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TRADING FUTURES CONTRACTS IN GLOBAL MARKETS

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Abstract. In today's global market environment the existence of risk is permanent. Its management is one of the fundamental goals of investors and participants of financial markets. Derivatives markets are integral part of a financial system. Futures, options and other derivative securities provide the ability to identify, evaluate and transfer existing risks. Trading of futures is one of the most important financial activities in financial markets. They are important price evaluation and risk management tools especially in the commodity market. These securities can generate large returns to speculators, but can be quite risky in some cases, too. Analysis of the development trends of trading futures in different markets was done in the article.

Keywords: financial market, derivative security, future contract, risk, commodity.

JEL classification: G11, G17.

1. Introduction

Over the last years the dramatic changes have transpired in global markets. The environment is driven by big flows of information and sophisticated technology. Financial risk arises due to unforeseen changes in underlying risk factors (Down 2002) and it results in financial losses or gain. Firms operate in high level of instability in the economic environment. The volatility of the environment is reflected in various factors: stock market volatility, exchange rate volatility, interest rate volatility, commodity market volatility (Down 2002) and so on. So it could be stated that financial risk nowadays is unending and its management is going to be the fundamental goal of investors, fund's managers and other decision makers.

Every day large distribution of goods and services are seen. Enormous quantities of various goods and services are sold and bought. As the prices are changing depending on the supply and demand trends, sometimes it is quite difficult to buy or sell required commodities at desirable price. For this reason the risk occurs which doesn't allow people to be insured against losses due to inefficient decisions of purchasing, selling or investment.

One major function of financial markets is to relocate risk between different economic agents. Futures, options and other derivative securities provide the ability to identify, price and transfer existing risk (Rambo *et al.* 2011). These instruments have become one of the main tools of risk management.

Trading of futures is one of the most important financial activities taking place in world financial markets. Futures are traded in the biggest part of financial and commodity markets and have proven to be an important tool of price setting and risk management. Being just the hedging tool, nowadays future contracts become an important arbitrage and speculation tools, too.

Trading in futures contracts needs some special conditions, so in Lithuanian markets there is no possibility to make future contracts because of the lack of exchange, but modern technologies have proposed the possibility to trade in global markets through financial intermediaries.

The purpose of the article is to analyse possibilities and risks of trading futures, as well as futures markets development trends. In order to achieve the purpose of the article, some tasks were fulfilled: theoretical analysis of future contracts was made, changes in the futures markets were evaluated, possibilities and risks of such trading were distinguished, statistical analysis of contracts volume and futures price dynamics was performed, conclusions and suggestions for investors were made.

Research methods that were applied are systematic analysis of statistical data, comparative analysis of scientific literature, synthesis, generalizations.

2. Peculiarities of futures contracts in the context of other market instruments

As it was already mentioned in the introduction of the article, derivatives are an important class of financial instruments that are significant for today's financial and commodity markets. They offer various types of risk protection and allow creating of innovative strategies for investing.

Because of the globalization user of derivatives can trade without any brakes. Main participants in the derivative markets are banks, investment firms, insurance companies and corporates, but individual investors can trade in these markets, too. There are two competing segments in the derivatives market: the off-exchange or over-the-counter (OTC) segment and the on-exchange segment (Hull 2000; Benhamon 2007). Statistics of the two segments of derivative markets is presented in Fig. 1 and Fig. 2.

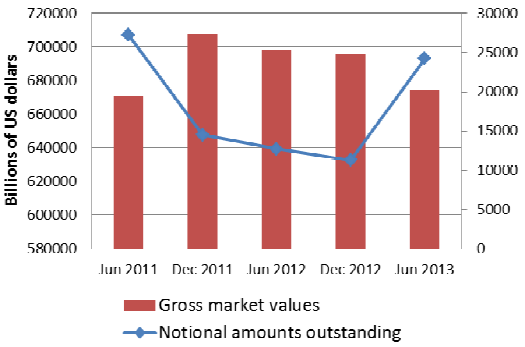

Fig. 1. Notional amounts outstanding and gross market values of OTC derivatives (source: compiled by authors based on Bank for International Settlements 2014)

