

# STRUCTURED COMMODITY FINANCE

Péter Suták

*University of Debrecen, Centre for Agricultural and Applied Economic Sciences, Faculty of Applied Economics and Rural Development, Ihrig Károly Doctoral School of Management and Business Administration, Debrecen, Hungary E-mail: peter96@freemail.hu*

**Abstract:** Over the past years, the financial stock market – providing the capital demand that is the result of stockpiling and the characteristic strong seasonality observed in the agricultural sector – has increasingly grown and become more “used” by market participants. Its size had reached an annual value of 200 billion HUF, of which agricultural products had received the largest proportion through the various market participants (producers, integrators, traders, feed producers, mills). In the meantime, this market had become part of the competition between the commercial banks that are the largest financers of the sector, due to which the financing credit institutions had undertaken increasing risk levels, with respect to both degree of financing and the VAT financing related to stockholding.

The practice of commodity financing by banks display a rather varied picture at present. Considering the exceptional degree of fall in prices and the actions of companies totally disregarding business ethics in 2008, it seems necessary to reveal the full scope of risks inherent in commodity financing. The primary aim of such an exercise is to ensure the prudent operation of refinancing activities for commercial banks.

The inherent risks in trade financing – as has been proven by the experiences of previous years – are not found primarily in the goods themselves, but rather at the actual storage facility and also emerge in relation to clients, as well as the inadequate and ineffective risk management of price volatility by the financers. Therefore, the establishment of banking risk management and risk prevention techniques, including the development of new financing procedures become indispensable, minimizing all types of risks that had emerged in previous years.

**Keywords:** structured finance, commodity finance, trading house, risks

## Introduction

Inadequate capitalization is a common characteristic of the agricultural sector and the companies operating in agriculture, and its related high demand for third party funding primarily in the areas of investment and current asset financing. The financial position of farmers is mostly inadequate security for financers.

The particular aspects of agricultural financing result from the varying, individual nature of agricultural production. It is necessary to examine these varying, individual aspects at two subdivisions (Kostyál et al, 2000):

- High capital demand of investments, coupled with – resulting from the seasonal nature of the sector – exceptionally slow return due to the low capacity utilization.
- The financing demand of current production is determined by e.g., the quality of production, the quantity of current assets, their composition or the material intensiveness of activities.

If one further examines the financing of certain production cycles, one faces further sector specific criteria:

- The vertical nature of production
- Cyclical nature of expenditures and revenues and also their realization during different periods (seasonality)

- Long production cycles, long reaction times

Increased dependency on natural factors increases the risks of return on investment and the repayment of the granted loans. The interests of the agricultural sector clash with the profit-oriented financial system: the banking sector can only provide loans on a strictly commercial basis, by ensuring the appropriate yield of loans that are also applicable in the agricultural sector. The banking sector cannot therefore introduce allowances into the financing system, even if this would be the public interest. Thus, the financing of the agricultural sector needs government subsidization. The government intervention in this area is as more important as larger the differences between the prices of agricultural products and their production costs and between the profitability of agriculture and the banking interest rates (Francsovcics, 2005).

Kovács et al. (2007) establishes that the implementation of EU regulations modified the conditions of farm loans. The range of the earlier government subsidies, coupled with financing options (interest rate subsidy, guarantee), decreased. The absence of financial sources had been supplemented in part by newly introduced financing options and, in part, by direct subsidies<sup>1</sup>. He further elaborates that, in relation to newly introduced EU subsidy types, certain

<sup>1</sup> Recently, direct subsidies had already contributed to nearly 60% of the agricultural budget in the EU. These subsidies are supplied detached from production. Without these, only 40% of Hungarian holdings could realize some profit. The conclusion is that Hungarian agricultural enterprises are subsidy dependent to a significant degree: their profitability and sustainability depends on subsidies (Kovács et al., 2007).

short term financing facilities had been focused on, such as factoring and public warehouse lending, in connection with intervention purchases.

