

# COMPANIES AND DERIVATES AS A TOOL TO HEDGE THEIR RISK

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## Foreword

Hedging against various entrepreneurial risks has become one of the most important activities within various companies in last two decades. It is utilized by huge multinational corporations (MNCs) as well as by medium and small companies which are active on regional scale. We are witnessing risk management teams creations in companies all around the globe. Whether in Asia-pacific region, in US or in EU, boards of directors have become more familiar with the necessity of risk hedging in companies they are heads of. There are either whole risk management departments or at least some sections within financial department which carry out company's hedging policy (from one form to another). Companies should, by their nature, be risk averse. If these companies are strongly convinced that risks they are considering to hedge will turn up in their favour, they do not hedge them. An opportunity for unexpected news to break out is than created. This is one of the reasons why there is certain level of risk hanging over almost every organization all the time. If all companies were rational there, theoretically, would not be any risk left to be exposed to. Even though, companies try to do their best to avoid risk, it has to be admitted that from time to time they are exposed to unnecessary risk by their own fault. Other reasons which have emphasized need of hedging for companies are as follows: possible recession, price shocks and mainly future contracts. For further details on these reasons see Císař [7]. All mentioned reasons only underline the need of hedging around the globe. Special types of derivatives could possibly solve many recent problems that have arisen. For example, credit crunch which has become more significant after Northern Rock crisis could have been prevented by using credit derivatives. Market for credit derivatives has been booming in recent years. However, there is one significant disadvantage with credit derivatives. They lack marketability, standardization and therefore are

less liquid. These disadvantages emerge from the fact that there is no exchange-organized market for credit derivatives. Hence the only way how to deal them is "over the counter". This is probably most important reason why corporate treasurers do not usually include credit derivatives into risk hedging instruments they use. See, for example, Freeman, Cox and Wright [15]. Fact that credit derivatives are not commonly used by companies for hedging purposes, excludes them from further conclusions in this paper.

## Methodology

We compare the conclusions obtained from primary and secondary research. During the primary dissertation research in UK (from January to March 2008) a questionnaire attached to an e-mail was chosen as the best method. This method allowed researcher to design questionnaire as desired and to make it as attractive and as easy to fill in as possible. More precisely, convenience sampling method was used, see appendix L inside Císař [7, p.89]. There was, though, slight modification made to this method. Companies were not chosen entirely randomly. From the entire portfolio of LSE companies the biggest 311 companies (FTSE 350) were chosen first. Then another 173 firms were added (from FTSE All-share index). Afterwards, another 71 small companies (FTSE AIM 100) were added to the research portfolio of this paper. Following 449 companies were than chosen randomly on LSE. Companies within each index were chosen randomly as well. During the secondary research were used statistical resources from Slovak financial market and European statistics and world bibliography.

## 1. Our General Findings in Literature Review

There is wide range of literature regarding theoretical explanation of what financial derivatives

are and how do they work. See for instance Hunt and Kennedy [19], Winstone [32]. Practical approaches of derivative instruments utilization are described in number of books as well. Moreover, there were enough surveys conducted in last 20 years, which allow us to create presumption of how derivatives are used among companies not only in the UK, but worldwide including transition economies. See for example general table of Mallin, Ow-Yong and Reynolds [22], Bodnar et al. [6], Grant, K. and Marshall, A. P. [16] and Phillips [26].

## 1.1 Attitude to Risk

First of all it is very important to find out what is company's attitude to risk. Knowing this is crucial for the organization as it has huge implications on how the firm sets its hedging policy. After company sets aims and objectives in risk management, it is then ready to decide on how to manage its risk exposures. In general, two hedging techniques are at disposal. First involves internal hedging technique. This technique incorporates various risk management strategies based on the use of internal sources and instruments. For example leading and lagging, matching, netting, etc. This paper does not pay more attention to these internal hedging techniques. More importantly, second way how to deal with vast number of risk exposures is by using external hedging techniques. These include taking positions on various external markets to the company (money market, foreign exchange market, stock market, futures market, options market, commodities market etc).

Risk attitudes of UK companies are, not surprisingly, negative in terms of risk taking. According to Belk and Glaum's [3, pp.3-13] empirical research majority of UK multinational corporations with subsidiaries overseas was "totally risk averse". They add that substantial minority of researched companies do not hedge some of their foreign exchange risks, so could be called "risk averse". Furthermore, Belk and Glaum [3] continue and make clear that only small minority of companies was "risk taking". Belk and Glaum's evidence is not surprising these days. Firstly, since the world has started becoming "smaller place" due to advanced technology in every imaginable way the global competition has increased rapidly. Every company and country around the

globe is trying to harvest the most from its competitive advantage on world markets. Secondly, especially these days, in current possible global slowdown, companies are not willing to expose themselves to risks more than it is necessary and sound for their business growth.

