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INTERNATIONAL MARKET OF THE INTEREST RATE DERIVATIVES: ANALYTICAL ASPECTS

The article analyzes the international market of interest rate derivatives as a major segment of the exchange-traded and over-the-counter markets. In addition, the author provides an insight into the interest rate derivatives performance during the latest financial crisis and after it. The author identifies the key trends that currently dominate the market and the potential vectors for further development.

Keywords: *interest rate derivatives; options; futures; swaps; central clearing.*

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СВІТОВИЙ РИНОК ПОХІДНИХ ФІНАНСОВИХ ІНСТРУМЕНТІВ НА ПРОЦЕНТНУ СТАВКУ: АНАЛІТИЧНІ АСПЕКТИ

У статті проаналізовано світовий ринок похідних фінансових інструментів на процентну ставку як основного сегменту біржового та позабіржового ринку. Досліджено проблеми функціонування похідних фінансових інструментів на процентну ставку під час фінансової кризи та після неї. Визначено основні тенденції, що домінують на даному ринку та напрямки його подальшого розвитку.

Ключові слова: *похідні фінансові інструменти на процентну ставку; опціонні контракти; ф'ючерсні контракти; свопи; централізований кліринг.*
Рис. 6. Літ. 10.

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МИРОВОЙ РЫНОК ПРОИЗВОДНЫХ ФИНАНСОВЫХ ИНСТРУМЕНТОВ НА ПРОЦЕНТНУЮ СТАВКУ: АНАЛИТИЧЕСКИЕ АСПЕКТЫ

В статье проанализирован мировой рынок производных финансовых инструментов на процентную ставку как основной сегмент биржевого и внебиржевого рынка. Исследованы проблемы функционирования производных финансовых инструментов на процентную ставку во время финансового кризиса и после него. Определены основные тенденции, которые доминируют на данном рынке и направления его дальнейшего развития.

Ключевые слова: *производные финансовые инструменты на процентную ставку; опционные контракты; фьючерсные контракты; свопы; централизованный клиринг.*

Introduction. Financial markets globalization led to numerous structural changes in financial and economic systems around the world and appeared to be one of the most common reasons for financial shocks in the last few decades.

Destabilization of financial markets was primarily caused by regulatory liberalization as a way to create sophisticated financial instruments in order to hedge the risks of market participants.

Volatility of interest rates may have a significant impact on the performance of market participants, especially in times of economic recession, which in turn will be conveyed into income downturn, the need to cut expenses and equity reduction. A possibility to minimize interest rate risks is an important element in the integrated system of risk management. Herewith, interest rate derivatives become more and more relevant.

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Moreover, interest rate derivatives (hereinafter – IR derivatives) are the most significant part of the exchange-traded and over-the-counter markets in terms of notional amounts outstanding. Thereby, the detailed analysis of these instruments will give the possibility to improve understanding of its complex structure and current market trends in this segment.

Recent research and publications analysis. Currently, there is a scarcity of Ukrainian analytical on IR derivatives. This is mainly caused by the specificity of the chosen subject as well as dynamic changes at the market.

The author explored numerous reports of the Bank for International Settlements (BIS, 2013), International Swaps and Derivatives Organization (ISDA, 2012), World Federation of Exchanges (WFE, 2013) and provided a conclusion regarding current state of this segment and possible ways of its development.

The research objective is to provide a detailed analysis of the current state of IR derivatives market, compare its performance before and after the financial crisis and disassemble distinctive features of its functioning on the exchange-traded and over-the-counter markets.

Key research findings. The extraordinary high volumes of IR derivatives and their unprecedented role in capital movements in global business environment should be carefully analyzed in order to identify potential threats and methods for further reforms.

The derivatives market remained to be the most dynamic sector of the financial market, despite recent catastrophic volume downturn on the exchange-traded (-23 trln USD or -27%) and over-the-counter (-48 trln USD or -9%) markets (BIS, 2013). According to ISDA and BIS, derivative is a widely used method of risk hedging. More that 90% of the world's largest companies (Fortune Magazine, 2013) used derivatives to hedge their risks in 2013 (ISDA, 2012; BIS, 2013).