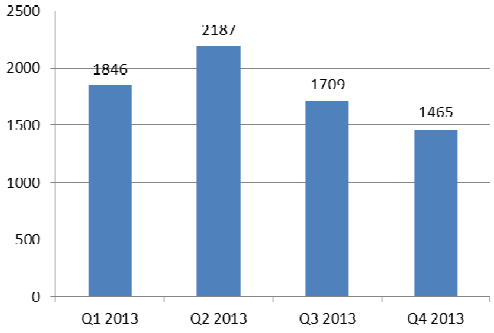

Fig. 2. Derivative financial instruments traded on organized exchanges, quarterly turnover, millions of contracts (source: compiled by authors based on Bank for International Settlements 2014)

The statistics provided in Fig. 1 covers data on forwards, swaps and options according different type of contracts: forex, interest rate, equity-linked, commodity and credit. The decrease during recent half-year in gross market value of derivatives was mainly due to the decrease in interest rate swaps and options, while forward rate agreements on interest rates increased since the end of 2012 from 47 to 168 USD bill. All other contracts, except credit default swaps, experienced a small increase.

Fig. 2 presents separate data on futures traded in all markets during 2013 year, divided according quarters. A decrease in futures market turnover can be seen during last 6 months. Some more statistics on futures will be presented further in the article.

Derivatives are totally different from standard securities. Various authors describe a derivative security almost quite similarly (Hull 2000; Benhamon 2007; Kancerevyčius 2009). A derivative is a contract between a buyer and a seller entered today into a transaction to be fulfilled at a future point in time. A derivative is an instrument whose value depends on the value of other more basic underlying variables (Benhamou 2007). Derivatives are financial instruments whose payoffs derive from other, more primitive financial variables such as a stock price, a commodity price, an index level, an interest rate, or an exchange rate (Sundaram 2012).

The main categories of derivatives are options, futures and forward contracts. They are financial instruments that are mainly used to protect against and manage risks, and very often also serve as arbitrage or for investment purposes, providing various advantages compared to securities (Benhamou 2007).

According to A. A. Kodze (2011) the old saying exists stating that there are two emotions that drive the market that is greed and fear. These emotions then lead to two types of traders: speculators and hedgers. Derivatives are attractive financial products for both of these, but hedges and speculators have different needs in the market. Speculators are interested in derivatives because they can provide a cheap way to expose a portfolio to some market risk with a view to outperform the market. Derivatives are an alternative to investing directly in assets without buying and holding the asset itself (The Global Derivatives Market. An Introduction White pages). They also allow investments into underlying and risks that cannot be purchased directly (credit derivatives or weather derivatives). Investors can take positions in the market if they expect the underlying asset to fall in value. Hedgers are interested in derivatives because they allow investors to reduce market risk to which they are already exposed (Kodze 2011). That is derivatives make future risks tradable. For example, financial institutions and enterprises use derivatives to protect themselves against changes in raw material prices, exchange rates, interest rates etc.

They serve as insurance against unwanted price movements and reduce the volatility of companies' cash flows, which in turn results in more reliable forecasting, lower capital requirements, and higher capital productivity (The Global Derivatives Market. An Introduction White pages; Patric Cusatis, M. Thomas 2005).

Futures are the oldest group of derivatives instruments. Futures contracts traditionally have been characterized as exchange-traded, standardized agreements to buy or sell some underlying item on a specified future date (Kuprianov 1992). A futures contract is an agreement to exchange cash flows based on a predetermined purchase or sale price of an asset at a specified time in the future (Cusatis, Thomas 2005). Lithuanian author A.V. Rutkauskas (1998) defines future contracts as contracts to deliver securities, currency or commodities to the agreed location at the agreed time and price in the future. A futures contract is, in essence, a forward contract that is traded on an organized exchange rather than negotiated bilaterally. Futures contracts grew out of forward contracts in the mid-19th century. Futures contract terms (maturity dates, deliverable grade of the underlying, etc.) are standardized, and the exchange guarantees performance on the contract. Participants in futures markets are required to post margin, which is essentially collateral against default (Sundaram 2012).

Buyer of the futures contract commits to the seller of the contract to pay a sum of money at the time of delivery. The seller has different commitment that is he has to deliver agreed basic asset. But in the real market physical delivery of the agreed assets is quite rare. In practice, most buyers and sellers do not hold contracts until delivery of the underlying commodity or asset is required. They close out the contract by selling or buying an offsetting amount of contracts before the delivery date. In this way the futures market provides speculators and hedgers with the opportunity to lock in asset prices without requiring the burden of delivery (Cusatis, Thomas 2005).

