DEVELOPMENT OF COMMODITY EXCHANGES IN FUNCTION OF AGRIBUSINESS IN SERBIA

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Abstract

This paper aims to determine the impact which developed commodity exchanges have to the improvement of agricultural products' market in Serbia.There are two types of commodity-exchange markets; first, spot or daily trading which provides to participants in trading the purchase of agricultural products by transparent prices with safe delivery. Delivery of agricultural products on spot commodity-exchange is mostly done within several days. The second type of commodity-exchange operations is the commodity derivative market, where buying and selling of agricultural products is realized in a precise in the future. Spot market which operates within the only stock market in the Republic of Serbia-Produktna berza a.d. Novi Sad is poorly developed. Commodity derivative market has not been established in Serbia. According to the analyses done within this work, the underdeveloped commodity-exchange operations are the consequences of, first of all, inadequate legal framework, as well as the non-established preconditions in form of a common business environment, significant for operating of commodity exchanges. Development of commodity exchanges would contribute significantly to the improvement of agricultural products market, as well as the possibility to manage the risk in farmers' business.

Key words: *Commodity exchange, spot market, futures, options, commodity derivatives*

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Introduction

One of the basic characteristics of contemporary business operations is dynamics and the increase of uncertainty degree in business operations. Cash flow of an enterprise is constantly exposed to the changes in prices of products and inputs, tax and interest rates, labour costs, exchange rates, unfavourable effects of natural factors, etc. As a consequence of such manifestations it has occurred the need for the development of financial instruments, by which application it would make the business operations more certain. For that reason, in the past four decades has come to the powerful development of derivative markets, which provide to economic entities in developed market economies the use of different hedging strategies. In that way, hedgers can transfer the risk of change in assets prices to which they were created the derivate securities to speculators, who expect to make a profit by accepting the risk (Zakić & Kovačević, 2012).

On derivative exchanges is traded with derivative securities. Value of derivative securities is derived from a value of other assets and this how terms “derivative securities “and “derivatives” originated. The derivative securities were created to numerous forms of assets, such as: metals, energy substances, agricultural products, shares, interest rates, foreign currencies, indices, time indicators, etc. These securities are named also futures contracts, in regard that the realization of trading by these contracts will happen in future (Chisholm, 2010).

At the core of derivative securities there are some other forms of basic assets: commodity, foreign currencies, interest rates, other securities, time indicators or indices. Term “*future trading*” is related to derivatives and it has series of characteristics which differs it from the prompt (*spot, casa*) trading. Unlike the prompt business operations, where a transaction ends immediately or no later than 2-5 days, a future (forward) character of conducting transactions implies the existence of a certain period of execution. There is a difference also in regard to the physical delivery of assets underlying a future contract in sense of a fact that, in prompt businesses a cycle of trade compulsorily ends with the delivery of commodity, while futures operations is not obligatorily followed by the delivery of assets, but this contract can be performed also with financial conciliation.

Economic environment in Serbia has been developed for many years within this economic system in which there have been many elements of planned agriculture. After transition toward the predominantly market way of doing business in 1990ies, the agricultural enterprises were facing business risks, uncharacteristic to business in planned economy. In other words, these mentioned risks in business were uncharacteristic to a high vertically integrated and planned organized economic sector in Serbia as it was in past decades.

Establishing a commodity derivative market represents one of the mechanisms which provide the management of risk in economic entities. In order to make the mentioned system work, it is necessary to set up basic preconditions, like: 1) sufficient quantities of uniform quality commodity (in case of commodity derivatives), 2) regulated optimal quality standards by which would trade on the stock exchange, 3) macro-economic stability, 4) legal framework which ensures the establishment of all commodity exchange institutes, 5) liberalized market, etc.

According to a review of experience in the development of futures contracts market in the world, as well as the analysis of needs and status of commodity-exchange operations in Serbia, there were given recommendations for further activities which would lead towards the establishment of a contemporary commodity exchange and would provide to agricultural enterprises in Serbia to use all mechanisms of business risk control, which were available to agricultural enterprises in developed countries.