In terms of notional amounts outstanding, IR derivatives are the most important instruments for both segments. The exchange-traded market is highly concentrated on 4 main grounds: CME Group, Eurex, NYSE Liffe and BM&FBOVESPA.

In 2013 the turnover of exchange traded derivatives (ETD) amplified by +14% surpassing the 3.2 bln contracts peak in 2008 (Figure 1). The main impact is attributed to long-term interest rate contracts (LTIR) that increased by 16% as compared with 11% growth of the short-term interest rate contacts (STIR) demonstrating that long-term hedging remains to be very important. Primarily, this growth shows the dominance of high interest rates, accelerating economic growth and credit exposure. However, in terms of notional value and notional amounts outstanding, STIR contracts occupy the major part (87 and 94%, respectively) and fully drive recent growth (WFE, 2013). Presumably, such split in the number of contracts and its notional value as well as notional amounts outstanding is an effect of speculative operations at the market. Long-term contracts mainly aim to hedge interest rate risks, while short-term contacts are dedicated to fast profit making. This statement fully reflects the nature of derivatives market and motivation of its participants.

At the IR derivatives market a predominance is observed in the over-the-counter part mainly due to the importance of interest rate swaps. However, standardized derivatives should expand in the nearest future as a result of tightened regulation in the USA and Europe for over-the-counter derivatives (OTCD).

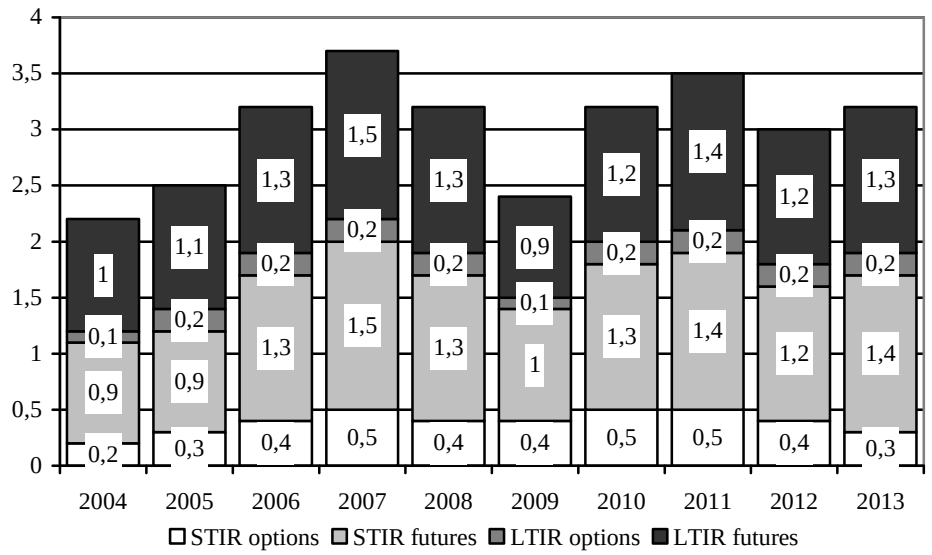

Figure 1. **Number of the IR ETD traded worldwide,** *bln contacts, compiled by the author on the* WFE data (2013)

According to statistics of the Bank for International Settlements (BIS, 2013), the IR derivatives volume follows similar treands on the exchange-traded and over-the-counter segments and there is no cannibalization observed between these segments (Figure 2).

