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UKRAINIAN DERIVATIVES MARKET

Introduction

Derivatives market is defined as the financial market for derivatives, financial instruments, like futures contracts or options, which are derived from other forms of assets. However, most „derivative instruments, often used to mitigate interest-rate risks, can be used to hedge any type of risk exposure in any market” [6]. Main derivative instruments are options, swaps, futures and forwards.

According to Bodie, Marcus and Kane „futures and forward contracts are like options in that they specify purchase or sale of some underlying security at some future date. However futures and forwards carry the obligation to go through with the agreed-upon transactions”[2]. This quotation covers all derivatives markets. But these authors do not separate futures from forward contract, while Muhammad al-Bashir Muhammad al-Amine maintains that „The futures contracts have been able to overcome some of the problems of the forward contract associated with risk, especially price risk and better planning of business” [3]. So, as our article is devoted mainly to financial futures Roses and Hudgingses’ definition fits its purpose the best – „a financial futures contract is an agreement reached today between a buyer and a seller that calls to delivery of a particular security in exchange for cash at some future date” [4].

Bodie, Marcus and Kane identify hedging as a technique that offset particular sources of risk [2]. This definition perfectly illustrates the main idea of introducing derivatives on the Ukrainian market, because in the unstable conditions of the Ukrainian economy it is quite reasonable to prevent risks.

Derivatives Market Formation and Main Problems

Ukrainian derivative market is not the main player of the Ukrainian market in general. The unit weight of derivatives even does not reach 1% [10]. The history of the Ukrainian market is not long, that is why Ukraine is on its way of developing the market. The whole Ukrainian money-market began its activity after disintegration of the Soviet Union in 1992. The initial purpose of such a market was to make purchase and sale operations of foreign currency. In 2006 there began the real futures

trade on the mean interbank rate USD/UAH, which was calculated by the UICE on the ground of white sheets granted by the Ukrainian banks. In 2010 the Ukrainian exchange was working on launching of the derivative market [11].

Nevertheless, on the way of using the derivatives in Ukraine there are definite problems. The main domestic manufacturers refuse from using derivatives because of lack of confidence for the derivatives market development and the absence of legislative foundation. The present situation is such that there is only a Law Draft „About Derivatives” in the country and it actually does not fit in the real economic situation in Ukraine [7]. The other problem of the Ukrainian derivatives market is the high level of speculation. In most cases traders buy futures with the expectation of index growth and sell when they think that index will decrease [9]. The representatives of the SSEC say that the majority prefer to buy options on exclusive things such as options on delivery or places on the ground for marking. Financial instruments narrow represented on the Ukrainian derivatives market. This is mainly because of the low level of the markets development and their low activity. The most options which are issued on OTC market or just delivered directly to the client. This is somehow the way of omitting tax evasion for those firms that issue such kind of derivatives.

Companies Comparison

As it was said in the previous chapter, the Ukrainian derivatives market cannot be called developed. As far as derivatives give more liquidity, more opportunities for hedging, and more instruments to capital market, they are an essential part of it in the modern economy. That is why the Ukraine’s low underdeveloped derivatives market is a problem. Causes of this problem are completely interdependent: on the one hand, there is low demand on the derivatives in Ukraine, and on the other hand, there exist a small number of such instruments, which means low supply [9]. Since supply can create a demand, and the number of the instruments can be increased manually, it appears to be a simpler method of solving the problem, and that is why we focused this study on it.

At the European exchange for derivatives – Eurex, derivatives on stocks of more than thousand companies are traded daily. The Russian stock exchange RTS

provides 17 derivatives on shares of the largest Russian companies [12]. At the same time, equity derivatives are not traded on the Ukrainian capital market at all.

The question „Why is not there equity derivatives on Ukrainian market?” is unanswered. In this study we supposed that the key to the question is Ukrainian companies, and put forward a hypothesis: companies which have derivatives on their stocks may have something common in their finance, which is no for the Ukrainian companies. The hypothesis was tested using this algorithm:

- Blue chips of Ukrainian market, whose stocks are potential underlying assets for equity derivatives, were selected.

- European and Russian companies, which have the same main activities, but have derivatives on their stocks openly traded, were selected.

- Commonly used financial ratios were computed for selected companies on the base of public financial data

- Results of computations for every company were compared with the others, and data summarized were analyzed to check the hypothesis.

For this study there were taken 5 companies from this list, each representing a different industry:

- Motor Sich – aviation engines production.
- Ukrtelecom – a large-scale telecommunication company [13].

