Asymmetric Information, A Causality Analysis of The Stiglitz - Weiss Model for The Credit Markets, Related to The Textile Sector in Turkey

Cenap Mengü Tunçay
Department of Economics
Gazi University, Ankara, Turkey

Atilla Gökçe
Department of Econometrics
Gazi University, Ankara, Turkey

ABSTRACT

In this study, the problem of asymmetric information and its effects on credit markets have been undertaken within the theoretical framework. It has been tried to test whether the theory of Stiglitz Weiss Model, one of the approaches of theoretical framework of asymmetric information, is convenient for the credit markets, related to textile sector in Turkey due to Granger and Toda Yamamoto Causality Analysis. It has been also determined the direction of causality is convenient with the theory or not. By analyzing Granger and Toda Tamamoto Causality between selected financial ratios, which was chosen from Central Bank of Rebuplic of Turkey, Company Accounts between 1991 – 2014 for the firms, operated in textile sector and credit risk of the sector, it has been tried to determine which financial ratios have causality with the risk of textile sector and the way of causality between these variables. As a result of Granger and Toda Yamamoto Causality Analysis, which have been carried out, it has been found that, for the textile industry in Turkey, the ratio of total credits in short run to total liabilities and the ratio of total credits in long run to total liabilities are affected by the sector's proportion of liquidated loans to total loans. Due to the mentioned conclusion, some suggestions, belonging to textile sector specifically, have been made by evaluating the strategies, which banks have followed for commercial credit placement, to avoid the default risk of commercial credits.

Keywords: Asymmetric information, Stiglitz-Weiss model, textile sector, causality analysis

INTRODUCTION

Within the context of information conveyed or communicated, the concept of information in the theory of economics is an element that usually leads to render of certain decisions and contributes to accumulation of knowledge in the market (King& Roderer, 1983). Asymmetric information forms when one of the parties in the market has better or more information than the other. The full information possessed by one side of the market also makes the structure of information asymmetrical (Phlips, 1988). Typically, the party that possesses more information or better information about the product traded on the commodity market than the buyer is the seller. However, it is possible that the opposite could also be true. Thus, the buyer can possess more or better information compared to the seller. The circumstances where the seller has more or better information than the buyer are seen more frequently.

According to Stiglitz (2002), studies in economics literature, which advocated the market economy and its radical policies for a long time, have ignored everything based on the information theory. The studies in the literature have been concentrated on models built on

the assumption that information is perfect. The assumption that the information is perfect in these studies was based on Marshall's dictum, which is the understanding that economies resemble with economies bearing perfect information a lot, when information has serious extent of imperfect structure in the economy. However, it has been widely recognized that information is effective in decision making for companies and households and that it is also not perfect. Minor amount of information imperfection can have quite significant impacts on equilibrium.

Grossman and Stiglitz (1980) defend that the structure of information is always asymmetric and justify this situation with the cost of information. According to them, if information is costly, obtaining information also requires spending particular effort and resources. In return, of this cost, there should also be an apparent gain. If the information is conveyed instantaneously by the prices and the information is costless, no agent in the economy will make any effort to obtain information because there will be no gain to produce information. Expenditure, which will not yield any return will not be made. Since no gain will be achieved by producing information anymore, no endeavor will be made to generate specific new information.

The presence of asymmetric information in the market could diverge the market price from the price of equilibrium, and thus the price level may be above the equilibrium price. One of the theoretical approaches devoted to the existence of asymmetric information theory in credit markets is the Stiglitz - Weiss model. In this study, the theoretical structure of the model has been analyzed based on the causality relation for the textile sector in Turkey. The direction of the causality relationship in the credit markets for the textile sector has been determined by means of causality analyses and it has been tried to judge whether the direction of the causality relationship is compatible with the theory or not. Within this context, firstly, the problems, which asymmetric information created in the functioning of the credit markets, will be discussed and the Stiglitz Weiss Model, one of the theoretical approaches in this subject, will be examined.