It should be emphasised that participation in futures markets doesn't mean that investors are obligated to get or to sell something. It was mentioned that first of all market participants use future contracts to hedge from various kinds of risk or to speculate and not to exchange some goods.

Futures contracts differ from other derivatives because they are traded according to strict standards and exchange rules. They have standard contract sizes, settlement procedures and delivery dates. Futures are exchange traded and are very liquid because of established settlement and margin procedures. The market functions efficiently because the exchange monitors the ability of participants to honor their contractual obligations (Cusatis, Thomas 2005; Hull 2000).

Two main types of futures contracts exist (Table 1): financial futures and commodity futures.

Table 1. Types of futures contracts (source: compiled by the authors according to Cusatis, Thomas 2005; Kancerevyčius 2009)

Financial future contracts	Commodities future contracts
Equity – for example, IBM, Microsoft Corp. stocks	Industrial metals – copper , zinc, stanum, nickel, plumbum, aluminium, uranium
Bonds – for example, U.S. Treasury notes and Bond contracts	Precious metals - gold, silver, platinum, palladium
Currency – for example., USD, EUR, JPY, CHF	Energy – crude oil, natural gas, gasoline, electricity
Indexes – Dow Jones Indus. Avg., S&P 500, NASDAQ 100, Euro Stoxx 50, OMX Stockholm 30, Nikkei 225	Agricultural – coffee beans, cocoa, cotton, corn, wheat, meat

As it can be seen from Table 1, there is possibility to trade almost in any commodity or financial instrument in futures markets and the decision to choose one or another contract depends just on the purpose of the trader and possible market direction.

Trading in financial futures was very important innovation in financial markets though it started much later than trading in commodities futures. Origins of financial futures were growing influence and uncertainty of interest rates and exchange rates (Winstone 2011). These rates are the main as a basis of financial futures.

Financial futures have three main differences comparing them with other future contracts (Winstone 2011):

1) they don't have any expenses of storage;
2) the seasonal fluctuations are not characteristic for these contracts;
3) there is no physical delivery.

All mentioned aspects are particularly important for commodities futures, especially agricultural futures.

It should be emphasised that regardless of the underlying item of the futures all active and successful futures markets have common characteristics. As Mr. Paula Tosini presented in the Second International Roundtable on Securities Markets in China in 2002 these characteristics could be:

– an economically significant underlying cash market;
– price volatility of the item underlying a futures contract;
– risk-shifting potential to a market participant who wishes to accept the risk;
– standardization of the underlying item.
– trading liquidity;
– adequate deliverable supply of the underlying item for futures contracts that require delivery;
– a reliable, independent series of cash prices for futures contracts that are settled in cash.

The conclusion can be done that terms and conditions of futures contracts are important means of hedging against market manipulations, restrictions, monopolies, overcrowding and fraud, which negatively affects the integrity of the market and the economic usefulness for market participants. Market participant cannot hedge if such problems exist because they cannot rely upon prices of future contracts. For this reason professional intermediaries exist in futures markets.

It should be emphasized that less than 3% of all future contracts are physically fulfilled and underlying items delivered. This means that most investors usually close their positions, without waiting for an agreed date of exercising of the contract. The difference between the purchasing or sale price of the future and the price for closing the position is the investor's profit or loss. Before the end of the contract its price may be higher or lower than the price of underlying item, but at the time of exercising the price of the future contract must be equal to the market price of the underlying. In other case arbitrage possibility between futures market and market of the underlying asset occurs.

In concluding the market of future contracts is a place where risk hedges can meet. What object of the contract will be chosen mostly depends on the purpose of market participant. The main functions of futures contracts are hedging from the risk and possibility to get profit from speculation in the markets.

3. Historical development of futures markets

Origins of derivative contracts were analysed by many authors (Huang *et al.* 2011; Carruthers 2013; Miffre, Brooks 2013). All of them emphasise that derivative securities from the beginning were originally used to hedge commodities products such as agricultural production and metals. Derivative markets can be traced as far as the Antique Greece or even somewhere around before the time of Christ.

The first recorded instance of futures trading occurred with rice in 17th Century Japan. With the rice coupon becoming an actively traded entity, the Dojima Rice exchange became the world's first futures exchange. It was established in 1697. The first "futures" contracts are generally traced to the Yodoya rice market in Osaka, Japan around 1650 (Winstone 2011).