Beside direct benefits which come from a possibility to use commodity-exchange instruments in daily business, the derivative market would have a positive direct impact to the economy in Serbia through the effects for the total business environment which manifest primarily through impact to the decrease in price fluctuations of agricultural products and inputs, interests, macro-economic stability, price transparency, etc. (Zakić & Kovačević, 2012).

In the front of Serbia it is an extensive work in setting up a legal regulatory rules related to the regulation of commodity-exchange operations, changes of various state policies which affect the commodity-exchange operations, as well as the education of participants in a commodity exchange system on possibilities to apply a hedging strategy by using derivative exchanges instruments (Zakić & Vasiljević, 2013).

Importance of commodity exchanges for agribusiness sector

There are two types of commodity-exchange markets:
- Spot and
- Commodity derivative markets.

On the spot market, buying and selling of commodity is realized after which the commodity delivers physically, as a rule within five days. The commodity from the group of agricultural products, the most trade with, on the commodity exchange is: wheat, maize, soybean, sunflower, soybean oil meal, fertilizer, etc.

A basic precondition in order to trade with one product on the exchange, is that it can be standardized, i.e. that a buyer, in accordance to a description of product on an exchange table, can buy this product without having insight in the product.

It is necessary to emphasize that the volume of spot trading on developed commodity exchanges reduces each year, so most of developed commodity exchanges don't have spot trading but only derivative. The reason for disappearance of spot trading is in the development of electro-communication technologies and therefore supply and demand for agricultural products meet easily outside the exchange and isn't exposed to the exchange commission costs. In spot commodity exchange trading, it is inevitable to pay, besides the exchange commission, also for transport of commodity to a standardized location of exchange delivery[3]. This fact burdens additionally the costs of exchange trading compared to out of exchange market trading, as the consequence of additional spot exchange costs. On developed commodity spot exchanges trade occurs for products which have low transport costs per u product unit.

On futures-commodity exchanges there are traded with standardized futures contracts:
- Future contracts and
- Option contracts.

In last decade, the USA market domination by derivative financial instruments gets weaker in regard to the Asian market.

[3] In practice, the commodity has not been transported, but there are reduces by tables the price of commodity to standardized delivery place, usually the stock exchange airport.

Futures contracts are highly standardized contracts on selling and buying certain assets in the future. They have numerous similarities, but also differences in regard to the forward contracts.

Thanks to a high standardization, it is possible the secondary trading with futures contracts, unlike forward contracts. Another difference between futures and forwards is that the physical delivery of goods happens in about 2% of cases and most of futures end with a financial transaction. Unlike forward, they have high security that the contractual obligations will be executed, which realizes through a mechanism of the compulsory depositing of a “margin” deposit, both for buyer and seller.

For functioning of futures, a clearing house is necessary and it is appointed toward a futures buyer as a seller, and toward a seller as a buyer. The clearing house guarantees also for execution of duties from futures contracts. In this way, a direct acquaintance between buyers and sellers is not necessary, i.e. a personal trust turns to the institutional one. Hence, they trade with futures exclusively on organized market.

Option contracts can define as derivative securities, with a particular right. Relations among the contract parties are regulated by an *option contract*. Option agreement in legal terms represents incomplete contract, regarding that it entitles one party to buy or sell certain kind of commodity after a prior agreed price, but it doesn’t oblige. The reason for the compliance of an option seller to a buyer's desire is that a writer, while making an option agreement, gets a premium or an option price.

Importance of commodity exchange for agribusiness sector in Serbia

Trading (trading) on spot commodity exchange market provides to the agricultural enterprises the following:

- To sell an agricultural product or buy the agricultural instrumental goods after transparent prices,
- Efficient buying and selling of commodity in short-term,
- Buying and selling commodity along with a decreased risk that commodity won’t be paid, i.e. that the bought instrumental goods won’t be delivered.

Hedging strategies with futures contracts are based on purchasing (opening hedging long position) or sale (opening hedging short position) the futures contracts. In this way, the agricultural enterprises ensure a price of its agricultural product which is the most often still in the field in the moment of trading (trading) (Kolb & Overdahl, 2007). If the price at spot market at the futures maturity is lower than the contracted price on futures, a planned price will be compensated with futures gain and *vice versa*, if it is higher, it will be reduced for loss on futures. In that way, in both cases the price arranged on futures is realized.