Subsequently, with the help of ratios, provided from sectoral balance sheets of the Central Bank of Republic of Turkey (CBRT), by performing Granger and Toda-Yamamoto Causality Analyses, it will be tried to determine the direction of causality relationship between banks' corporate credit portfolio risk ratio, regarding the textile sector and the companies operating in the textile sector in Turkey during 1991-2014 period and financial structure ratios selected from the sectoral balance sheets of the CBRT.

THE PROBLEM OF ASYMMETRIC INFORMATION IN LOAN MARKETS AND FINANCIAL MARKETS AND ITS IMPACTS ON THE FUNCTIONING OF FINANCIAL MARKETS

Equilibrium in the loan market is ensured by means of the interest rate in case there is perfect information in the loan market. Credits are effectively passed on through the credit users with the equilibrium interest rate. But, this ideal situation is not applicable most of the time because of the problem of asymmetric information (Stiglitz&Weiss, 1981). Compared to loan lenders, loan borrowers in credit markets possess more information regarding loan risk and potential return of the investment projects for which the loan is used. Lack of symmetric information creates two major problems in the financial system: adverse selection and moral hazard.

The problem of adverse selection originates from the fact that credit lenders are not familiar with the characteristics of borrowers before the credit contract is signed between the parties. This situation may stem from that people or institutions, seeking funding in the market, hide their financial situation that would prevent them from obtaining funding or that they can

reflect their financial situation in a different way which will affect their creditworthiness to credit lenders. Accordingly, they can obtain the fund, which they want, at a low cost without paying the risk premium. The existence of this situation in the loan market may cause fund providers to be reluctant to provide loan, or they may supply their funds at very high cost by demanding high risk premiums with more cautious behavior, in case that there is a possibility of misinformation. In this situation, loan borrowers with high credibility in the market are affected by the high interest rates or lack of funds, since they are not able to differentiate themselves from others, they cannot obtain funds, or they obtain funds at a high cost due to the fact that, their risk premiums have increased too much. In terms of macro perspective, the high funding costs in the market, namely the high interest rates for credits, can be explained with two significant reasons. The first reason is that fund providers limit funding the market due to asymmetric information. The second reason is fund suppliers require high risk premium, even if funds are offered in spite of asymmetric information. In this case, investors or borrowers, who have high credibility, are unnecessarily subjected to the high price (interest rate) or they drive out of the market.

The moral hazard problem occurs following the completion of transaction and in fact, it is a type of risk in financial markets. This problem occurs when credit borrowers in the market utilize the credit by engaging with an undesirable activity or for other aims hidden. Also it can lead creditors stop supplying credits, even if they are convinced that the credit borrowers will use it appropriately with the aim known. In case of moral hazard, credit borrowers may make the credit suppliers hesitate to supply their funds and even if the credits are supplied, this situation brings about liquidated loans. Besides, the lender's gain does not change in any circumstances, although their risk varies. The spread of this situation in the economy may lead fund providers to limit the amount of credit and to raise the interest rates.

Credit rationing occurs in credit markets due to the asymmetric information and moral hazard. Not to be supplied credit as much as demanded in the market or to be supplied in limited amounts due to unwillingness to provide credit is defined as credit rationing (Jaffee, 1971). In other words, to keep the interest rate of the credits at a certain level in order to maximize the profit or to reduce the excessive demand by restricting the amount of credit with some regulations by fund suppliers is defined as credit rationing, when there is an excessive demand in the credit market (Jaffe&Russell, 1976). In case of credit rationing, the credit demand exceeds the credit supply and credit is not received from the current interest rate. Banks want to increase interest rates in such cases. While a rise in interest rate to a certain point increases the credit offered, a rise above the certain point of interest rate decreases the amount of credit that can be supplied because of the decrease in demand. The level of increase in interest rates depends on the degree of asymmetric information. The more banks increase the interest rates, the more their own loan portfolios become risky. This diminishes the profitability of the banks. Therefore, most of the time, banks intensify their screening activities by changing loan amounts and collaterals through contracts (Stiglitz & Weiss,1981).

Asymmetric information leads to high interest rates for borrowers, who have high credibility and it may cause them to decide not to take credit. Thus, the ratio of risky credits, used by borrowers having low credibility, to total credits may increase. Under such circumstances banks, which's credit portfolio becomes risky, may have the risk of liquidated credit.