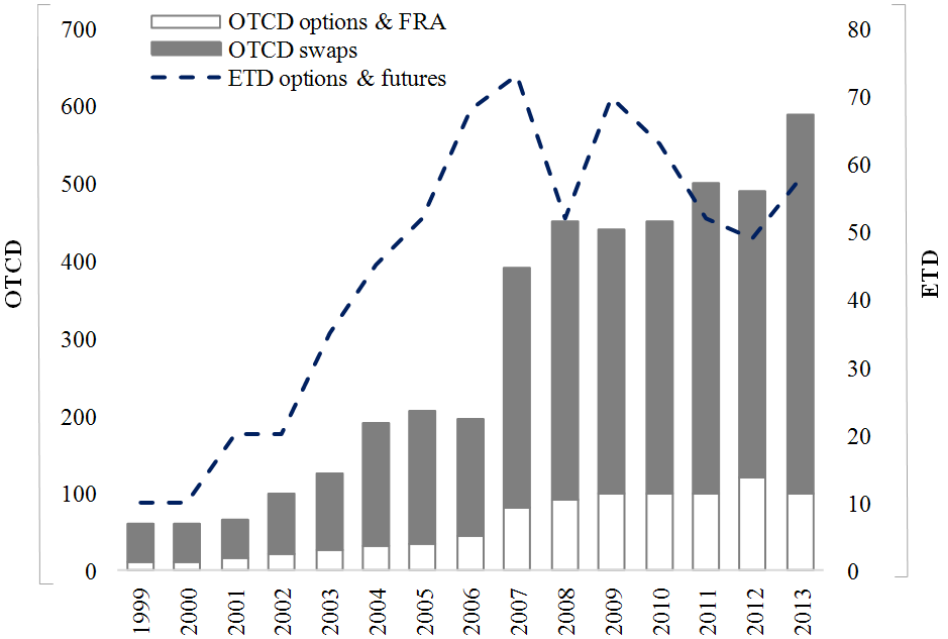

Figure 2. **Evolution of notional amounts outstanding for IR ETD and IR OTCD,** *trln USD, compiled by the author on the* WFE data (2013)

Regarding IR OTCD, the latest global statistics shows that the notional amounts outstanding made up 693 trln USD in 2013 (+10% vs. 2012), while IR ETD amounted to 59 trln USD (+17% vs. 2012). This deviation reflects the differences in the structure of these two markets and contracts maturity. Despite the increase in the residual value of the contracts, the gross market value (value of the existing contracts at market prices) declined by -19% to 28 trln USD.

The largest volume in the IR OTCD is attributed to swaps (grew by +11% vs. 2012) followed by forward rate agreement (grew by +26% vs. 2012) and interest rate options (declined by -4% vs. 2012).

IR derivatives are the major instruments at the market occupying up to 71% of the global notional value. They facilitate risk hedging and funds reallocation between financial and non-financial organizations that particularly cause a huge turnover at the OTCD market.

After a rapid increase before 2008, the growth of IR derivatives slightly decreased. However, in the middle of 2013, average daily turnover amounted to 2.3 trln USD, which is the highest indicator during the last 3 years. We believe that low and stable interest rates after the financial crisis was caused by low but positive growth in the majority of currencies.

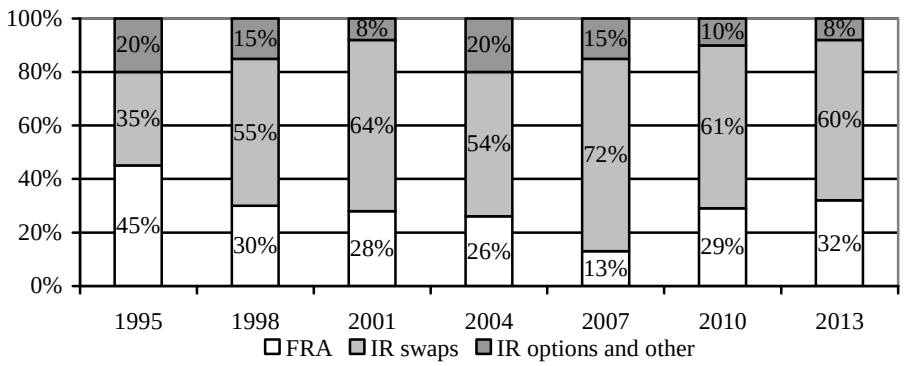

Figure 3. IR derivatives split by instruments, *%, compiled by the author on the BIS data (2012)*