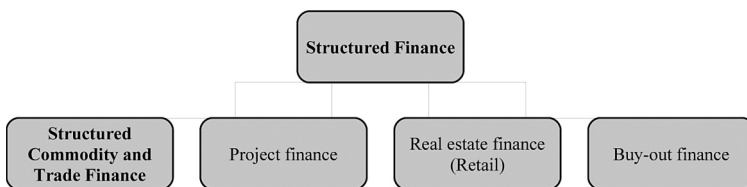
## Structured commodity finance

In previous years, it had become clear for financiers that the classic, balance sheet based financing does not completely serve the custom made service provision of enterprises, nor the efforts of banks for secure lending.

In many cases, the client's borrowing capacity had prevented the utilization of ordinarily applied financing structures. Thus, in order to increase their competitiveness, it had become appropriate for financiers to develop structured financing facilities that are sector specific and target the professional procedure of financing the trading and production of essentially commodity market eligible goods (wheat, fertilizer) and also easily marketable finished products (canning industry products), basic goods and large volume energy carriers (commodity products).

The developed individual facility follows the raw material procurement, production and the finished product, in harmony with the real processes of companies offering the most appropriately structured financial solution at all times.

There are many definitions for structured finance. Perhaps it is the most expedient to consider it as a generic term:



**Figure 1:** Types of structured finance

Source: Own figure

If I wanted a basic approach to structured finance as a definition, then it would be advisable to consider the following: An enterprise can be financed in two ways. On the one hand, financing can be based on the balance sheet of the company, the cash flow produced by the featured assets and business activities. On the other hand, the financing of an individual transaction (e.g., procurement, stockpiling) may be separated from the other business activities, making them individually financeable. In the case of structured finance, the latter approach is followed; one separates the assets or transactions from the other activities of the company and tries to interpret their individual borrowing capacity and financing eligibility.

In the present paper, I only wish to address the structured financing methods most relevant to agriculture, namely commodity or stock financing.

Synthesizing the definitions of “Structured commodity finance<sup>2</sup>” found in international publications, the following primary elements may be given greater importance, which define structured commodity and stock financing:

- Short term current assets, individual or repeated, primarily commodity based, mostly closed (back to back) financing facility, with fixed financing target;
- The structure and collateral ensure the financier control over the goods and also control over the cash flow from the transaction and the right of use;
- The financier tracks the movements of the goods (in part or the whole process from procurement to sales);
- Strict monitoring of the financed transaction that permits immediate reactions;
- The coverage for the source of repayment are the revenues generated by the sale of goods, the debtor typically does not have any other available funds;
- The risk elements characteristic to the structure are clearly identifiable.

As a result of these elements, one can determine that structured commodity and stock financing are applied in cases of non-financeable (primarily balance sheet based) companies or in the case of a company that may not be financeable over a given limit, in which cases the risks inherent in financing are counterbalanced by the adequate structured finance facility and strong collateral system.

The business model applied in structured commodity financing identifies the occurring costs, the necessary funds, the optimal financing facilities, techniques; indicate the relevant financing structure supporting market participants, institutions (e.g., public warehouse, insurance of receivables, factoring house, trading house, etc.). The utilization of a business model is of key importance in the development of the financing structure. With the help of the model – part of which is a dynamic balance of assets-liabilities related to the financed business period – one can determine the size of cash flow of the transaction, their timing and also the distribution of these between the financier and client, in suitable harmony with the collateral structure.

The financial model also plays a key role in the case of the financiers, since the financial model becomes the primary tool in monitoring, settlement and accountability following the disbursements. By utilizing the model, sensitivity tests can be carried out, simulating and evaluating the scenarios deviating from the norm (worth, basic, best) and also their effects on the adapted financing structure.

## Collateral in structured commodity financing

Of all the risk mitigating economic instruments available to the creditor, the most important is the collateral system. In most cases, the financial institutions require legal collateral, i.e. adequate securities for lending. This need is expressed by

<sup>2</sup> According to a simplified definition, this is the supply of clients with individual requirements by a complex financing source.

both the financial and credit institution acts (Balázs et. al, 1997).

