroeconomic events on the risk of credit of the banks coming from firms sectors. Jacobson and al (2005) have adopted others approaches more complexes with three blocks. The first is an autoregressive vector (VAR) for the macroeconomic variables. It concerned the domestic production, of the inflation rate, of nominal interest rate and the real rate of exchange as exogenous variables in the model. The foreign macroeconomic variables as the default rate of the firms have been introduced in the model of the endogenous way. In the second bloc, they are considered a logistic model for the probability of the default rate of the firms; here the macroeconomic variables together with several variables of the balance of payments were considered as explicative. At last, the third block constituted an estimation approbation of the way that the variable of the balance of payments includes in the logistic model depends on the macroeconomic variables. Figlewski and al (2006) in their study heading « modeling the effect of the macroeconomic factors on corporate default and credit rating transitions », have used the firms data from 1981 at 2002, to measure, with the Cox model, the intensity of the credit events, including the values of the default together with the important improvement and the decrease of credit rate. They remark that in the approach of the short form of the credit modeling, the frequency of the default depend on the several own firm factors, notably the credit rate. But in the aggregated approach of the credit modeling, the default rates change also considerably during the time, which shows probably the changes in general economic condition. They show that the intensity of the event of credit is clearly influenced by the macroeconomic factor.

Some empirical researches support that there exist a strong relationship of the long term between the aggregated default rate and the evolution of the macroeconomic variables as the index of prices, the industrial production and the interest rate of short term and show that the rate of interest has the more great impact on the default rate among whole macroeconomic variables included in the model (for example, “Macroeconomic Impact on Expected Default Frequency” of Sommar and Shahnazarian (2008)). The model has been used to predict the default rate of the firms sectors according to the probable evolution of the macroeconomic variables.

An alternative to the traditional econometric models for the analysis of the link between of the default rate and the macroeconomic variables depend on the specification of the hypothesis which is retained. We distinguish the econometric models with exogenous economic factors (Wilson, 1997) and the

econometric models with the endogenous economic variables (Hoggarth, Sorensen, and Zicchino (2005)). On the one hand, Can Lau (2006) has enumerated three advantages of these typical models. First, they are very adapted at the scenario studies of stress testing. Second, of the fact of the presence of the long series of data for the majority of the countries, it is then possible to make the comparative studies between countries. Third, the default rates used for the estimation of the model are the historic data, of that fact, we can give up to formulate the hypothesis. Moreover, a disadvantage of macroeconomic models is that the data must cover a longue period that the duration of economic cycle will not obtain the impact of economic cycle on the default rate. It is indicated that these typical model have the subject of the critics of the part of Lucas as the parameters or the functional form are not necessary stable in the times. In this paper, the goal is to explain the evolution of the default rate by the macroeconomic variables for the case of French economy. How can we give an account of the determinatives economics factors which underline the fragility of the firms sectors to prevent extreme macroeconomic shock? At this consideration, it concerns to identify different approaches to accumulate a certain number of elements vrey useful for the comprehension of phenomenon. Beyond of the sectorial particularities, the young firms and the small firms are more affected by the nature of the economic situation? The study of the accountable data does it help to identify the problem of the economic performance as symptomatic element of default rate? How to plan future evolution of the default rate in function of macroeconomics aggregates?

The rest of this paper is organized as follows. Section 2 presents the VAR econometric model and its estimation's process. Section 3 shows the data and data processing, and reports the main results. Section 4 ends the paper with concluding remarks.

2. EMPIRICAL ANALYSIS

2.1. Data and no parametric tests

The data set used in this study comes essentially from the National Statistical Office of France (INSEE), Bloomberg and the Bank of France. These data are the quarterly data covering the period from first quarter 1985 to fourth quarter 2010. This study registers itself as well in the logic of the research of the macroeconomic determinatives of the default rate of firms. The major part of the studies done, have analyzed the default rate aggregated without taking account the fact that the default is affected by the characteristic inside of the firms. In other ways the default rate is not the same according to the finalities of the credit. The spearman test is used to point up the level of the link between the default rate and the economic situation according to the finalities of the credit such as: the creation finality, development finality, restructuration finality of the financial situation and the transmission finality. Results of the test enhance the exposition at the risk of the firms' relation to the different finalities. Indeed, the analysis reveals that the finalities creations, financial restructuration have in average a level of the risk raiser than those of development and the transmission. With their high value, they mark-down of the others, of a point of economic view this means that the SAF of least of 3 years or in creation are exposed at very high risk to be in default. Normally, the young firms by lack of experience have more of difficulties to clean up their financial annoyance since their creation. For the firms linked at the financial restructuration finality, they dismiss one part of personnel and reorganize themselves to look for a better financial situation. The elevation of default of firms in this finality is then due in great part at their unstable financial situation. So, the finalities creations and financial restructuration are very unstable and would expose the investors at more risk. Of the other hand, the development finalities and transmission are a level of default very feeble. That means of a point of economic view these finalities expose the investors at less at phenomenon of loss history. Thus, to execute the affair with the firms linked at these finalities is relatively less risked.