In 2013 the total turnover of IR swaps reached 60% that demonstrates 12% contraction in comparison with 2007. The share of the forward rate agreements (FRA) amounted to 32% in 2013 (+19% to 2007), while the share of IR options and other products fell by 7%. Despite the growth of the IR OTCD notional amounts outstanding, its market value fell by -20% mainly due to significant decrease of the replacement cost for swaps denominated in USD, EUR and GBP. Currency exchange rates rose sharply in the first half of 2013, bringing them to the level that prevailed at the beginning of the period when these swaps were arranged.

IR OTCD is traded in the squeezed number of currencies. For example, turnover of the IR OTCD in EUR went up by 37% in 2013, occupying almost half of the total turnover. A turnover of the instruments conducted in USD remained stable during several periods that heavily impacted its share and caused a -28% drop. Sterling kept

its place as the third most important currency with the 8% market share at the end of 2013 (BIS, 2013).

Importance of the advanced economies currencies has also changed over the last years. Rapid growth of contracts denominated in Australian and Swedish currencies contrasts with lower activity in other currencies of developed economies. Turnover of contracts denominated in Australian dollars even overtook Yen contacts.

Another significant trend of the recent years is a dramatic increase of contracts denominated in currencies of developing countries – although with a relatively low base. The sharp increase was notable for the contracts denominated in Brazilian Real, South African Rand and Chinese Yuan, however, their turnover remains to be very low.

The growth of turnover also significantly differs by instruments. The FRA experienced a rapid growth for Euro-based and Sterling-based contacts, which contrasts with lower volumes contracted in US dollars. At the swaps market, turnover increased by 25% in the Euro-Dollar segment, whereas activity in Sterling and Yen fell sharply.

Trade is also concentrated geographically. Slightly less than half of the global turnover is made in the UK and 23% – in the USA (Figure 4).

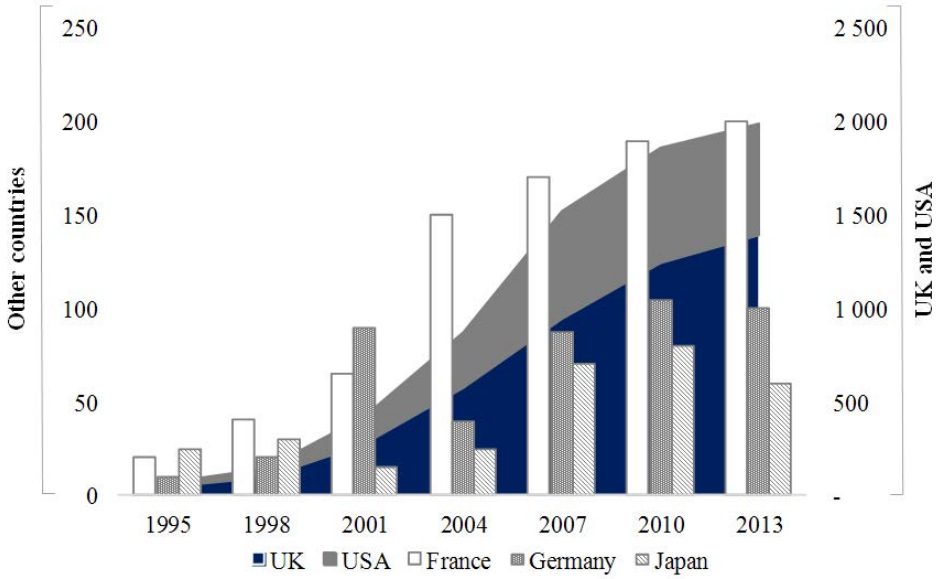

Figure 4. **Geographical structure of the daily average IR OTCD turnover,** *bln USD, compiled by the author on the* BIS data (2012)

Among other significant markets, we should mention France (202 bln USD) that has a strong position in swaps trading, Germany (101 bln USD) that specializes in the FRA. The turnover of Denmark increased from 16 bln USD to 59 bln USD as of 2010, where more than 80% were denominated in EUR. Danish financial institutions often use Euro-based IR derivatives to hedge foreign exchange risks due to the volatility of Danish Crones as they believe that greater liquidity of the Euromarket minimizes potential foreign exchange risks. Japan leapfrogged Australia by 1 bln USD

with the turnover of 67 bln USD, while Singapore and Hong Kong reached 37 bln USD and 28 bln USD, respectively.