- Centerenergo – a managing company which owns power plants and different assets in power engineering and one of the market leaders [14].

- Azovstal Iron and Steel Works – a metallurgical plant, one of the largest in Ukraine [15].

- Ukrnafta – an oil and gas company, which has processing plants, drilling divisions and many other assets in this industry [16].

Additionally, large-scale European and Russian corporations, which have derivatives on their stocks, and operate in the same industries, were selected:

- Daimler AG, a giant in machine building.
- Telefonica, one of the leading European telecommunication companies.

- Fortum and RusHydro, counterparts of Centerenergo.

- Arcelor Mittal and Severstal, which are large-scale metallurgical enterprises, and rivals of Azovstal Iron and Steel Works on the international market.

- Norilsk Nickel – a mining company, counterpart of Ukrnafta

Of course, all these Ukrainian, Russian and European companies cannot be compared directly. However, as our hypothesis suggests, finance is what they may have in common. To check if these common features exist, a system of financial ratios was used.

Hypothesis consists not only in existence of common features among between companies that have derivatives on their equities, but also in the assumption that the Ukrainian companies lack these features, and that is why derivatives on their stocks are not issued. That means that ratio's values for the Ukrainian companies must be worse than for their Russian and European counterparts. A worse value in terms of financial ratios means lower profitability and liquidity as well as higher debt ratio value. Results of calculations are given below.

Financial ratios which were computed are reasonable for almost every public company, even if they operate completely different businesses, so data in the Table 1 is adequate. And on the basis of these data, no dependence between the country of company's foundation and its financial ratios was found. It may look like Ukrainian companies have lower profitability in general, however losses of two companies are rather connected with specific problems, than with the generalities of Ukrainian business environment: Ukrtelecom was privatized in 2010 and is in a process of a reorganization [29], while Azovstal highly relies on the world metal prices, and hardly suffered from the world financial crisis [31]. As for liquidity and debt ratios, no noticeable trends are found as well.

Assets Variation

Traditionally financial futures are more highly traded than agricultural, metals or energy futures. One of the points why companies trade futures is that the variation of their assets is large [2]. So if a company has great volatility in its assets, its rates vary and stocks payment might be different, that is why there is a need in the futures on the stocks of companies. In this part we analyzed whether this premise is correct in Europe and in Ukraine. Firstly we will cover the sampling of the European blue chips, and secondly investigate Ukrainian companies.

Arcelor Mittal has been changing its assets since its first acquisition in 1989, leasing the Iron & Steel Company of Trinidad and Tobago. Since then Arcelor Mittal continued increasing the number of its assets and announced 35 transactions in Argentina, Austria, Canada, China, Estonia, France, Germany, Italy, Mexico, Poland, Russia, Slovakia, South Africa, Turkey, the United Kingdom, Uruguay, the United States and Venezuela, a number of which were completed in 2007 [21].

Fortum, a large energy producer in Europe, started the formation of its assets in 2002 by selling its Norwegian EP business to Eni and two new tankers from China. In 2010 Fortum acquired a 40% stake in Europe's wind farm projects in Blaiken, Sweden [19].

A few years after the USSR collapse, in 1993 Norilsk Nickel became a corporation. In 2003, the company took

Table 1.

Financial ratios of the companies

	Gross profit margin	Operating profit margin	Net profit margin	Return on assets (ROA)	Asset turnover	Current liquidity	Quick liquidity (Acid test)	Debt ratio
UkrNafta	0.241	0.187	0.132	0.144	1.073	1.058	0.578	0.554
Azovstal Iron and Steel Works	0.00025	-0.027	-0.007	-0.005	0.697	1.392	1.219	0.555
Motor Sich	0.467	0.307	0.250	0.203	0.964	2.044	0.877	0.381
Center-energo	0.023	0.018	0.002	0.002	1.308	0.761	0.187	0.569
Ukrtelecom	0.173	-0.042	-0.038	-0.025	0.608	1.273	0.830	0.357
Arcelor Mitall	0.089	0.052	0.039	0.023	0.603	1.389	0.388	0.495
Daimler AG	0.233	0.074	0.048	0.034	0.739	1.073	0.707	0.721
Fortum	0.548	0.271	0.215	0.062	0.301	0.747	0.507	0.602
Telefonica	N/A	0.271	0.166	0.078	0.511	0.629	0.584	0.756
Norilsk Nickel	0.618	0.513	0.242	0.129	0.547	4.811	2.662	0.248
RusHydro	N/A	0.041	0.027	0.017	0.722	2.169	0.773	0.204
Severstal	0.329	0.175	-0.038	-0.027	0.697	1.506	0.471	0.621