However, this empirical research by Belk and Glaum demonstrate that even some big multinational corporations do participate in speculative trades. This is the case despite speculative trades are considered to be high risk deals. Participation of companies in speculative trades is rather surprising fact resulting from their research. On the other hand, another research shows contradiction. Bodnar et al. [6] claim that in the USA, companies usually do not use derivatives for speculative purposes. This assumption was based on 530 responses obtained from 2000 companies. However, there was huge gap in derivatives usage between big and small companies (According to Bodnar et al. [6 pp.104-114] 65% of big firms used derivatives in oppose to only 13% of small companies involved in derivatives). In order to be able to make some conclusions deriving from the size of the company, it is essential to understand how many companies actually use these exotic instruments. Our finally results of primary research in this area are presented on pages 44-50 inside the dissertation [7].

## 1.2. How Many Companies Do Use Derivatives in General?

Recently, El-Masry [13, pp.137-159] answered this question in his survey of UK non-financial companies. This relatively new research shows that 67% of researched companies used derivatives and only 33% were nonusers. His findings are based on 173 responses out of 401.

El-Masry's research support the above stated argument that companies lately realized the importance of hedging by derivatives. Mallin, Ow-Yong and Reynolds [22, p. 68] support El-Masry's findings that among companies there are more users of derivatives than nonusers, by demonstrating that in every sector they researched more firms used derivative instruments than did not.

Furthermore, in Australia, Berkman et. al. [4, pp.5-13] came up with the same results as above mentioned authors. Berkman et. al. divided companies into two groups namely industrials and mi-

ners. Sample of 158 firms consist of companies which are listed on Australian Stock Exchange. 52.8% of firms in the industrial sample used derivatives. Among mining companies, 61.5% were derivatives users. These results were based on 1995 annual reports from sample companies. As it is clear, from three different sources at two different geographical spots, there are more derivatives users than non-users across the board in general. Fact that most of the world companies, at least in the developed world, use derivatives is not a surprise at all due to gradually increasing competition on the global market and the fact that larger scale transactions and commitments cause increasingly higher exposures to risks. Our finally results of primary research are presented on pages 57-63 inside of dissertation [7].

### 1.3 Financial Managers Concerns Regarding Financial Derivatives

Whilst paragraph above shows same results from around the world, there are differences in what concerns financial directors about derivative instruments usage the most. In 1995, Bodnar et al. reported first time on this matter in the USA. Later in 2001 was this issue adopted by Mallin, Ow-Yong and Reynolds, who did include question regarding financial directors concerns about derivatives into their research in the UK. In contradiction to USA's research, in UK financial directors appeared to be most concerned about "evaluating risks of proposed derivative transactions" [22]. High or moderate concerns were expressed by 79 out of 230 companies on this matter. On the other hand, in America, credit risk and account treatment of hedging was demonstrated to be top two concerns of financial directors. Authors of UK survey tried to explain the reason of choosing risks evaluation of proposed derivative transactions as main concern. They pointed out that it might had been caused by currency crisis in East Asia and by that times derivatives disasters.

Above described concern of financial directors (derivatives risk evaluation) appeared to be legitimate. Why? The answer for this question can be easily found in current financial and real markets. There is an extensive problem with evaluating risks attached to derivatives due to lack of regulation and existence of some very complicated derivatives of derivatives. As long as nobody knows what are some of these exotic derivatives

worth nobody is willing to buy them because they are unable to evaluate risks that are connected with them. That is why some institutions (mostly money lenders and investment banks), in current conditions, got stuck with some "bad" derivatives (CDOs – collateralized debt obligations for instance) on their accounts. They are then sources of huge write-offs and subsequently losses. What are the main determinants that influence companies' usage of derivatives?

### 1.4 Size of the Company and Its Influence on Derivative Instruments Usage

Evidence on companies' size influence on derivatives usage can be found out there. To demonstrate this proposition on the UK's case following study was looked at. Mallin, Ow-Yong and Reynolds [22, p. 69] concludes that "usage of derivatives is clearly, and significantly, related to company size". According to their research, size of companies was measured by firms' turnover; bigger companies were more likely to lean on derivatives side. With the decreasing size of the company the use of derivative instruments declined too. Furthermore Grant, K. and Marshall, A. P. [16, p.194] concur that size of the company is the "primary characteristic" influencing whether firm uses derivatives or it does not. Based on their survey of large UK companies, around 90% of respondents quoted that they used derivatives in 1994.