Another observable tendency is a decline in the inter-dealer position, which was offset by an increase of other financial counterparties. It is the most noticeable for FRA, where only 10% of all transactions are done between reporting dealers. Partially, it reflects the increasing share of the contracts that are cleared centrally. When counterparties clear the contract centrally, the turnover will double because one contract will be replaced by two (Figure 5). Due to the influence of central clearing, the FRA market value jumped from 47 bln USD at the end of 2012 to 168 bln USD in the middle of 2013 (BIS, 2013).

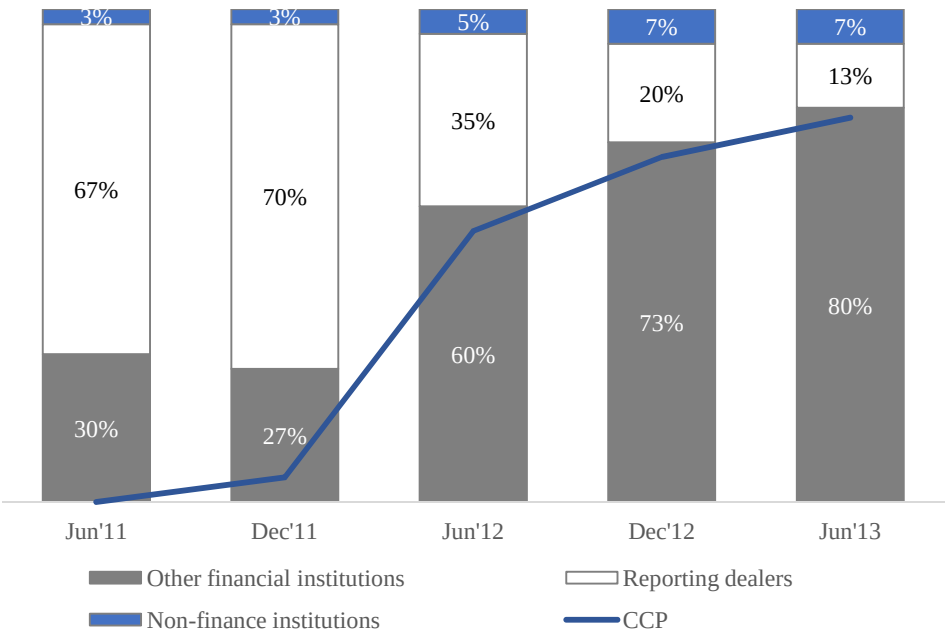

Figure 5. **FRA turnover by counterparties,** *%, compiled by the author on the* BIS data (2012)

The volume of transactions with non-finance institutions also decreased. Despite the rapid growth at the currency markets of developing countries, trade is still concentrated in major currencies and financial centers. Moreover, recent changes in the derivatives regulation have increased the number of contracts to be centrally cleared.

According to recent researches, approximately 57% of all FRA transactions and 35% of all swaps transactions were centrally cleared as demonstrated in Figure 6.

Interest rate risk can be seen as one of the most important forms of risk currently faced by major market players. Finance engineering, massive computerization and changes in foreign exchange, credit and capital markets have created the necessity to supplement traditional and well-known methods to manage interest rate risk with more sophisticated methods. In order to better control interest rate fluctuations and

increase working capital, which can result in higher overall profitability and greater returns, IR derivatives can be used along with more traditional approaches.