In practice, it is worth distinguishing between the words collateral and security as definitions. Legal regulation only accepts collateral as a legal institution while, from the viewpoint of banks, collateral must be marketable<sup>3</sup> and immediately liquidated, preferably into cash, (e.g., marketable goods, securities). A portion of collateral (guarantee, joint and several guarantees) is not marketable and related to a specific transaction and are non-transferable.

In general, good collateral is one that can be easily, inexpensively, quickly:

- assessable,
- verifiable,
- enforceable – even in the event of enforcement, bankruptcy or winding-up proceedings,
- “clean” from a legal viewpoint,
- That which has a stable value.

Structured transactions are always collateralized loans. When devising a transaction, along with the planning of cash flows and their financial modelling, the most difficult task is to devise the financial and legal collateral system.

The collateral system backing the transactions may not only include traditionally accepted collaterals, according to Hungarian provisions: the lenders’ security may be increased by other collateral not specifically defined as collateral by other legal institutions, also such facilities that may only be viewed as “collateral” due to their effects. (Nádasdy et al., 2011)

The diversity of economic life and of economic interests and their varying intensity resulted in the parties seeking collaterals that are outside the Civil Code chapter 23, one direction among others was the application of so-called fiduciary legal solutions<sup>4</sup>.

### Trading house

The optimal combination of applicable banking collateral in the area of structured commodity finance and commercial transactions allow the client to receive funding even if the client’s financial situation and capitalization would otherwise not allow the establishing of a financing limit or if the client is loss-making; however, the stocks are available in large, homogenous volume, immediately marketable at a traceable price.

Trading house financing also represents a huge competitive advantage for banks, considering that the ownership of the goods acting as collateral provide greater loan security over most banking type (e.g., mortgage right) collateral, and also the option of disposal over the goods are immediate. It is a further positive point that the clients may be financed over the financing limit and – when necessary – for transactions that are at the stage of their being devised and the prior, intensive (restructuring) management can be dealt with rapidly and flexibly (collateral transfer).

The trading house financing permits banks to enter into the financing of such companies where the company – due to existing banking relations – cannot offer classic types of collateral (e.g. real estate). With the buy-out of certain assets and stocks additional financing may be provided, with lending of considerably higher yield than applicable to other business sectors, that further expands the market options of banks.

The Trading House is a typically project type company that can perform invoiced commercial activities<sup>5</sup>, acting as an instrument in such financing transactions where the acquisition of the ownership right of goods is preferred or is the only lending method (Figure 2).

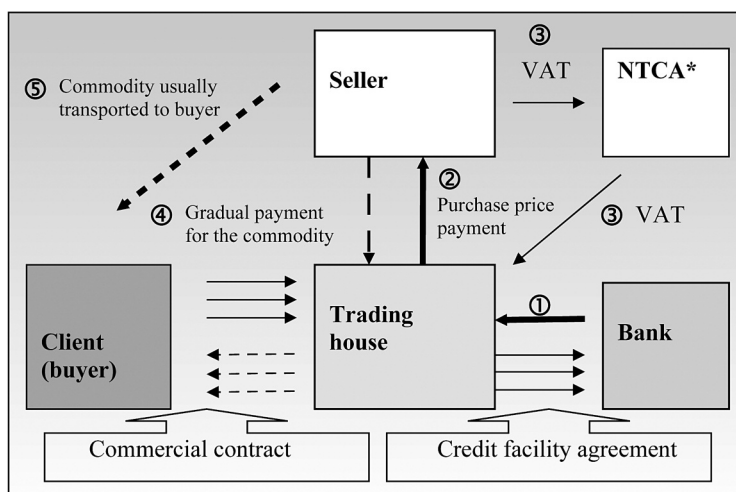


Figure 2: Methods of trading house financing model

Source: Own figure

\*National Tax and Customs Administration

Also important from the prudential supervisory viewpoint is that those commodity financing activities that are carried out through trading companies are performed with the involvement of such companies where the controlling, refinancing credit institution can exert an exclusive competence regarding the management of risks.