Example: If it is assumed that the price on the derivative market was in December 12.5 RSD/kg for maize and this is the price which was satisfying farmers. For that reason, he/she contacts his/her broker and orders futures sale of 10,000 tons of maize for delivery in December, after the price of 12.5 RSD/kg. The futures contract closes in December after the price of 12.0 RSD/kg, and a manufacturer really sells maize on the spot market in November for 12 RSD/kg.

Table 1. *Striking short hedging position (no changes of basis)*

Corn spot price	Corn future price	Basis	
Planned price 12.5 RSD/kg	Opens a short position for November (sell) by 12.5 RSD/kg	/	
November – price on spot market 12 RSD/kg	Closing the position in November contract by price of 12 RSD/kg	/	
Result on spot market: 12.5-12 RSD/kg = 0.5 din/kg less than the planned price	Result on derivative market: 12.5-12 RSD/kg = 0.5 din/kg profit	/	**Final score** - Desired price 12.5 RSD/kg - Realized price on spot market 12 RSD/kg - Profit on derivative market 0.5 RSD/kg Total realized price 12.5 RSD/kg

Source: Authors' calculation

The essence of opening the short hedging position is in a fact that, if there comes to the decrease of prices on spot market as it is case in this mentioned example, the planned price (12.5 RSD/kg) is protected by a gain on a futures contract. It can be presented simpler that, if a manufacturer loses with the decrease of price from April to November on the spot market, then he will gain the same on the other side with the decrease of prices on the derivative market. Mechanism of using the farmers hedging strategy, with the use of option contract, is shown in next example.

Example: Enterprise which deals with livestock production expects the increase in maize price and it has a dilemma whether to buy maize in July and to store it until May when it will be needed. The other solution would be to try to ensure a more favourable price through the purchase of *call* option on maize. For that reason, the agricultural enterprise purchases the *call* option with maturity in May next year and a determined strike price of 300 USD/t of maize, pays a premium of 30 USD/t for a contract of 1000 tons. Depending on trends of maize prices, the following possible situations are described in Table 2.

Table 2. *Strategy of purchasing call option - possible outcomes*

Price of maize on spot USD/t	Real value of options of USD/t	Profit/loss USD/t	Total profit/loss USD/t
272	0	-30	-3,000
296	0	-30	-3,000
300	0	-30	-3,000
305	5	-25	-2,500
330	30	0	0
348	48	18	1,800

Source: *Authors' calculation*

Turning point in the price of maize of 330 USD/t is shown in Table 2. Furthermore, the gain of an option buyer increases parallel to the increase in maize price. However, an option buyer, in range of maize price from 300 to 330 USD/t, will use their right to decrease a loss on premiums. Activating the option when the price of maize is under 300 USD have no sense, because it would produce extra-loss.

Development of the commodity exchanges in Serbia

Despite high fluctuations of prices of agricultural products in last few years and expressed need for the establishment of standardized forward marketing, the establishment never came to life in Serbia. The reason is primarily in the lack of legal regulatory rules which would create the possibility for forming basic institutions on the commodity exchange. Law on Capital Market anticipates the possibilities for the establishment of forward marketing, but not the possibility for the establishment of clearing and balancing within the same exchange or an independent clearing house. Although it was announced passing of the Law on Public Procurement in weeks to come, right after the Law on Capital Market was passed in 2002, this was never happened, not even after ten and more years. Impossibility to form basic mechanisms of developed commodity exchange in Serbia has caused that today it is traded with simple instruments: commodity, warehouse receipts and poorly secured forwards, i.e. the instruments which require a lower level of commodity-exchange infrastructure.

Legal framework for functioning of the spot and futures commodity exchanges is different.

The spot commodity exchange operations are not regulated by the common Euro regulative and it is left to each EU member to regulate this field individually. In the past ten years, there were more attempts to arrange the field of commodity-exchange operations by the special Law on Commodity Reserves within the ministry authorized for trading operations. The current state in the field of spot commodity-exchange operations which realizes on the *Produktna berza a.d. Novi Sad* is a low level of “services” for participants in trading. This reflects first of all in:

- Absence of clearing services in a way that the participants in trading, after matching the exchange indents, get an interchangeable data and take care by themselves on disbursement, i.e. delivery of commodity;
- Non-established system of the exchange's arbitration, and therefore in case of dispute, the participants in trading in the process of commodity delivery are left to the long-lasting regular judicial procedures instead of fast out of court settlement at the exchange.