2.2. Results of econometric estimations

It concerns a vectorial model at error correction which is estimated. We have at total 10 variables which are included in the model whose four variables are under endogenous forms: these are the variables characterizing the default rate according to the finalities. Others variables which concerning the

conjuncture are been token in exogenous. It is necessary to precise that in the autoregressive vectorial model with exogenous variables the whole delay of exogenous variables put besides in the model is considered as another variable , and in more, the choice of delay to include in the model doesn't concern only endogenous variables. We had retained as optimal two (2) delays for endogenous variables and until at three (3) delays for the exogenous variables.

First, the development finality, creation and transmission finality do not influence the financial stability of businesses in financial restructuring. However, the rate of interest on the money market and the evolution of the commands are cyclical variables which explain the phenomenon of default for the businesses in default of the financial restructuring's finality. An increase of one percentage point of the average rate of interest on the monetary market resulted in an increase of 0.21 % of the rate of default for restructuring's finality in the third quarter after the increase. On the other hand, an increase of one percentage point of commands received led to a decline of 0.04 % of the default rate of the finality of restructuring in the third quarter after the increase. Secondly, the rate of loss experience of the business in development, creation and the businesses in transmission combine to explain and decrease the credit risk of the development companies in the next two quarters. The good health of businesses of development's finality on the previous two quarters decreased the level of default of the companies of the finality. Then, the default's situation in the creation and transmission finality reverberate on the firms in development. But to a cyclical viewpoint, the rate of growth of GDP, the interest rate on the monetary market and unemployment explain the phenomenon of default rate in the development's finality. A 1% increase of the economic activity in the previous quarter significantly improves the level of the quarterly risk of default of 0.002 %. But, an increase of one percentage point of the average rate on the monetary market causes an increase of 0.11 % of the rate of default for development's finality to the following quarter. A strengthening of one percentage point of unemployment rate increases of 0.11 % in the third quarter the rate of default of development's finality. Thirdly, the situation of default rate in the restructuring's and development's finality don't affect the level of the credit risk of the enterprises in creation. But the phenomenon of default of the transmission's finality and that even companies in creating affect that which prevails in creation. In fact, the goal transmission and creation have opposing effects on the level of default of the companies in creation. Ultimately, the phenomenon of default for the creation's finality is virtually explained by the other finality. For a cyclical viewpoint, only the unemployment rate explains the phenomenon of default rate for the businesses in creation. Indeed, the level of the unemployment rate in the first quarter past explains the situation of the credit risk. The situation of the high rate of unemployment in the first quarter past leads to amplify the magnitude of the phenomenon of default rate of companies in creation. A strengthening of one percentage point of the unemployment rate increases of 0.22 % in the quarter following the default level in the aim of development. However, in the fourth place, the fault of the businesses in development and transmission explain the phenomenon of loss experience for the transmission's finality. In effect, the level of credit risk for the companies in development and transmission will combine to reduce the phenomenon of credit risk of the transmission's finality. Then, the growth of economic activity, the level of the interest rate on the money market and the development of the orders received from enterprises mainly explain the phenomenon of default in the transmission's finality. An increase of one percentage point in the economic activity increased third quarter following the fault of companies of this purpose of 0.002 %. But, an increase of one percentage point of commands received reduced in the third quarter following the default risk of firms in this finality of 0.01 %. And finally, a one percentage point increase in the average rate on the monetary market improved to 0.08 per cent the default rates of businesses in the financial restructuring's finality in the third quarter after the increase.

