

Financial Risk Management Using Financial Engineering Instruments

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Abstract: The study reveals and justifies the management of financial risks using derivative financial instruments. Disclosing the use of derivatives the Russian companies and their gives their comparative characteristics of their use. To minimize the additional cost of paying the loan in foreign currency company may use derivatives exchange market. Also presented the strategy of hedging the cost of raw materials and foreign exchange.

Key words: Derivatives, financial derivatives, hedge, forward, futures, option, swap, contract

INTRODUCTION

The financial activity of the enterprise in all its forms, involves numerous risks, the degree of influence which the results of these activities increases significantly (Kurilov *et al.*, 2014). The increase of the degree of influence of financial risks on the financial performance of the enterprise associated with the rapid variability of the economic situation in the country and the financial market, expansion of financial relations and its “liberation”, the emergence of new business practices, financial tools and technologies and other factors (Ajupov *et al.*, 2015a, b; Magee, 2013). Under the financial risk of the enterprise is understood as the probability of adverse financial consequences in the form of loss of income or capital in a situation of uncertainty of conditions for the exercise of its financial activities.

MATERIALS AND METHODS

Hedging financial risks through the implementation of relevant derivative securities is a highly effective mechanism of reducing possible financial losses in case of risk event. However, it requires certain expenses on payment of commission to brokers of premiums on options, etc. However, the level of these costs is much lower than the level of costs for external financial risks insurance (Wong, 2013). Various forms of hedging financial risks are already widespread in the practice of risk management. Derivatives allow you to transfer the price risk of one side to the other, ready to take in order to profit in the future (Kellner and Gatzert, 2013; Elices and Gimenez, 2013). In particular, the transferor’s own risk and at some coming period gains price certainty but loses the

opportunity to obtain additional income if prices on the market does not justify the expectations, for hedging purposes of which was the contract. A similar fate may befall the party taking the risk.

Procedure like insurance, derivatives protect against possible adverse circumstances affecting the cash flow (Kaeck, 2013). However, manufacturers face and reverse the effects of currency fluctuations related to the strengthening of the national currency. As is the case with the growth rate of the foreign currency interest rate growth begins in the most “wrong” time-during the progressive crisis phenomena in the economy (Wong, 2013).

Normally at this point in the warehouses of dealers residues accumulate unsold products, suppliers of raw materials and components are beginning to feel the lack of working capital, reduce the supply of products under the terms of payment by installments, requiring prepayment (Byoun *et al.*, 2013).

At these moments, the debt burden on the company automobile which are a unique center for the application of credit load the entire business process, critical increases and growth in interest for the loan servicing existing debt makes software critical for the life of the enterprise (Ajupov *et al.*, 2015a, b). This can lead to destabilization of the financial condition of the company, a decline in its liquidity and bankruptcy of the enterprise. A striking example-the crisis of 2008-2009, the consequences of which are: the bankruptcy of the largest automobile manufacturer-General Motors (General Motors), technical bankruptcy of a member of the American trio-Chrysler (Chrysler), the financial problems of the German Opel (Opel) and Russian AvtoVAZ, bankruptcy of the Swedish SAAB (SAAB) and so on.

RESULTS AND DISCUSSION

In general, the Russian enterprises in their business activities there are many risks, the risk of compliance with contractual relations in the supply of components and raw materials to the risks associated with changes in the legal system and force majeure. Consequences of most of these risks are minimized by means of selecting contractors, contracts with insurance companies, the use of legal support and so forth. Out of the risk should be allocated the risks associated with the rising cost of raw materials, changes in exchange rates and interest rates, for the following reasons.

Firstly, these risks are an effective system to reduce losses by hedging these risks in financial and commodity markets through transactions with derivative financial instruments. Second, the risks are of a periodic, cyclical nature which explains the periodic opposite changes in asset prices in financial and commodity markets. Third, hedging these risks without the use of OTC and listed derivative financial instruments is virtually impossible (Table 1).

In this case, under the hedging understand insurance, reducing the risk of loss due to adverse for buyers or sellers changes in market prices of goods in comparison with those taken into account in the contract.

To minimize the additional cost of paying the loan in foreign currency company may use derivatives exchange market. In this case, the maker could buy a derivative or a combination of several financial instruments with terms of delivery dollars at the time of interest payments on the loan and the date of payment of principal. Thus, the risks associated with a possible increase in the USD exchange rate would be reduced to a minimum. Selection of a particular hedge currency risk will depend on the state of the system hedging specific manufacturer (Magee, 2013; Ankirchner *et al.*, 2013). In the presence of an effective system of hedging may use futures contracts in the absence of such a system is the most effective and safe in terms of the risks associated with the acquisition of a derivative security is to buy an option or entering OTC

swap transaction. For the automotive industry, exporting products to other countries is characterized by the loss associated with the reverse situation-the growth rate of the ruble against the dollar. Thus, automakers typically faced with two varieties of currency risk-the risk of depreciation and appreciation of the national currency. In this case, one currency position may prevail over the other and in some cases foreign exchange position of the company can offset each other.