But the real birth of modern futures markets started in the United States, with the creation of the ancestor of the CBOT. The Chicago Board of Trade was established in 1848 and in the 1870s and 1880s the New York Coffee, Cotton and Produce Exchanges were born. In 1878, a central dealing facility was opened in Chicago, USA where farmers and dealers could deal in 'spot' grain, i.e., immediately deliver their wheat crop for a cash settlement. Futures trading evolved as farmers and dealers committed to buying and selling future exchanges of the commodity. The biggest increase in futures trading activity occurred in the 1970s when futures on financial instruments started trading in Chicago (Kotze 2011).

The 1929s crisis and the depression took its toll on various exchanges. This led first to more rationalization of exchanges as well as better regulation. Political pressures to regulate futures markets led in 1933 to the commodity exchange act that established more rigorous rules for futures trading exchange.

But the real birth of financial markets can be said to have come really in the 1970s. First of all, the system of fixed exchange rates, which pegged the major currencies to the dollar, which in turn was pegged to gold, went burst. With this move, currencies suddenly floated free and were subject to supply and demand like any other product, pushing for more freedom to trade. Second, the exchanges like the CBOT or the CME had decided to standardize their products, making the market more liquid as well as expanding the number of products that they were trading (Kotze 2011; Winstone 2011).

Derivatives markets were ready for their explosion as futures exchanges extended from the United States to Europe and Asia in the 1980s with the opening of various derivatives exchange market such as the LIFFE, the MATTIF (Paris exchange market), which later on merged with the Amsterdam, Bruxelles and Lisbonne exchange markets into the Euronext market, the German market (the Deutsche B □orse) which later on merged with the Swiss Exchange into the Eurex.

History of financial futures is quite short. The beginning of these futures was Chicago Mercantile Exchange which in 1972 has opened the International Monetary Market (IMM). The reason for

new financial contracts was the need for the means of risk management and hedging that agricultural sector was using already for 100 years.

So the first important step of market development was creation of currency futures. And this event had changed the history of financial markets' development (Grinblatt, Titman 2002). Currency futures were first created at the Chicago Mercantile Exchange in 1972, less than one year after the system of fixed exchange rates was abandoned along with the gold standard. Some commodity traders at the CME challenged the banks by establishing the International Monetary Market (IMM) and launched trading in seven currency futures on May 16, 1972. Today, the IMM is a division of CME (Kotze 2011).

In 1974 in the USA private ownership of gold was legalized. At the same time financial innovation was presented for market participants; that was gold future contract. Differently from currency futures gold futures immediately become very popular. The reason of the popularity was the hedge and flexibility of these contracts. In 1981 gold futures were traded all over the world by individual investors and institutional intermediaries.

In the 8th decade interest rate futures were presented to financial markets. Trading in interest rates futures started in 1976; USA Treasury notes were the first underlying item for new future contracts. During the first five years of trading interest rate future contracts became mostly usable future contracts in the market (Winstone 2011).

After the successful beginning in the United States other countries started to trade future contracts too. In 1979 the exchange was opened in Australia, in 1982 trading in future contracts started in London and in other biggest cities of the world. At the moment trading in futures is possible in quite a big part of world's financial markets.

Nowadays the market of future contracts is global market, presenting possibility to trade not only in agricultural products, but in a wide range of financial products, too. Today, the majority of futures contracts are executed on electronic exchanges. With the help of modern global technologies investors can trade all over the world and to hedge risk or make profit. Information and communication technologies also make trading faster and allow trading in countries other than the place of investor's residence.

4. Risks of futures trading

The derivatives market must meet three prerequisites in order to deliver maximum benefits to its users and to the economy: derivatives trading and clearing must be safe, the market must be innovative and it must be efficient (Kotze 2011). Despite the fact that derivative contracts are prepared to hedge from risk, as every financial contract derivatives include some types of risk, too.

Different authors differently present the risks related with future contracts. J. Madura (2008) risks of future contracts divides into five groups: market risk, basis risk, liquidity risk, credit risk, prepayment risk. Market risk depends on fluctuations in the value of the instrument as a result of changing market conditions. In the case of hedging market risk will gain less loses but in the case of speculation losses can be quite big (Down 2002). Basis risk is the risk that the position that was hedged by the future contract is not effected the same way as the instrument underlying the future contract. This type of risk is important for hedgers. Liquidity risk arises due to the lack of liquidity and can affect the price of the contract. Credit risk depends on the counterparty defaults on the credit. This type of risk is actual for over-the-counter transactions. Prepayment risk is the possibility that the assets to be hedged may be prepaid earlier than their designated maturity.