Long term relation shows the first relationship of co-integration which is only present in the default rate on restructuring shows a positive impact on the four default rates. The other three default rates, retain the same evolution then the default rate on restructuring tends to deviate from this relationship. The elasticity's of long-term shows that an increase of 1% of default linked to the development's finality led to a decline of 0.14 % of default restructuring. However, a 1% increase in default of creation and

transmission cause each an increase of 0.3 % of default in the restructuring's finality. Then, the fault levels of creation and transmission have the same effects on the level of default of long-term restructuring. The second relationship of co-integration shows a common development of the four default rates. In addition, the negative sign of the coefficient of the strength of reminder of positive development and those of creation and transmission provide a specific piece of information in relation to this relationship. Indeed, a positive impact on the development tends to deflect this last of the long-term equilibrium. However, the force of reminder will bring back toward the long-term relationship. At the same time where the adjustment was made for development, the creations and transmission, tend, as to them; also join the new position of development for a new balance. So, an increase of development resulted in the creation and transmission. First, in terms of the impact of long-term, we note that a 1% increase of the restructuring led to a decline of 0.15 per cent of development. As regards a 1% increase in creation and transmission, it led to a respective increase of 0.4 per cent and 1.05 per cent of development. Then, in terms of the impact of long-term, it should be noted that a 1% increase in transmission led to a decline of 2.6 % of creation. As regards an increase of 1% of restructuring and development, it causes a respective increase of 0.37 % and 2.45 % of creation. Finally, in the long term, an increase of 1% of creation led to a decline of 0.38 % transmission. The latter is, also, its value increased by 0.14 percent and 0.94 % as a result of an increase of 1% respectively of restructuring and development.

3. CONCLUSION

The empirical relation and the conceptual analysis between the type loss histories and the variables reflecting the economic situation have permitted to find two results. Firstly, the variables such as the growth rate of DGP are negatively linked at phenomenon of the default rate of the French firms. Secondly, variables like unemployment rate, the evolution of the command are positively linked at default rate relation to the four finalities: creation, development, transmission and restructuring. The evolution of default rate is contra-cyclical of the economic activity in France because of the negative relation between the quarterly growth rate and the default risk in quarterly rhythm. It stands out that the economic situation effect on the default happens with delay notably by the canal of the evolution of raw material prices. At last, certain variables act on the phenomenon that we study with a delay effect. However, the default rate fluctuate distinctly, according to that we are in the short horizon or long term. At short term, the default in the development finality, creation and financial restructuring can explain itself by the worsening of the default in these finalities themselves. The increment of the economic activity at precedent quarter contributes to decrease the default risk of firms in development in quarterly rhythm. An increase of the commands received concurred to decrease at the following third quarter the volume of current loss history in the transmission finality and to reorganize the financial situation of firms. If an increase of the interest rate on the money market dwindles at third quarter following volume of the current of loss history in the transmission's finality, that aggravates the default in the development's finality and transmission's finality respectively at third and first quarter after the increase. The level of the unemployment rate at first quarter past explains the situation of risk of credit of firms in developing and creation. At long term, on the one hand, an increase of one point of percentage of default linked at development's finality carries away an increase of 0.14% of restructuring's default. On the other hand, an increment of one point of percentage of default of creation and transmission leads up to each one increase of 0.3% for default in the restructuring's finality. Another hand, we apprehend, equally, contagion's effect by the fact that: an increase of one point of percentage of the restructuring causes a decrease of the 0.15% of development; an increase of 1% of the creation and transmission, conducts at an increase respective of 0.4% and 1.05% of development; a worsening of default risk of one point of percentage of transmission causes a decrease of 2.6% of creation; an increase of one point of percentage of the restructuring and the development involves an increase respective of the 0.37% and 2.45% of creation.

We recommend that to set up the policies of maintain a good situation of business economy in order to reduce the risk for firms to be in default. More especially; we recommend a structural policy endeavoring



to increase the economic activity. Secondly, we recommend the cyclical policies to create job. Indeed, a decrease of unemployment rate will give a decrease of risk level on the three first quarters for the young firms and by contagion effect a decrease for the firms in development. A positive shock on the commands received via the importations is unfavorable for the firms in creation, in development and in restructuration. The authority will must take the measure to reduce the importations coming from the inflationist economic environment countries. Finally, we don't recommend a policy endeavor to reduce the average interest rate on the money market because the last aggravates the default situation of the firms which are in default.

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