over Stillwater Mining Company. Stillwater operates a platinum group metals (PGM) facility in Stillwater, Montana in the USA. In November 2010, Norilsk Nickel sold Stillwater. During 2007, Norilsk acquired a number of mining and metallurgical assets abroad: in Australia, Botswana, Finland, Russia, South Africa, and the United States. The crucial deal was completed on June 28, 2007, when Norilsk Nickel acquired about 90 per cent of Canada's LionOre Mining International Ltd [23].

Telefonica is one of the giants of telecommunication industry. It was fully privatized by the government in 1997, nevertheless the company steadily began to cope with new markets and build its subsidiaries. Nowadays Telefonica acts as a parent company for ten major subsidiary companies, including Telefynica de Espaca, Telefynica Latinoamericana, Telefynica Myviles S. A., Terra Lycos S. A., Telefynica DataCorp S.A., Atento, and Admira" [18].

Daimler Company began from Carl Benz and Gottlieb Daimler, who are cited by most authorities as the most important contributors to developing of the internal combustion engine. In 1926 Daimler and Benz merge to form Daimler-Benz AG, which begins producing

cars under the name Mercedes-Benz. In 1928 Chrysler acquires Dodge Corporation. However in 1944 World War II destroys most of Daimler-Benz's plants in Allied bombing raids. In 1987 Chrysler acquires American Motors Corporation. In 1993 Daimler-Benz becomes the first German firm listed on the New York Stock Exchange. In 1995 Jürgen Schrempp takes over as Daimler-Benz's chairman and CEO; company posts losses of nearly \$4 billion. Finally, in 1998 Daimler-Benz and Chrysler merge to form DaimlerChrysler AG [17].

As it can be seen on the example of the European countries the statement, that companies trade futures because the variation of their assets is high, is proved, and might be considered to be true. To say whether it is preferable in Ukraine we will look on the assets variation in the companies from our sample. Motor Sich in 1995 was transformed into public corporation, before it had become the corporation the assets of it increased [32]. While since 1907 there was only Zaporozhskiy motor-building plant in 1988 Zaporozhskiy machine-building plant was established. Meanwhile in 1970 there was build Snezhanskiy machine-building plant and in 1971 – Volochinskiy machine-building plant. So the assets

variation was observed only in times of the Soviet Union. Ukrtelecom was organized as united telecommunications in Ukraine in 1993. At the time of its formation the company consisted of 5 organizations: Kiev telegraph, „Ukrtech”, „Zakarpattелеkom”, „Dneprsvjaz”, „Ukrsvjazoproekt”; in 1995 22 regions telecommunication enterprises aligned and finally in 1996 „Dneprtelecom” was linked to Ukrtelecom [33]. Ukrnafta appeared on the market as public corporation in 1994 and from 2000 Ukrnafta began to buy petrol network, there are 563 petrol stations all around Ukraine [34]. Centrenergo was united to one company in 1994 according to the statute of Cabinet of Ministers of Ukraine and then was reorganized into public corporation. So Centrenergo did not have assets variation [35]. Metallurgical enterprise Azovstal was founded in 1930 and in 1996 it became public. In 2005 it merged with Mariupol by-product coke plant „Markohim” [36].

From the all above we can conclude that in most blue-chip Ukrainian companies there is assets diversification, but it is in times less than European countries assets variation. Of course, this difference is under conditions of some factors, main of which are: unstable post-soviet economy and incommensurability of European and Ukrainian companies' sizes of. However the thesis was basically proved for Ukrainian companies as well, so looking through the prism of this thesis Ukrainian blue chips companies can trade futures on their stocks.

Correlation of Futures on Index

It is proved that effectively functional markets are perfectly, contemporaneously correlated the returns on

stock index and stock index futures. This article studies the correlation of stock index and futures index on the unstable Ukrainian market. This is made to figure out whether existing Ukrainian futures can be used for hedging domestic economic risks but not only for scalping. Fig. 1 shows the volatility of stock index on the Ukrainian market.