Other authors state that (Cuthbertson, Nitzsche 2003; Cusatis, Thomas 2005) besides mentioned risk such risks as policy risk, currency risk, and brokerage risk exist. Risk can be concerned with terms and conditions of the contracts, suspension or restriction of trading and pricing relationship, deposited cash or property, commission and other charges, electronic trading and other circumstances.

Also, two points of treating the risk while undertaking a futures contract could be distinguished: hedging and speculating. In its simplest form, hedging is the basic practice of shifting price risk to a party that is willing to accept it, the speculator. It is also said that futures markets were created for hedgers but are made possible by speculators. However, hedging and speculating can face different types and levels of risk depending on the underlying asset of a future contract. For example, futures market is arguably the most efficient means of hedging commodity price risk. This is due to the trading of standardized contracts on organized exchanges and also because of market liquidity brought by speculators (Garner 2010).

In general, the OTC and exchange segments have taken different approaches to mitigate unwanted risks, but investors must understand existing risk and to choose suitable means of risk management. Analysis of particular risk management means in futures market is a topic for further research.

5. Development trends of futures and options trading

5.1. Futures and options trading according market segments and underlying assets

Some statistical data on trading of derivative contracts was already presented in chapter 2. Now some broader information about contracts development trends will be presented.

While analyzing market data on volume dynamics of derivative contracts, often data on futures is combined with options and thus represents the situation on the organized exchanges. In 2012 global derivatives market experienced the biggest fall during the last decade. The total number of futures and options decreased by 15,3% to 21,2 bill. contracts, and this was the lowest level since 2010. The fall of trading activity could be noticed in all major regions – Asia Pacific, Europe and North America and in key categories of financial instruments – interest rates, stocks and currencies. The market of commodities did not recall the general trend, but its part in world trade was too low to make changes to the general trend.

The structure of trading by markets and by financial instruments is presented in Fig. 3 and Fig. 4. It can be seen that key markets for derivatives traded on exchanges are Asia Pacific and North America, then Europe follows.

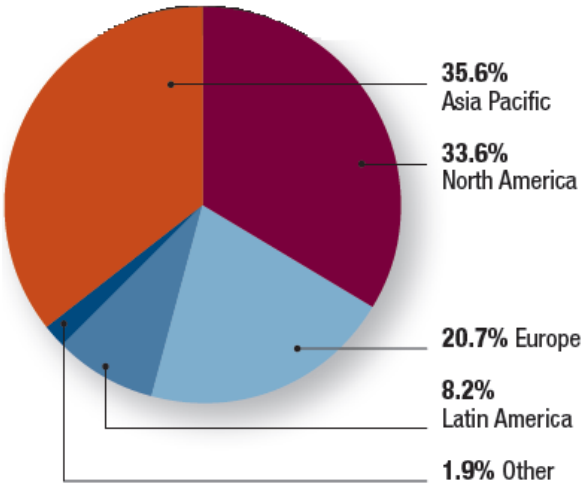

Fig. 3. Global futures and options volume by region, 2012 (Source: FIA Annual Volume Survey 2012)

According data obtained from 84 exchanges worldwide, the most popular futures and options contracts are based on such underlying assets as individual equity, equity indexes, interest rates and currencies. Then commodity market follows. Even though the market of commodity derivatives is not in the first place according trading volume and market activity due to its complexity and some peculiarities, it is widely analysed by various authors and is treated as an innovative market segment with wide possibilities of risk management (Schofield 2007; Acharya *et al.* 2013; Skiadopoulos 2013; Daskalaki *et al.* 2014).