With a new legal framework which would regulate especially the spot commodity-exchange operations, it is possible to establish the exchange arbitration[4], as well as security funds, which would provide better safety in execution of exchange trade. Additional safety and raising a level of services provided to the participants by the exchange would be in providing clearing on the spot commodity exchange, while a clearing house would take care on sellers' disbursement delivery.

[4] There is a possibility for the enforcement of arbitration on commodity exchanges within the Law on Arbitration, but this arbitration system is not completely adequate for commodity exchange operations.

It is important to say that spot commodity-exchange operations in countries with high developed commodity-exchange operations loss its significance every year primarily due to the development of information and telecommunication systems, which make easier finding buyers and sellers outside the exchange. This fact one must have on mind while establishing the above mentioned institutes on the commodity exchange, because besides a positive effect on the increase of safety and the commodity exchange services they have a negative influence on the increase of trading costs, i.e. the exchange commission for the participants on spot commodity exchange.

For the establishment of futures commodity-exchange trading, there is important the fact that the Republic of Serbia, in the process of EU accession, is obliged to adjust its legislation in the field of futures contract market with the EU legislation.

In 2012, the law known as *EMIR* [5] came into force and it was passed the similar clauses as *Dodd-Frank Act*. Basic clauses of EMIR, which refer to the commodity-exchange operations are: 1) compulsory clearing both for the exchange trading instruments and most of off-market trading instruments, 2) application of certain techniques of risk management for trading instruments which don't succumb to clearing, 3) reporting on trading[6], 4) special requirements for the foundation and work of clearing houses and trading platforms (Kovačević, 2014).

On several occasions has been tried to establish the commodity-exchange operations in the Republic of Serbia, by regulating this field through passing a special Law on Commodity Exchanges. The legal possibility to do so existed in the past, until the change of MIFID 2 Directive, which was adopted on July 2014 and there was expected to come into force in January 2018. That is to say, this directive has classified commodity derivatives with financial and exotic derivatives into the unique category of financial instruments, by which the market and trading of all futures contracts was regulated in the same way. Taking into consideration this new approach to the directive, there follows that the regulation of all

[5] See more: Regulation (EU) no. 648/2012 of the European Parliament and of the Council of 4th July 2012 on OTC derivatives, central counterparties and trade repositories.

[6] Both parties in trading (dealing) are obliged to report dealing in a specific term.

futures contracts in Serbia should be done through the improvement of Capital Market Act (CMA). Exactly the establishment of commodity-exchange futures trading is of the great importance and significance for agro-business sector in Serbia and it is a subject of the common EU regulatory rules and the Republic of Serbia is obliged to adjust its regulatory rules with the common EU regulations.

There are legal preconditions for operating of futures commodity exchanges in the Republic of Serbia within the Capital Market Act. Besides, the derivative market, neither commodity, not financial, has begun to live. The reasons can be found primarily in inadequacy of the Capital Market Act, which is not harmonized with the common EU regulatory rules. Basic deficiencies of CMA are in a fact that there is no system of licensing and control of clearing houses, but a clearing function can be performed only by Central Register of Securities. This situation is not practice in regard that clearing is a form of "market services" and granting a monopoly to one institution is not possible. Secondly, the Central Depository of Securities cannot provide clearing services regarding that a basic function of this institution is keeping records on dematerialized securities. Taking over the clearing service, which implies taking over the risk from the non-fulfilment of contractual obligations of participants in futures trading would jeopardize due to bankruptcy of the Central Registry of Securities.

After the world economic crisis, there has come to the adjustment of legislative framework globally. G-20 Summit in St. Petersburg, held on 5th-6th September 2013 is of special importance. At the Summit it was given direction of development of commodity and financial organized market for 20 most developed countries, which have adopted principles for the development of derivative financial instruments trading[7]:

- Establishment of common criteria for functioning of the exchange and off-market organized markets,
- Regulation of trading with swaps[8], through swap dealers licensing, registration of trading and clearing obligations for swaps trading,
- Strict obligation to report on trading,

[7] See more: G 20 Leaders' Declaration, www.g20.org/documents/pittsburgh_summit_leaders_statement_250909.pdf (available: 15th October 2013).