Competition in the banking sector may also lead banks to provide funds for more risky projects. Especially, competition in the credit market pushes interest rates down and this situation could increase the possibility of moral hazard. For this reason, frequent ruling of the banking system by governments may come to the agenda and regulations such as increasing

barriers to enter to the market for foreign capitalized banks, introduction of ceilings on loan and deposit interest rates can be applied (Mishkin, 2000). In case regulations are not made, the interest rate may be lowered until the loss of the banks due to the risky credits become equal to the profit from the risk free credits. Otherwise, lending of loans for banks will not be rational and there will be no further entry into the credit market. Therefore, banks' ability to maximize their profits originating from credits can depend on the skills of identifying the risk structures of borrowers or developing meticulous and rigorous criteria for selecting borrowers.

If demand exceeds supply in the credit market, price (interest rate) will go up. The supply will rise or the demand will decline until the equilibrium is reached at the same interest rate. If the price (interest rate) fulfills the task of shifting supply and demand in the market, there will be no credit rationing. But, the credit rationing exists in the market and the equilibrium, reached, is the one with credit-rationed equilibrium (Stiglitz & Weiss, 1981). According to Jaffee and Russell (1976), a certain number of factors, that makes credit market different, do not move up interest rates and credit rationing occurs because of imperfect information and uncertainty, which is specific for the credit market.

The aim of the banks, when credit rationing is applied by the banks, is to attract the application of the low risk project owners by means of arrangements by adjusting interest rates and due dates or using components such as collateral and so on. However, credit rationing has generally been made by quantity, not by price. According to Hodgman (1960), the reason for making credit rationing without price elements may be derived from the rigid interest rate which is generally not changed easily due to the oligopolistic structure in the credit market.

The collaterals are phenomenon, ensuring the repayment of the credit and partially imposing the credit risk to the credit borrower. Even though, rising collaterals increase the earnings of banks by enabling credit borrowers to prefer less risky projects; it may not completely eliminate the credit rationing (Bester,1985). With regard to Stiglitz-Weiss, those who demand credit can tend to prefer risky projects; even if they are obliged to give more collateral. Accordingly, increased collateral requirement can reduce the returns of the banks, supplying the credit (Stiglitz&Weiss,1992).

Although credit rationing is not an efficient mechanism to solve information problems, it is a phenomenon that limits the risk taken by the credit lender (Bebczuk, 2003).

MODELS FOR EXPLAINING OF ASYMMETRIC INFORMATION IN THE CREDIT MARKET AND THE STIGLITZ-WEISS MODEL

The Stiglitz-Weiss model focuses on the behaviors of lender institutions, especially banks in the credit markets, when the asymmetric information is concerned.

According to Stiglitz and Weiss (1987), in accordance with the model, when there is high interest rate in the credit market with imperfect information, the expected return of the loan demanders from successful projects will decline. This situation will primarily increase liquidated loans and motivate loan demanders for risky projects unlikely to be successful, high-yielding or force them to use risky techniques. Asymmetric information has a significant importance in the occurrence of liquidated credits (Bofondi&Gobbi, 2006). According to Stiglitz and Weiss (1981), when interest rates are high; banks lower the credit demands for risky projects by selecting the demanders of credits, in other words, by making quantity rationing, rather than raising interest rates.

In this model (Stiglitz&Weiss,1981); it is assumed that as the interest rates go up, the repayment rate of credit will diminish, high interest rates will make the credit portfolios of banks more risky and as a result the expected interest income of the banks will shrink and accordingly the expected profit of the banks will decline.

With reference to Stiglitz - Weiss model, the amount of the loan demand at the particular interest rate in the market is higher than the loan supply and the bank will not provide loan to potential loan borrowers, willing to accept a credit even at an interest rate much higher than the particular interest rate. The reason for this is that the loans offered at the interest rates above the particular interest rate is considered to be risky by the banks. According to the banks, credits granted at interest rates above the particular interest rates are credits, rendering credit portfolio risky and lowering the expected return. With reference to Stiglitz-Weiss, banks take into consideration interest rates that maximize their profits not the equilibrium interest rate in the market and use this particular interest rate as a eliminating tool for those demanding loan based on their risks.