We have used linear correlation coefficient to calculate the variation of futures on the Ukrainian stock market. Futures on stock index have their time of circulation, on the Ukrainian market its medium time of circulation is almost 4 months. Our sample contains futures on stock index and stock indexes, respectively, from 5.11.2010 to 4.11.2011, that is why there are some correlation coefficients. 6 futures were investigated on the stock index in different time periods. Correlation between futures and indexes in the respective time is mostly the same with a small variation from 0.96 to 0.99. Table 4 represents a sample of stock index futures and stock indexes from 05.11.10 to 14.12.10, where x is the closing price on stock index futures and y is the closing price on stock indexes.

The sample is represented according to the number of futures on stock index ($ux-12.10$). Within the following formula it is possible to calculate the correlation.

$$\rho = \frac{CovXY}{\sigma_X \sigma_Y} = \frac{\sum(x_j - \bar{x})(y_j - \bar{y})}{\sqrt{\sum(x_j - \bar{x})^2 \sum(y_j - \bar{y})^2}}$$

Where c is a correlation coefficient, x_j is the corresponding closing price on stock index futures, y_j is corresponding closing price of stock index, \bar{x} and \bar{y}

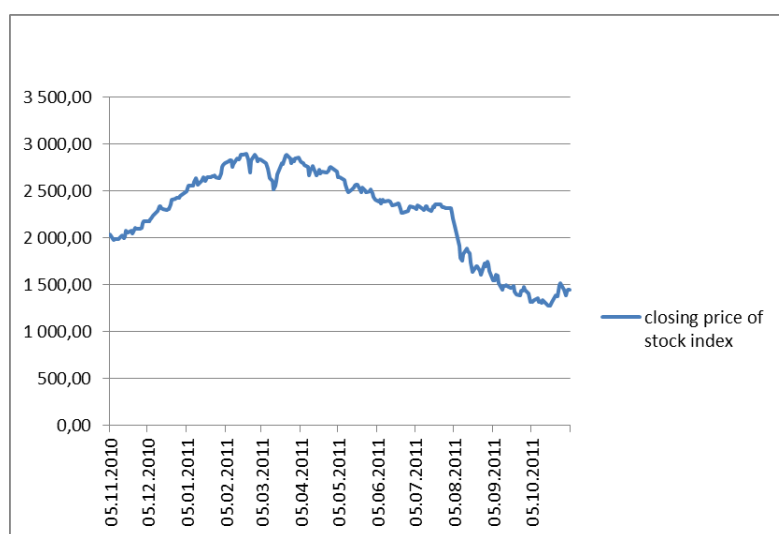


Fig. 1. Variation of stock index [8]

are mean values of figures in x and y, respectively, which could be calculated within the following formula [1].

$$\bar{x} = \frac{\sum x_j}{n}$$

Where n is the quantity of dates, in our case $\bar{x} = 2100,23$ and $\bar{y} = 2103,77$.

Calculations result in:

$$\rho = \frac{265181,35}{\sqrt{257631,96 * 275697,33}} = \frac{265181,35}{266511,2612} = 0,99$$

Such value means that stock index and futures on it are highly interconnected with each other and when stock indexes increase, the futures on stock index also

increases. That is why we can conclude that UX index can be used for hedging.

Conclusions

This article is focused on various aspects of the Ukrainian derivatives market. The word „market” stands for the dynamically changing environment, and that is why the first question to start with was the current situation on the market. In the developed countries, derivatives play an important role on the capital market, are widely used and traded in large volumes. In Ukraine, on the contrary, derivatives market is objectively underdeveloped. Only two instruments are openly traded on the stock exchange, and volumes of their trade are relatively low and highly volatile. The article contains the

Table 2.

The sample of stock index futures and stock indexes from 05.11.10 to 14.12.10

Trading date	x	y
05.11.2010	2 064,99	2036,11
08.11.2010	1 989,68	1972,89
09.11.2010	1 988,00	1986,49
10.11.2010	1 983,00	1987,12
11.11.2010	1 979,86	1985,05
12.11.2010	1 974,00	1985,96
15.11.2010	2 014,10	2026,33
16.11.2010	1 994,30	1991,64
17.11.2010	2 008,00	2016,46
18.11.2010	2 079,00	2074,42
19.11.2010	2 065,61	2058,47
22.11.2010	2 074,91	2080,93
23.11.2010	2 047,49	2041,94
24.11.2010	2 059,99	2063,44
25.11.2010	2 085,00	2103,39
26.11.2010	2 085,40	2098,15
29.11.2010	2 093,49	2096,68
30.11.2010	2 098,99	2104,92
01.12.2010	2 141,91	2155,84
02.12.2010	2 180,86	2175,4
03.12.2010	2 173,00	2180,44
06.12.2010	2 176,99	2180,31
07.12.2010	2 196,50	2194,62
08.12.2010	2 194,01	2202,59
09.12.2010	2 220,88	2235,96
10.12.2010	2 235,47	2246,77
13.12.2010	2 265,00	2283,78
14.12.2010	2 336,00	2339,5