[8] Parties in contract give consent for the exchange of certain assets in future time by swaps. This kind of contract is characteristic also for dealing in currencies.

- Introduction of general criteria, common for regulatory authorities of commodity-exchange systems, as well as better coordination of the regulatory authorities' cooperation.

The European Securities and Markets Authority (*ESMA*)[9] does a legislative and control function in the field of licensing and control of capital market. The commodity-exchange spot commodity market is not a subject of EU legislation arrangement, but it is left to every member-country to arrange.

It can be concluded that the establishment of derivative market is preconditioned with two factors: first, the regulation of foundation and work of clearing houses activities and second, the regulation of swap contracts.

Integration of the commodity and capital market exchanges within one exchange is of special significance, which is practice in contemporary developed exchanges (Belozertsov et al., 2012).

Besides the quality legal framework for functioning the spot and futures exchanges, of special importance is also setting up a stimulating general business environment that affects the commodity exchanges activities and this primarily relates to:

- The activities of the Republic Directorate for Commodity Reserves which must move from purchase where an intervention price is determined by the conclusion of Republic of Serbia to purchase through public offering collection. In the first model, a price determined administratively can be known to a small circle of tradesmen, which can lead to manipulations on the market;
- Providing sufficient amounts of commodity securities by which guarantee delivery.

The comparative analysis of the exchange trading on the most important commodity exchanges in the world and in Serbia was described in Table 3.

[9] See more: European Securities and Markets Authority, www.esma.europe.eu (available: 11th July 2013).

Table 3. *Comparative analysis of commodity-exchange systems in Serbia and in the world*

Commodity exchange	Country	Commodity exchanges licensing and controlling system	Trade instruments	Clearing at comm. exch.	Arbitration	Trade platform	Warehouse receipts *	Exchange information system**
CME	SAD	Yes	Futures, options, indexes, spot	Yes	Yes	Electronic	Well developed	Well developed
CBOT	USA	Yes	Futures, options, indexes, spot	Yes	Yes	Electronic	Well developed	Well developed
MGEX	USA	Yes	Futures, options, indexes	Yes	Yes	Electronic	Well developed	Well developed
BMF	Brazil	Yes	Futures, options, indexes	Yes	Yes	Electronic	Medium developed	Well developed
NYX	EU	Yes	Futures, options, indexes	Yes	Yes	Electronic	Well developed	Well developed
BSE	Hungary	Yes	Spot, futures	Yes	Yes	Electronic	Well developed	Well developed
WGT	Poland	Yes	Spot, options	Yes	Yes	Electronic	Medium developed	Medium developed
RCE/ BRM	Romania	Yes	Spot, futures	Yes	Yes	Electronic	Medium developed	Less developed
IME	Turkey	Yes	Spot	Yes	No	Electronic	Not established	Less developed
RTS	Russia	Yes	Futures	Yes	Yes	Electronic	Not established	Less developed
(NAMEX)	Russia	Yes	Spot, futures	Yes	Yes	Electronic	Not established	Less developed
KievAgro-industrial Exchange – Kievagroprombirzha	Ukraine	Yes	Spot	No	No	Classic trade board	Not established	Less developed

BUCE	Ukraine	No	Spot	No	No	Classic trade board	Not established	Less developed
KICE	Kazakhst.	No	Spot	No	No	Classic trade board	Less developed	Less developed
MCX	India	Yes	Futures, options, indexes, spot	Yes	Yes	Electronic	Medium developed	Well developed
NCDEX	India	Yes	Futures, options, spot	Yes	Yes	Electronic	Medium developed	Well developed
KEX	Japan	Yes	Futures	Yes	Yes	Electronic	Not established	Well developed
ECX	Ethiopia	Yes	Spot, forwards	Yes	Yes	Electronic	Medium developed	Medium developed
DCE	China	Yes	Futures, spot	Yes	Yes	Electronic	Medium developed	Well developed
ZCE	China	Yes	Futures, options, spot	Yes	Yes	Electronic	Medium developed	Well developed
SHFE	China	Yes	Futures, options, spot	Yes	Yes	Electronic	Medium developed	Well developed
ASX	Austral.	Yes	Futures, options	Yes	Yes	Electronic	Well developed	Well developed
Produktna berza N.S.	Serbia	No	Spot, forwards	No	No	Classic trade board	Well developed	Well developed