According to the Stiglitz and Weiss (1981), in accordance with the model, the fund supply is determined by the average return of the loan corresponding to particular interest rate. However, there is excess demand in the market at the particular interest rate. Loan demand is a decreasing function of the interest rate charged to borrower. If the demand for loanable funds at the particular interest rate exceeds the loan supply, the credit rationed equilibrium is occurred, which means there is excess demand surpassing the supply. Consequently, according to Stiglitz - Weiss, when there is an asymmetric information, loan supply is restricted in the market and the interest rate, applied to the loans is determined below the interest rate that will clear the market. If the interest rate, applied to the loan is above the optimal rate for the bank; those demanding loan from the bank will bear risk and the default risk of the bank's credit portfolio will rise. In this case, the expected return of the bank from the loans will also decline and the loan granting will not be efficient.

According to Stiglitz and Weiss (1981), even if the projects of the demanders of loans, having different properties, are successful or not; the increase in the amount of collateral that the banks require from loan demanders will initially make the bank loan portfolios risk free.

However, since, low risky loan demanders have projects with a low rate of return and have low income level in average; they can not provide the requested collateral, when a level of collateral, exceeding a certain critical level is requested by the banks. Because of this reason, the risk free loan demanders will obligate banks to face with credit demanders, having risk and high-income, either by diminishing their loan request or leaving the market. This situation may increase the risks of credits in the banks' loan portfolios.

THE LOAN MARKET IN TURKISH BANKING SECTOR AND ITS RELATIONS WITH REAL SECTOR

There is a close link between credit volume and the economic activities of the real sector. For this reason, the loan lending process, the way credit markets work, factors affecting the credit volume offered to the real sector are significant. These factors can be counted as deposits drawn from the banks during the economic crises, gaining importance of alternative assets facilitating to issue credits such as government securities and restrictions for the loan interests or loan amounts (Sak,Özatay&Öztürk 1996).

The fundamental distinctive features of the loan market are the asymmetric information and exchange process are not happened with concurrently in these markets. The credit market

reaches equilibrium with price movements, which is interest rate. However, there may be disequilibrium at a certain level of interest, and this generally exhibits itself as excess demand. One reason why loan lending institutions cannot raise interest rates in spite of the excess demand is related that the loan portfolio becomes risky after a certain level has been exceeded. In this case, in spite of the excess loan demand interest rates are not raised, the borrowers are faced with the quantity restrictions and consequently the loan supply is restricted by credit rationing (Sak et al., 1996).

The most important burden which uncertainties arised and structural or non-structural imperfections in the financial system, is the increase in the resource costs. The excess risks and uncertainties increase interest rates on deposits and interest rates on treasury bills, as reference interest rates. Particularly, the reference interest rate has crucial significance in determination of deposit interest rate and indirectly in determination of the price of the loan. However, a factor that is not considered as direct uncertainty at this point but can increase the degree of uncertainty is dominance of asymmetric information in financial system. Banks do not have perfect information about their own customers in the banking sector as well. Accordingly, in determining the price of the loan, the risk premium that the bank adds on the fund cost is not determined based on the good customer, who does not have risk, rather than based on the bad (risky) customer. Banks accept that their loan borrower customers do not provide perfect and accurate information about themselves for credit borrowing. Thus, the price of the loan determined in the banking sector will be above the level accepted (consented) by good customer and will be below the level accepted (consented) by bad customer. Since the bad (risky) customers dominate the market at this price level, credit volume shrinks and problems appear in the banking system. Asymmetric information causes not only inefficient price, but also adverse selection and moral hazard.

The most important function of the banking sector is to mediate to utilize the savings accumulated in the economy for the finance of the investments to be made. The banks, as the companies that produce products, with their both assets and liabilities, use the funds, they collect from those who have savings, in their liabilities and supply these funds through the products, they created in their assets by trying to minimize the cost of information. The most important product in their assets is loans. It can be said that since the total assets of Turkish Banking System (TBS), corporate loan volume and the ratio of this volume to GDP (Gross Domestic Product) has not reached the levels of developed countries, the relations of the banking sector with the real sector has not reached satisfactory levels (TÜSİAD, 2005). Therefore, it must be ensured that the banking sector works with the real sector in a more active and efficient market.