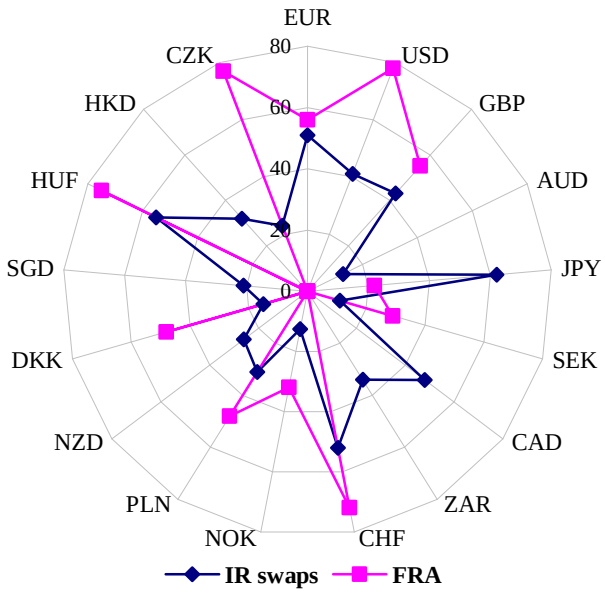

Figure 6. **Share of transactions subject to central clearing in 2013,** *%, compiled by the author on the BIS data (2013)*

After having carefully analyzed the latest trends at the market of interest rate derivatives, we may assume that this segment will continue to grow in near future. This trend is mainly caused by its fundamental feature to cut expose to economic risks.

However, we should not forget that derivatives remain to be a potential source of financial shocks. This leads to enhancement of the current regulation system as the recent financial crisis has clearly demonstrated the inability of timely response to such threats and their adequate prevention. Regulation effectiveness has always been important, even during the pre-crisis period. However, the latest financial crisis led to the increased attention to this issue on the global and national levels.

Considering the fact that mandatory clearing was introduced as an anti-crisis measure based on the findings of the previous financial shocks, we see that the share of such transactions is quite significant. As IR derivatives occupy more than 70% of the market turnover, we can assume that one of the possible crisis reasons is removed. Regarding IR derivatives that are not centrally cleared, they have to be applied to the higher capital requirements and minimum profitability requirements.

Conclusions. If we analyze the history of financial collapses in the last few hundred years, we will see that the periods between them are gradually reducing. Market participants must be better prepared for them in the future and have a more diversified defense, as new crisis may have even greater impact on separate companies as well as whole countries.

IR derivatives market has significantly increased since its inception. Its structure remained stable from the late 1980s but now it is rapidly changing. Mainly, it is a

result of latest regulatory changes that aim to increase market transparency and reduce counterparty risks.

One of the major trend at the market is the reduced role of the inter-dealer segment. The market continues to rotate around a limited number of dealers, but their turnover declines. However, the inter-dealer segment remains to be a significant part at this market. These changes will have consequences for market liquidity. New regulation will make trading more expensive, but at the same time, it will reduce counterparty risk. How both factors will affect market liquidity is needed to be investigated.

On the other hand, a share of transactions that are centrally cleared continue to grow making market more transparent and preventing the emergence of new financial shocks. The central clearing minimizes systemic risks that may arise from the use of IR OTCD as they provide greater flexibility in risk management strategies.

Regarding geographical trade structure, there are no major changes. As previously, the principal part of transactions is concentrated in the world's financial centers, where about 50% accounts for the USA and the UK.

However, despite the dominance of the major financial centers, top-currencies are replaced by the currencies of developing countries. The main reason for this substitution is the development of the derivatives market in these countries as well as the recovery of the market after the crisis.

Current risk management systems use diversified tools to identify, control and minimize the possibility of unfavorable changes in interest rates. The necessity of additional management instruments to hedge interest rate risks was the starting point in the development of derivatives designed specifically for effective management during adverse changes in interest rates. Thus, the relevance of IR derivatives is extremely important in the risk management system.

Nowadays, regulating authorities have to control this expansion via inclusion of strict requirements and rules for this market to boost the growth in the controllable way and not to prevent its development.

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