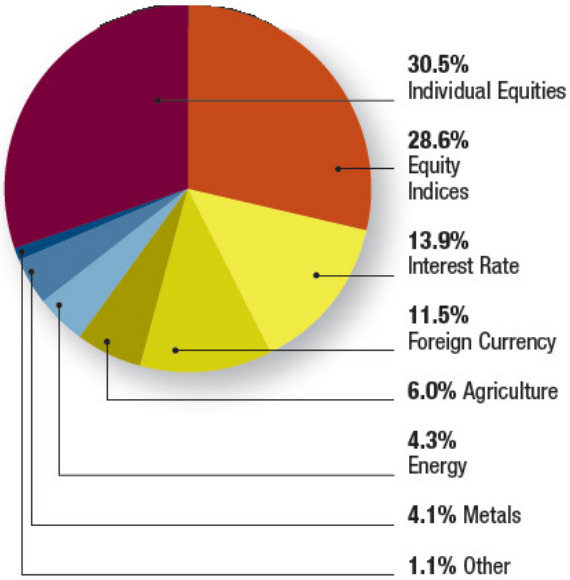

Fig. 4. Global futures and options volume by category, 2012 (Source: FIA Annual Volume Survey 2012)

Analysing trading volume according different exchanges, the biggest trading volumes are attributable to CME Group of exchanges and to Eurex.

5.2. Price dynamics of futures and possible market developments

While analysing the trends of futures prices on global exchanges, it is worth presenting their dynamics. Speaking about European stock exchanges, that are usually smaller than global, the Frankfurt Boerse can be distinguished. The stock Exchange trades such index futures as DAX Futures, DJ Euro Stoxx Future, MDAX Futures, TecDAX Futures, that are mainly of regional importance. The historical prices of DAX Futures are presented on Fig. 5. It can be noticed that the graph is quite volatile, but there is a clear upward trend since the second part of 2011. Also, the trading volumes have substantially increased since 2012.

Fig. 5. DAX futures price dynamics, 2011-2014 (Source: Boerse Frankfurt 2014)

Fig. 6. S&P 500 Futures dynamics, 2012-2013 (Investing 2014)

Also, especially popular are futures based on S&P 500 index (Fig. 6). Its stable trend with small falls is attractive for making futures and options contracts as they can insure against small fluctuations in the market.

The dynamics of futures contracts prices also shows the big activity in trading. In the markets where activity is high, the efficiency of such markets is stronger. As financial products and services are becoming more sophisticated and new information and communication technologies appear that enable faster and more convenient trading, it could be assumed that futures trading will not lose its popularity in the future and the volume of trading will even grow. For this reason there is a growing necessity to increase possibilities of futures trading in small markets.

Speaking about Lithuania, there are no organized exchanges for futures contracts. Derivative instruments can be only bought through the commercial banks. Also, DNB bank offers a trading platform *DNB Trade* that enables trading derivatives online (DNB Trade trading platform 2014). There is a lack of place and possibilities to trade futures in Lithuania and in Baltic countries. A strong stock exchange – NASDAQ OMX – exists in the Baltics that offers trading of stocks of three Baltic states (Nasdaq OMX 2014). In other countries where NASDAQ OMX group is operating it offers derivative trading possibilities. Thus an assumption could be made that there is a theoretical possibility to introduce derivative trading on NASDAQ OMX Baltic. Thus it could be possible for Lithuanian companies to trade derivatives openly through the stock exchange. Also, introducing organized derivative stock exchanges, making derivative trading branches on exchanges or in other way promoting derivatives trading in small countries would stimulate financial market activity and transfer of funds.

6. Conclusions

It can be concluded that trading of futures is one of the most important financial activities taking place in world financial markets. Over the years futures are traded in the biggest part of financial and commodity markets and are important tools of price setting and risk management. Nowadays future contracts are not only the hedging tool they are important arbitrage and speculation tools too.

Despite their purpose to hedge from risks future contracts are risky as every financial activity in the market. According to the analysed literature different types of risk exist. In conclusion risks of future contracts can be divided into such groups: market risk, basis risk, liquidity risk, credit risk and prepayment risk. Some risks are more actual for hedgers; some of them are actual for speculators. Some types of risk exist despite of the purpose of the use of future contracts.

While analyzing derivatives market trading volume, a decrease during several recent years has been noticed. In 2012 the total number of futures and options in world markets decreased by 15,3% to 21,2 bill. contracts.

Key markets for derivatives traded on exchanges are Asia Pacific and North America and Europe. The most traded derivative contracts are based on equities.

As financial products and services are becoming more sophisticated and new information and communication technologies appear, it could be assumed that volume of futures trading will increase in the future. Thus there is a need to increase possibilities of futures trading in small markets.

For Lithuania a recommendation could be made to introduce derivative trading on NASDAQ OMX Baltic in order to stimulate financial market activity and transfer of funds.

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