Hedging increase in the cost of raw materials and components may also be effected by means of derivatives. However, in contrast to hedge currency risk, hedging increased cost of raw materials on the Russian stock markets for car manufacturers is rather difficult due to lack of necessary trade financial instruments such as contracts for aluminum and steel as well as the low liquidity of the markets.

By using derivative financial instruments that are traded on international markets, the automaker can hedge the risks increase in the cost of raw materials by buying derivatives that are similar to the above example with the hedging of currency risks.

Given a certain complexity in the organization of the process of hedging the rising cost of raw materials through the purchase and sale of derivative financial instruments on the international financial markets, initially Russian automakers can recommend the execution of OTC contracts with Russian banks that offer effective ways of hedging commodity risks.

For this purpose between the bank and the automaker must be enclosed model contract ISDA, defining the rights and obligations of the parties in the course of hedging risk positions of the client. A significant advantage of this option is the lack of actual hedging transactions in the market on the part of the client, i.e, Bank shall purchase or sale of exchange tool in its own name on behalf of a client. Typically, banks are given three options hedging changes in the cost of raw materials (Table 2):

- Price fixing (swap)
- To guarantee the maximum level of prices (optional)
- Limiting the potential price fluctuations (collar)

Table 1: Comparative characteristics of derivative financial instruments that can be used to hedge risks

| Tool | Advantages | Disadvantages |
|------------------|---|--|
| Forward contract | Availability | Lack of liquidity, as it is an OTC financial instrument Potentially unlimited loss on the transaction Risk of default of the contract, there is no system security risks |
| Futures contract | Availability, liquidity, a high probability of the transaction, validate the warranty exchange | Potentially unlimited loss on the transaction |
| Option | Availability, liquidity, a high probability of the, validate transaction, the warranty exchange (if this exchange instrument) the possibility of waiver of the transaction by the buyer of the option | Expenditure on payment of premium to the option seller |
| Swap | Availability | Lack of liquidity, as it is an OTC financial instrument Potentially unlimited loss on the transaction Risk of default of the contract, there is no system security risks |

Table 2: Comparative options hedging changes in the cost of raw materials as a result of the agreement to enter into an OTC ISDA

| Tool | Advantages | Disadvantages |
|--------------------------------|--|---|
| Fixing (swap) | Protection rates, purchased asset does not imply bonuses and commissions | Losses as a result of falling asset prices |
| Purchase warranty (optional) | Protection rates, purchased asset | The high cost of the strategy by the payment of premiums and commissions |
| Limiting fluctuations (Collar) | Relatively small values of financial instruments | The upper limit is often higher than the budget price possible losses as a result of falling asset prices lower limit of the corridor |

Consider the example of hedging the rising cost of raw materials by the example of Russian manufacturers of aluminum-metal that is gaining share in the cars produced in the world is gradually replacing the traditional steel.

Russian automakers pay for the supplied aluminum suppliers in accordance with the average quotation of aluminum on the exchange LME. To avoid this, the company can hedge risks through the purchase of OTC contract ISDA. Consider the economic impact of the various options hedging.

The first option is to hedge price fixing, i.e., finally, swap (SWAP). The purpose of this transaction to fix the price of purchasing the product at a certain level for a specified period. If the market price of aluminum during a specified period is lower than the fixed price, the buyer of the swap pays the seller the difference between the fixed rate swap and the market price.

Another option hedging-buying a call option (call), i.e, fixing maximum prices. By purchasing an option, the customer gets the right but not the obligation to make a purchase of an asset at a specified date at a predetermined price (the strike price). If formed price at expiration the market price is more favorable level of the strike, the client waives the strike and making the deal at the market price. Buying an option involves the payment of a customer the option premium. In contrast to the swap agreement, the option buyer not only protects against unfavorable changes in prices but also allows you to “participate” in a positive development of the market for the client.

The third option proposed by Russian banks hedging is the purchase of a call option (call) and sale of a put option (put). This achieves fixing the market price of the purchased product in a certain guaranteed corridor during a specified period. At the time of the transaction the customer pays the bank a one-time insurance premium. Maybe pick up the boundaries of the corridor so that the insurance premium will be equal to zero. The combination of put and call with a minimum premium achieves almost ideal for the enterprise version of the hedge. So, if the market price is higher than the fixed price (or rather the boundaries of the corridor), the bank will pay the difference between the fixed and the market price. If the market price during a specified period would be within the boundaries of the corridor, the obligations under the option will be reset without payment of additional

premiums and commissions. If the price falls below the corridor, the company will incur unlimited losses. For a final decision on the choice of an option hedging is necessary to assess the price risk, for example by the method of “Monte Carlo” using time series, characterized by fluctuations in prices for a given asset.

CONCLUSION

At present, the Russian domestic industries are at a critical portion of his development, Russia’s accession to the WTO, increased competition makes paramount speedy work to optimize all types of costs not only by the trivial reductions on all counts but also by searching for painless methods of production and consumers to reduce them. One option is to hedge the risk of rising raw material costs and financing as well as changes in exchange rates (Ruf, 2013). Creating a system of hedging by Russian enterprises-it is one of the most effective ways to optimize costs without sacrificing consumer properties of products.

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