history of derivatives in Ukraine and main challenges of Ukrainian derivatives market. One of the most serious challenges is the poor legislative base in terms of the capital market. There is no particular law which would regulate derivatives market in Ukraine. The other problems are interdependent: it is low demand on derivatives in Ukraine, and low supply (in shape of low number of instruments). On the other hand, there exist such important circumstances for introducing new derivative instruments as a variety of potentially underlying joint-stock companies and an infrastructure, needed for the open trade of securities on the market.

This article studied Ukrainian enterprises, blue chips of the domestic stock market, which are regarded as potential underlying assets for the equity derivatives. Because derivatives on shares of Russian and European large-scale companies are wide-spread, the following hypothesis was put forward: companies which have derivatives on their stocks may have something in common in their finance, which Ukrainian companies do not have. Because different enterprises from different sectors of economy cannot be compared directly, the hypothesis was tested using a range of financial ratios that characterize profitability, liquidity and debt. Same ratios were computed basing on financial statements of selected Ukrainian and foreign companies. If the hypothesis is correct, the data received should show a trend of Ukrainian companies having worse values of ratios than their foreign rivals. However, no trend was found, which means the hypothesis is disproved and leads to the conclusion, that shares of Ukrainian companies can become underlying assets for the derivatives in the future.

To develop the comparison, variation of selected companies' assets was analyzed. The study was based on the idea, that if a company has great volatility in their assets, its rates vary and stocks payment might be different, that is why there is a need in the futures on the companies' stocks. The conclusion was that in most blue-chip Ukrainian companies there is an assets variation, but it is in times less than assets variation in the European companies. Of course, this difference is under conditions of some factors, main of which are: unstable post-soviet economy and disproportion of scale of European and Ukrainian companies.

The Ukrainian derivatives market was analyzed not only from its perspectives point of view. The futures on the index of the Ukrainian Exchange (UX), which presently is the main derivative on the Ukrainian market, is used among traders for short-term speculations (scalping). However, it can be also used for hedging domestic economic risks, and for that reason the correlation between the values futures on UX index and

the index itself was checked. It was expected that correlation will be almost equal to 1, and these expectations were met, with a computation result being equal to 0.99. With such a strong correlation, the futures on the UX index can be definitely used for hedging, while changes in the index value simultaneously result in the same changes of the futures' price.

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Кірнос І. А., Вощина Є. С., Брейман М. М. Український ринок деривативів

В статті розглянуто стан ринка деривативів в Україні, можливість його розвитку в довгостроковій перспективі. Проведено порівняння провідних європейських компаній та українських компаній, що складають індекс Української біржі, з погляду основних економічних показників та історичного чинника формування компанії. Також було проведено кореляцію між біржовим індексом та ф'ючерсом на індекс.

Ключові слова: дериватив, ринок деривативів, вільна торгівля, ф'ючерс, капітал, коефіцієнт варіації, хеджування.

Киринос И. А., Вошина Е. С., Брейман М. М. Украинский рынок деривативов

В статье рассмотрено состояние рынка деривативов в Украине, возможность его развития в долгосрочной перспективе. Проведено сравнение ведущих европейских компаний и украинских компаний, которые составляют индекс Украинской биржи, как со стороны основных экономических показателей, так и со стороны фактора исторического их формирования. Так же была проведена корреляция между индексом биржи и фьючерсом на индекс.

Ключевые слова: дериватив, рынок деривативов, свободная торговля, фьючерс, капитал, коэффициент вариации, хеджирование.

Kirnos I. A., Voshchyna I. S., Breiman M. M. Ukrainian Derivatives market

This article deals with the topic of the Ukrainian derivatives market conditions and possibilities of its development in the long-run position. There were made comparison of European Blue chips companies and Ukrainian companies, which build up the index of Ukrainian stock exchange, from the point of view of main economic indicators on the one hand and from position of their historical development on the other hand. Moreover there were made correlation between stock exchange market and futures on index.

Key words: derivative, derivatives market, free trade, futures, capital, coefficient of variation, hedging.

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