While firms in the economy meet their financial needs from internal sources, commercial loans, stocks and fixed income securities; in Turkey large companies, quoted to the Capital Market Board of Turkey, generally collect funds from the capital market through their securities for investment financing and relatively small scale companies take loans from the banking sector and these loans have an essential role as indirect or external financing for investment finance (Sak et al., 1996).

That's why, functioning of the credit market without any problem has significant importance in stability of the real sector and investment financing and information, provided for credit borrowing and the collaterals, given have also significant role in functioning of the credit market efficiently for the investment finance. For this reason, the banking sector is frequently exposed to regulations based on the provision of accurate information for the protection of investor.

The instability in the economy adversely affects the domestic fund raising process of the companies and increases the uncertainties. Since the companies' production and investment decisions are associated with future and future values of companies cannot be estimated, uncertainty prevail short termism in the economy. Reducing the due date period of granted loans reduces problems arising from asymmetric information (Molina&Penas, 2007). Since instability and uncertainty increase the risk of bankruptcy as well, the fund transfer from the financial system is adversely affected. Banks prefer liquidity during periods of instability and uncertainty (Sak et all., 1996).

Due to the fact that especially, the crediting of the public sector between 1990 and 2002 had no risk, it can be said that for the banks, this situation meant in a sense perfect information about repayment of the credit without hesitation. In addition to the lack of trust for the real sector, because of high rate of taxation on corporate crediting and the dominance of public banks in the sector; the real sector can take loan at high interest rates

In spite of the risk, arising from asymmetric information banks are able to continue to provide loans to the real sector. Because, fund resources in their liabilities of their balance sheet, which exist as excess reserves causes a cost and banks do not want to endure these costs. When there is no problem for providing funds in the banking sector, it may be usual to see eagerness to give credit, but, in a potential crisis losses might be very high.

DATA AND ECONOMETRIC METHOD

In this part of the article, the causal relationships between the selected financial ratios of firms, operating in the textile sector in Turkey and the textile sector's credit risk ratio, exist in the Central Bank of The Republic of Turkey (CBRT) sectoral balance sheets has been analyzed. It has been examined that whether there is a causality relationship between risk of credit portfolio due to asymmetric information and selected financial ratio of the firms, operating in textile sector, from CBRT statistics. Accordingly it has been analyzed whether riskiness of credit portfolio causes credit rationing or not.

The textile sector in Turkey has been chosen because of the fact that, it is one of the most important sectors of the country in terms of employment, production and export volume due to being a labor-intensive sector for analysis. It has been extremely significant to be competitive, low cost, high quality and efficient production in today's global world market in the textile sector, which was severely influenced by the 1997 Asian Crisis and 1998 Russian crisis. Providing a healthy structure in the sector both in national and local basis is closely related with solving of financing problems of firms that can be considered as small and medium size enterprises (SMEs) making effort to maintain their activities in the sector. One of the most important problems, which the textile industry experiences today, is that a great majority of investments are made at high interest loan rate and short-term borrowing and this situation has distorts the financial structures of the companies in the sector.

The financial structure ratios attained from the balance sheet of the firms in the textile sector have been being published in the CBRT Sectoral Balance Sheets by using annual observations since 1991. Therefore, this article's data set consists of annual data for the period 1991-2014. Among the financial structure ratios of firms operating in the textile sector, three variables, deemed to be appropriate and important for the theoretical structure have been chosen. These variables are given below.

Y_1, Liquidated total loans in the sector / total cash loans used by sector
Y_2, Short-term bank loans obtained / total liabilities
Y_3, Long-term bank loans obtained / total liabilities

The Y_1 variable is calculated by us by dividing the liquidated total loans of the companies operating in the sector to the cash loans used by the sector.

It has been planned to interrogate the causal relationship between Y_2 and Y_3 of financial structure ratios that can represent the availability of credit rationing and the credit riskiness ratio (Y_1) in the textile sector. Accordingly, it has been tried to obtain information about the direction of the causality relationship between the relevant variables. As a consequence of the analysis, it has been tried to find that whether the credit market, related to textile sector, has appropriate with the theoretical structure or not in terms of Stiglitz-Weiss Model.