<sup>3</sup> The determination of the value of collateral means the establishment of the realistic market price. The financier is bound by neither the book value nor acquisition price. Of course during the valuation these factors could play a part; however, the aim of valuation is to establish an actual price that can be reached and realized on the market. It assists the financiers in valuing individual collaterals if one knows the individual values that one can take into consideration. In determining this, one has to keep in mind how could the value of the collateral change in time (time of realization), what type of factors and events could influence the value of the collateral, due to which the expert opinion does not only have to involve the valuation of collateral at present time value but it has to cover the collateral value at the time of realization.

<sup>4</sup> By fiduciary collateral, such legal operations are meant where the legal position of the entitled acts as collateral through ownership right, the option to ownership right, receivables or rights (Gárdos – Gárdos, 2004).

<sup>5</sup> The 1996. (23th) Act on Credit Institutions and Financial Enterprises rules out the acquisition or sale of goods by a credit institution that is aimed at profit generation.

## Financing model

The applied work-flow during the activities is in every case dependent on the composition of the structure, and also the type of goods. However, the source of repayment is in all cases the future cash flow from the sale of the goods.

The financing of the client is carried out against a revolving credit facility provided to the trading house by the refinancing bank. Its degree is determined on the basis of the client's previous financial year's procurement – stock levels – and sales data that are provided by the client. The trading company has disposal over the credit facility following the presentation of conditions and documentation proving the closed nature of the construction. In the case of this type of credit facility, the repayment schedule is fixed and the repaid amounts may be used again according to the conditions set out in the financing structure.

During the transaction process, the Trading company acquires (acquires ownership rights) the goods/stocks from the Client and each time obtains loans from the refinancing bank for the financial settlement of the gross purchase price. The determination of the purchase price plays a key role in every financing facility.

The trading house structured business model is basically based on the price difference of purchased goods and their resale price. Based on the model, the trading house receives the stocks at a specified – compared to the value of goods at a pre-fixed rate, reduced price. The seller (client) intends to repurchase these goods during the provided option period, but at the latest on the last day of the option period or a maximum of 1 year. The implementation of the option ensures the contractual collateral that may prevent the loss generating devaluation of stocks (Figure 3.). Thus, both the refinancing and the trading house capital are protected from possible price depression.

At the time of goods purchase simultaneously with the purchase-sale contract the trading house also concludes two option<sup>6</sup> contracts. On the one hand, the trading house provides a short call option<sup>7</sup> right to the seller of the goods for the repurchase during the term; on the other hand establish a long put option<sup>8</sup> right to reduce its risks. The latter means a purchase obligation to the seller.

In the case that the trading house experiences the unplanned increase in risks regarding a given transaction, acting within the options allowed by the contractual framework and utilizing its option right may call upon the client for the repurchase of the goods. In the event of non-compliance by the seller, the trading house possess the option to sell the stocks on the open market without any sanctions.

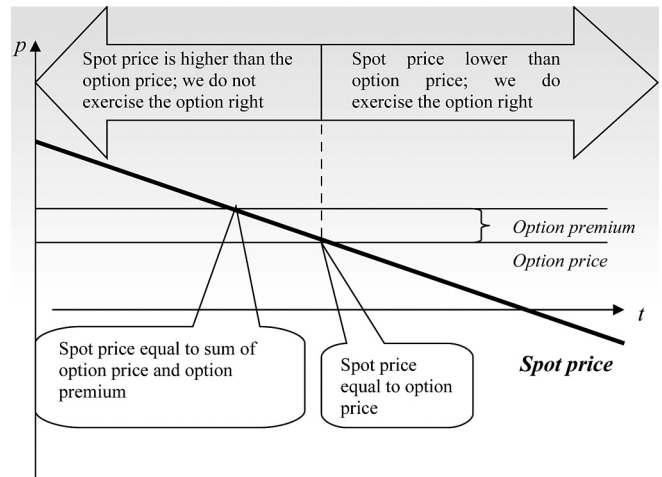


Figure 3: Methods of exercise long put option right  
Source: Own figure

With the establishment of the call option, it remains the trading house's discretionary right that in the case of default or fraud event steer the transaction towards commodities risk (possession, sale), or in the case of better borrowing capacity clients placing emphasis on company risk utilizing the put option forcing the client to repurchase the goods.