Source: *Kovačević, 2014*

* System of warehouse receipts is classified by the authors' evaluation, on: 1) less developed, 2) medium developed, and 3) well developed. Criteria for assessment are: 1) the existence of a system of licencing public warehouses, 2) the existence of a system of public warehouses operations control, 3) the existence of a system of voluntary remuneration, as well as terms for discharge of damages for a warehouse receipt owner, 4) whether the warehouse receipt is in paper or electronic form, and 5) the existence and types of public warehouses guarantees, first of all if the Compensation Fund is responsible for discharge of an eventual damage to warehouse receipts owners.

General globalization in commodity-exchange trading (trading), the regulation of commodity exchange operations, money flows etc., causes the need to be harmonized the business operations of Serbian commodity exchanges with the world commodity exchange systems. Experiences of successful commodity exchanges in the world could be helpful in setting up a Serbian commodity exchange model.

It can be concluded that there is a high connectivity between the development of commodity exchange system and trading volume on the commodity exchange, by analysing data from *Table 1*. The commodity exchanges which offer a "higher level" of services to clients, such as clearing, out of court protection and electronic trade platform have, as a rule, a higher trading volume. Positive influence on trading volume is also noticeable in case when the state institutions license and control the commodity exchange, which furthermore increases the safety.

In addition, there was recorded a positive impact of the development of warehouse receipts system, which provide safe delivery of commodity after matching of orders, to the development of commodity-stock exchange operations.

Produktna berza Novi Sad in regard to other world exchanges belongs to the group of exchanges with less developed exchange system. The reason is that this exchange does not fall under the system of licensing and control, it doesn't offer clearing and balancing services to its clients, but the participants in trading (trading) themselves take care on delivery and disbursement. Likewise, there is no provided extra-judicial protection, so the participants in exchange trading in case of dispute are left to the regular court procedure. There also lacks an efficient electronic system of trading (trading).

On the other hand, by the efforts of employees on *Produktna berza Novi Sad*, an efficient information system was established, used by many agricultural enterprises. A fact that Serbian commodity exchange could have a status of the regional commodity exchange is of great importance, in regard to a high correlation between the spot prices of maize and wheat in the region (Kovačević, 2014). It would be more favourable place for the implementation of hedging strategies of tradesmen from the region in the world exchange relations, where the risk in basis change is more expressed.

Conclusion

High developed commodity exchange trading had also the expressed positive impact to the agro-business sector operations' in Serbia.

Further development of trading with agricultural products through the legal regulatory rules within the ministry authorized for trading activities would have a limited impact in regard that the spot trading with agricultural products loses its significance due to the development of telecommunication systems and easier linkage between supply and demand out of the exchange.

The field of spot commodity exchange trading is not a subject of general and common EU regulations, and therefore Serbia can adjust the legal regulatory rules to its conditions. It is necessary to be careful because beside the positive impacts, which would be realized by un introduction of arbitration, clearing, protection funds, the introduction of these institutes also could have a negative impact through the increase in trading costs.

High price volatility of agricultural products in Serbia causes the need for the development of commodity derivative trading which provides to the farmers to apply the hedging strategies in order to insure prices in future time. For introduction and development of commodity futures' exchange, it is necessary to adjust the Law on Capital Market with the EU regulations, primarily in the field of licensing regulation and control of clearing houses work and reporting of trading with swap contracts.

According to the conducted research, it can be concluded that in one commodity exchange in Serbia it is dominant the trading with simple spot commodity exchange instruments. Furthermore, unlike the most of developed commodity exchanges, there is no connection with capital market exchanges. In accordance with done analyses, it is necessary to improve: a general business environment.

Commodity exchanges in Serbia could become the regional centres of commodity-stock exchange operations by fulfilling the above mentioned preconditions.

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