Unit root tests are required to examine causal relationships and to determine the method for the causality test to be used. In the first step of the econometric analysis, findings related with these tests are presented in Table 1. Unit root tests conclude that the series integration orders are $Y_1 \sim I(0)$, $Y_2 \sim I(0)$ and $Y_3 \sim I(1)$.

Table 1. Unit Root Tests

Series	Test Statistics	Lag Length	Break Date
Y_1	-6.2964[<0.01]	3	2000
Y_2	-5.3650[<0.01]	3	2009
Y_3	-1.5023[>0.99]	1	2001
ΔY_3	-4.4445[0.0499]	0	2012

Notes: Perron (1997) was performed for unit root test with structural break. Vogelsang (1993) asymptotic one-sided *p*-values are used and provided in square brackets. Δ represents the first difference form. Trend specification is trend and intercept, break specification is trend only, break type is an innovational outlier. The null is "series is has a unit root with a structural break".

Due to the fact that there are requirements for the determination of the VAR(p) model optimum lag length and adequate lag for autocorrelation tests; pairs of variables have been deemed essential instead of analyzing three variables together in order to get rid of the degree of freedom problem.

Causality tests give information about the presence or absence of a causal relationship between relevant variables. In the presence of a causal relationship, information about the direction of the relationship between variables is attained. It is also useful to point out here that the choice of approaches used for causality should vary based on the time series characteristics of the concerned series.

Table 2. Causality Tests

Variables	VAR(p)	Test Method	χ^2(d.f.)	p-value	Result
Y_1 **does not Granger cause** Y_2		Classical	$\chi^2(2) = 8.7779$	0.0124	
Y_2 **does not Granger cause** Y_1	VAR(2)	Granger Causality	$\chi^2(2) = 0.6582$	0.7196	$Y_1 \rightarrow Y_2$
Y_1 **does not Granger cause** Y_3		Toda-	$\chi^2(1) = 4.2112$	0.0402	
Y_3 **does not Granger cause** Y_1	VAR(1)	Yamamoto	$\chi^2(1) = 0.8353$	0.3607	$Y_1 \rightarrow Y_3$
Y_2 **does not Granger cause** Y_3		Toda-	$\chi^2(1) = 0.0006$	0.9791	**No**
Y_3 **does not Granger cause** Y_2	VAR(1)	Yamamoto	$\chi^2(1) = 2.1454$	0.1430	**causality**

Notes: p is the optimum lag for the VAR model and determined using the minimum information criteria. There are no autocorrelation problem up to 6 lags in the residuals of the estimated three VAR models and no heteroscedasticity is observed. The causality test method has been determined by considering the integration order of the series. Causality tests were applied with Wald tests by estimating the VAR model at the level of the series. In Toda-Yamamoto (1995) method for causality, the additional lag length determined using the p + dmax approach is considered for each variable in each equation. dmax is the maximum degree of integration for variable pairs.

Based on the findings of the causality test, there is unidirectional causal relationship from Y_1 to Y_2 and Y_3 for the period between 1991 and 2014 in the textile sector and the statistical significance for this relationship is quite high.

When the papers, related with this topic in the literature, studying the causality relationship between the liquidated loans and the credit rationing, are examined, the studies at the following can be considered. In the study of Aras and Müslümov (2004), which correlates credit rationing with liquidated loans and performs Granger Causality Analysis, it has been found out that the credit rationing has causality with liquidated credits. Another similar analysis is Okuyan's article. According to Okuyan (2009), by using Toda-Yamamoto Causality Analysis, it has been concluded that credit rationing changes due to the reason of the liquidated loans too. In the study of Ayrıçay and Altıntaş (2009), it has been also found that the liquidated loans caused credit rationing. Another study is Altunöz's study. Altunöz (2013) also claimed that especially in crisis periods, the excess size of liquidated loans triggered the credit rationing. The study of Köksel and Yöntem (2014) has concluded that following the restructuring in the Turkish Banking Sector after 2002, credit rationing is not affected by liquidated loans.