With the establishment of a put option, the trading house is entitled – on the put option – to involve further additional, classic banking collaterals such as blank bills, prompt collection order, offsetting and security deposit. The structures of this collateral in every case are subject to the transaction, client and market options.

When pricing, by using a security deposit, a volume of price puffer is formed that allows adequate room to manoeuvre for the trading house to securely manage stop-loss<sup>9</sup> events, to eliminate losses resulting from market processes. The value of the security deposit and the stop-loss level are the risks of the commodities, subject to the previously observed stocks volatility; client rating and the rating of the storage area are utilized in warehousing stocks.

With the application of this model, the trading house primarily serves the interests of the refinancing background, secondarily the operating prudence and the maximization of realizable profit only occurs as a tertiary aim.

As a result of individually designed financing structures the trading house has a number of differing (legally, accounting) options to sell the goods:

- The goods acquired by the trading company are sold to buyers denoted by the client and previously rated by the bank.

<sup>6</sup> Option means a right to the realization of a benefit. The concept of option had first emerged on the financial instruments market, during stock price valuation. These rights may be interpreted on the market of fixed assets, distinguished from the options related to money market; the latter is termed real option. In certain cases, the option may only be exercised on a given day. These options are traditionally termed European type options. In other cases, the option may be exercised on a given day and also any time prior to this date, these options are known as American type options.

<sup>7</sup> Act (1959) on Civil Code. 4. 375. §. If an owner grants a right of purchase (option) to another person, the beneficiary shall be entitled to buy the thing with a unilateral statement. Agreements on options to purchase shall be put in writing with the thing and the purchase price specifically indicated. An option to purchase stipulated for an indefinite period of time shall expire after six months; any agreement to the contrary shall be null and void. An option to purchase stipulated for a definite period of time can be stipulated for a maximum of five years.

<sup>8</sup> The other basic type of option is the put option that ensures the right of disposal at a pre-determined rate.

<sup>9</sup> The stop loss level equals to the refinancing costs and amount of variable operating costs per product unit value.



- The client repurchases the goods from the trading company, i.e. exercises the long call option right.
- The trading company sells the owned goods to buyers on commission from the client

Trading houses are primarily linked with business partners operating in capital intensive industry sectors, that are professionally well known exporters, wholesalers, energy suppliers, agricultural integrators and producers and also food industry participating companies and additionally with such companies that have suitable commodity products available and are intending to avail with the possibilities offered by the business sector (e.g. improvement of management ratios).

The range of financed products may only be products with transparently measurable market prices, available pricing and those that are controllable, homogenous and in demand. The range of products and the volume involved in financing are determined based on the sales records of the company. During the fixing of prices, the starting price in the case of trading companies are the acquisition, sales or other price that can be tracked on the market. For producing companies, the cost price is primarily used to make such calculations.

Commodity products may be classified into three primary groups:

- Agricultural products (soft commodities)
  - Metal and mining products
  - Energy industry products
- Goods with reference prices:
- grains (wheat, corn, rye, barley)
  - oil seeds (sunflower seed, rape seed)
  - protein sources (soy)
  - artificial fertilizer
  - copper, zinc
  - steel products
  - coke

The transparent reference prices and adequate historical data quantity of goods allow the determination of internal price, prices, that speed up the reactions given to market trend changes. Since only certain products (bread making wheat, corn, sunflower seed, rape seed, fodder wheat) are featured on the BSE<sup>10</sup> commodity section and these do not always possess adequate liquidity so that the quotations can be considered as a sufficient guide price, it is appropriate for financiers to monitor quotations on other markets. The typically monitored price indicators are MATIF<sup>11</sup>, CBOT<sup>12</sup>, LCE<sup>13</sup> and LME<sup>14</sup>, etc.<sup>15</sup> commodity market prices, and also the non-commodity market harbour quotations at Hamburg. Of course, in the cases of price indication calculated from foreign market prices, the cost of transportation has to be

included in determining the collateral value of stocks. Only the inclusions of excise goods are justifiably introduced into collateral system of goods with no reference. In this case the approval of National Tax and Customs Authorities is necessary for storage, greatly reducing the storage risks and also excluding the effects of price volatility due to the fixed nature of these prices.