At this stage, the impulse-response functions between variables are analyzed using VAR models.[1]

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[1] Y_3 was assessed with the first difference in the VAR model. The optimum lag of the VAR model is p =1 for both relations, VAR(1).
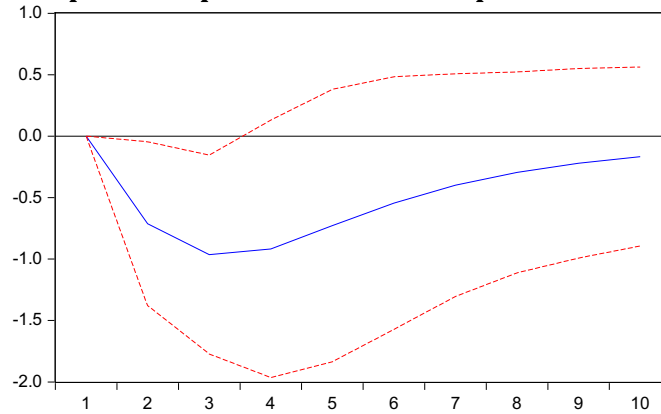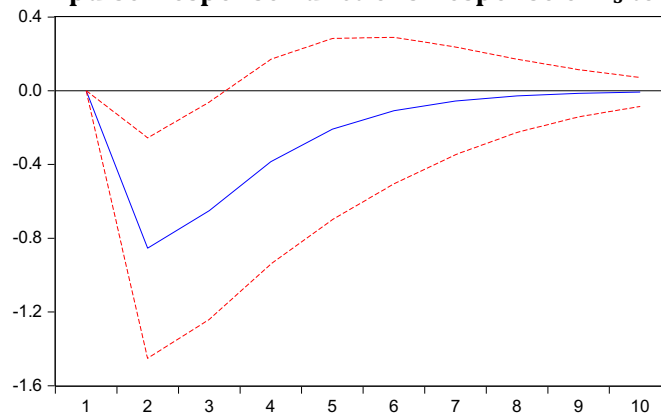
Figure 1. Impulse-Response Functions Response of Y_2 to Y_1 Shock

Figure 2. Impulse-Response Functions Response of Y_3 to Y_1 Shock

Figure 1. illustrates the response of Y_2 (short-term bank loans obtained / total liabilities) to 1 unit standard deviation shock that may occur in Y_1 (the total loan to be liquidated in the sector / the total cash loans used by the sector). Findings indicates that Y_2 instantly responds in decreasing direction to the Y_1 shock, and this response reaches the highest point in the third period, and even if the effect of the shock decreases, it did not disappear even after 8 period.

In Figure 2. it is observed that Y_3 (long term bank loans obtained / total liabilities) responds to the Y_1 shock in a rapid decreasing direction and this response reaches the highest level in the second period and the effect of shock tends to lose its impact after the fifth period and this effect has been disappeared in the ninth period.

Based on the action-reaction charts, the response of the share of short term bank loans used by the sector in liabilities (Y_2) is bigger than the response of the long-term loans (Y_3), against the shock that may occur in the share of the sector's total loan size to be liquidated in the total cash loans (Y_1) used by the sector and is needed more time to for extinction of this effect.

CONCLUSION

The econometric findings demonstrate that variations in the credit riskiness ratios of the textile sector firms create variations in the ratio of short term and long-term loans used by the sector to their total liabilities. Stated in other words, credit riskiness in the sector influences the banks' credit rationing in the sector. On the basis of the results of this study, it can be stated that the credit lending strategy must be determined according to the amount of liquidated loans, granted by banks in the textile sector, rather than the assets of firms, which might be a proper strategy in order to reduce the credit risk, undertaken by banks.

An effect, related to credit rationing in the textile sector can also be stemmed from the fact that the textile sector in Turkey has been directly encountering the exchange rate risk. Therefore, the banking sector has been hesitating to give credit due to sector's risky structure. Since the decline in the currency exchange rates reduces the competitiveness of exporters, this situation can lower the amount of production and can even cause closure of businesses due their failure to repay the loans. Therefore, to some extent the determinant factor of the commercial credits, offered to the sector by the banks is exchange rates.

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