### The introduction of occurring risks

Risk analysis is of paramount importance in the case of every institution involved in financing, since the results of these have a determining influence to both the design of the structure and the fulfilment of financing. With respect to risk mitigation, the primary task is the essential transfer of risks related to goods (exchange rate, quality) and warehousing to the buyer:

- In certain transactions, the transfer of the quantitative, qualitative and buyer risk demands an inspection by third parties (public warehouse, independent warehouse, accredited quality control institution, buyer insurance)
- The risk of goods marketability can be reduced significantly by an appropriate financing rate, meaning a purchase price calculated with a price reserve. These are typically:
  - grains: 90–95%
  - other commodity market products: 60–80%
  - goods that are difficult to sell on secondary market: 50–60%

Trading House solution mitigates counterparty risk and liquidation risk, but causes additional market risk (Figure 4).

	Working capital loan	Inventory financing with public warehouse receipt	Inventory financing with trading house involvement
<b>Counterparty risk</b> (potential default of borrower)	○	○	○
<b>Liquidation risk</b> (difficulty in exercising right over collateral given default)	○	○	○
<b>Market risk</b> (decrease in market value of collateral)	○	○	○

○ high risk   ○ low risk

Figure 4.: Relevant risks in commodity finance

Source: Own source

<sup>10</sup> Budapest Stock Exchange

<sup>11</sup> Marché A Terme d'Instruments Sinanciers, France stock exchange for rape and grain

<sup>12</sup> Chicago Board of Trade

<sup>13</sup> London Commodity Exchange

<sup>14</sup> London Metal Exchange

<sup>15</sup> LIFFE (London International Financial Futures and Options Exchange), WTB Hannover (Wareterminbörse Hannover), IPE (International Petroleum Exchange), AEX (Agricultural Exchange – Amsterdam)

## Market risks

The support of the ownership right of goods with factual, credible documents are the basis of trading house financing. For this purpose, as background documentation, the following are the most commonly used:

- supplier invoice on the procured goods
- declaration regarding the goods' exemption from legal proceedings, attachment, garnishment and execution
- market information regarding the ownership relationships, public warehouse closing of goods (to excluded double financing)
- quality certificate issued by accredited organizations
- records relating to the stocks management (quantitative, qualitative)
- commodity insurance policy issued by certified insurers

Along with the applied moderate price level established within the financing structure, the continuous monitoring of acquired stock quality, price movements, market and marketability options is essential.

The digressive price movements experienced in 2008, involving all industrial and agricultural products, pointed out to financiers, and primarily commercial banks, that it is not enough to utilize/apply the various exchange rate and market monitoring techniques in the areas of classic treasury products. Rather, the movements on the commodity market also have to be followed, to prevent the sometimes drastic decrease in collateral levels.

While volatility<sup>16</sup>, as a measure of risk had been in use for a long time, for a long period it had been considered as a type of constant value in time and as such a factor that can be eliminated by diversification. The fact that volatility can change in time basically only involved option traders and the people appointed to monitoring their risks. However, with the globalization of trading, the diversification options are becoming increasingly constricted; the increasingly significant speculative capital upset the markets from time to time, causing sudden significant changes in volatility.

It is a common observation on the market that volatility and exchange rates correlate negatively, namely at the depreciation of exchange rates volatility typically increases. Earlier, this could have been prevented by diversification between markets, since the fall on one market does not necessarily accompany a fall on other markets. Today, however, the markets are intertwined to such a level that a fall in one market is often followed by downward movement on other markets (Zsembéry, 2003).

The considerable financing risk inherent in price volatility may be kept within predetermined limits and can be secured by hedging (Kozár, 2011) with the application of an adequate contractual structure.

In determining the volatility in the case of financial models, the examined period in part fit in with the term of the option (mostly 1 year). Furthermore, during empirical application, it is appropriate to use the same period historical data set as for volatility value calculation during testing. Namely, if the volatility is to be used for the pricing of a 1 year term financing facility, appropriately a minimum of 1 year historical data set must be used in determining the volatility.

## Counterparty risk

Despite the commodity based financing, to both the trading house and the refinancing bank, the counterparty risks appear as a significant importance factor.

The banking risk management techniques primarily concentrate on identifying, preventing and managing the risks inherent in the client's course of trade. Along with factors that are examined based on objective ratios (capital structure, liquidity, debt service, trade receivables, free cash flow), an increasing emphasis is placed on subjective factors, such as management behaviour, ownership structure, professional competencies, sector specific information and track record.

As a result, it is necessary to take into consideration a client rating as a risk premium factor in determining the value of deposit (price reserve) in the business model of the structure – even if it is applied to a smaller extent.

In order to mitigate client risk, it is advisable to strengthen the financing facility structure by involving the client as a surety, that secures the refinancing facility of the Trading company undertaken from the Bank. This legal obligation is established between the Bank and the client.

Considering that the ownership rights of goods forming the basis of financing are transferred to the trading company and are under their disposal, possible wind up or bankruptcy proceedings initiated against the client do not represent significant risks regarding the return on the transaction.

## Storage risks

If the trading house does not possess its own storage capacity, the trading house has the option to – similar to public warehousing structure (artificial public warehousing) – warehouse the stocks at the client's own premises, or perhaps with the involvement of a third party under lease, ensuring the storage of the goods. In special cases public warehousing may be employed as a further security element. In this case the already public warehoused goods' ownership rights are transferred to the trading house by the transfer of warrants/bonds, or the trading house under the goods protection title enters as depositor on the public warehouse market. In the latter case, the additionally occurring public

<sup>16</sup> To forecast the future trends of volatility the simplest and most common method is known as historical volatility calculation. During the analysis, one assumes that the historical volatility calculated from prior data will follow the characteristics of the former trend in the future; therefore, the volatility does not change in time (Zsembéry, 2003).

warehousing costs have to appear in the costs of the financing facility.

The storage capacity, similar to the infrastructure provided by public warehouses, along with mechanical protection cannot dispense with the use of the latest electronic security systems<sup>17</sup> coupled with appropriately designed security protocols, ensuring the physical existence of the goods, to prevent unwanted goods movements.

It is necessary to examine the availability of necessary commodity specific infrastructure of storage capacity, its legal background (e.g. property protection).

The financial model applied to the transaction and financing structure calculates with a risk premium assigned to the warehouse as location where the goods are safe-kept similar to exchange rate risks, applying on relevant objective and subjective factors and weights.

### Quality risk

The majority of the goods stocks undergo such a lifecycle that in time not at all, or minimally – to a manageable level – influence the quality parameters. To mitigate the risks inherent in quality degradation occurring primarily in agricultural products (e.g. bug infestation, overheating) continuous, regular interval quality monitoring of goods is necessary. This allows for the minimization of amortization, quality degradation, and stock damage. In extreme cases, as coercive measures, the transportation of goods may take place or even the immediate sale of the stocks.

### Summary

The primary aim of the described structured financing is lending under non-standard conditions within a closed construction, the development of a financing solution and its implementation:

- indirect lending by way of goods acquisition from clients,
- the banking clients stocks and balance sheet optimalization at end of year,
- resale stocks that obtained by credit-related call option right (work out activity);
- the purchase and sale of goods acting as collateral, exclusively through closed (back to back) commercial transaction.

The financing facility displays considerable differences to general business lending, since there is an extra party – the trading company – between the capital provider and capital receiver in this type of financing, which could mean a solution to those companies that have limited borrowing capacity however has adequate volume and quality of goods. Thus, with the aid of the sector, the client can receive appropriate funds over a short period of time, while the trading house and/or through which the refinancing bank can realize profits with manageable risks.

The transaction is closed, the price and buyer risks are verified and secured with the appropriate business and legal instruments, and/or the given goods are of commodity type, accompanied by an adequate quality certificate, its trading is carried on organized markets. Furthermore, the trading companies have adequate price reserves in all cases or its equivalent in collateral, contractual background with respect to the acquired goods.

### Acknowledgements

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<sup>17</sup> Web based, industrial camera system, security service with 24 hour dispatcher center