All these previous surveys provide enough evidence of what is the main reason that distinguishes users of derivatives and non-users of derivatives. It is the size of the company. First question than comes up after digesting this fact is why? Answer is straightforward once again. Simple look at the scale of bigger companies' transactions (due to the fact that they are usually involved in international deals as well as in domestic deals) in oppose to those of smaller size is self explanatory. Not only transaction costs are higher for bigger companies but translation costs as well. They simply have to hedge their translation costs somehow because the amounts of money that are being paid out from or into the company are so huge that even small change in exchange rate causes huge change to final profit or loss. Use of derivatives is one of the possible solutions for companies how to hedge this expo-

sure. Although, in case of transaction cost, use of internal hedging techniques (matching) would be probably more appropriate.

## 1.5 Why Companies Reach Out for Derivative Instruments

Another interesting fact about derivative usage, which was concluded from almost every previous survey, is what purposes financial derivatives are used for. Many authors (see for example Bodnar et al. [6], Mallin, Ow-Yong and Reynolds [22], Grant, K. and Marshall, A. P. [16] and Phillips [26] agree that fundamental reason for employing derivatives is risk hedging.

As it derives from all the reasons that were mentioned in previous text (globalization, increasing competition among companies worldwide, larger transactions, more leveraged balance sheets, etc.) other purposes derivative instruments were used for included funding obtaining or reducing funding costs (50 % of companies in USA Phillips [26], also 69% of companies in New Zealand (Berkman et al. [4], yield enhancement and investing (50% of surveyed companies in UK with Grant and Marshall [16] and 15 % of companies in USA see Phillips [26]).

Another UK survey conducted by Mallin, Ow-Yong and Reynolds [22] puts forward that 86 % of UK non-financial firms use derivatives for "contractual commitments" hedging and only 31.1 % use them for "balance sheet" hedging. 21 % of companies hedged themselves against economic and competitive exposures.

Adedeji [1, pp.53-74] evidence suggests that "firms use derivatives in order to reduce their expected costs of financial distress and enhance their market values". The latter reason means that companies use derivatives in shareholders' interest. On the other hand, if company suffers loss from using derivatives (usually these losses are huge; see Winstone [30] it can have undesired effect on shareholders trust towards these instruments. This lack of trust can then stand in the way even if company wants to utilize derivatives for hedging purposes. Shareholders might not be very happy with company's decision to use derivatives after previous experiences (even if it is for different purpose).

Possible decline in the value of publicly traded company, due to market risks, could be dealt with

by relying of options and futures. It is important to distinguish between specific risk and market risk that company's shares are exposed to. Specific risk derives from inside of the company and company is directly responsible for any changes in specific risk of its shares. On the other hand, market risk is completely out of company's control. Market risk is connected with market conditions and future expectations on broader level. Firm cannot influence market risk directly.

There is the way how to cope with both of these risks, though. In terms of market risk, company can employ financial futures or financial options. More precisely, index futures or index options in this case. If company wants to hedge itself against possible decline in its value due to external market risk, it can take short position in either index futures or index options. This will secure gains for the company in case that broader market is developing in negative direction. Index futures should be employed only if there is certainty that market will behave in negative direction (in direction that will harm company's share price). Because if company shorted the market by index futures and the market behaved in positive direction, company would suffer a loss. In case of more uncertain situation companies should employ index options as they allow their holders to not exercise them in case of when market moves in favour of the company (if company short the market using index options and market will behave in positive direction, company does not necessarily have to exercise the option, so no loss will be made (beside the premium paid for purchase of put option)). Findings our research [7, p.50-54] are consistent with those described in literature review of this paper.

## 1.6 Utilization of Particular Derivative Types

Previous evidence also suggests that most used derivative type in the UK was swap (Grant and Marshall [16]). In their research, they claim that swaps use grew "rapidly" in 1990s before 1997. Swaps were not that famous among hedgers in the distant past. Through the time swaps made their way all the way to the top. They were the most used derivative type in 1994 and 1995 (Grant and Marshall [16]). 90% of researched companies used swaps in these years. Futures/ Forwards appeared to be in the second place

right behind swaps (around 80% of firms used them). Third place was taken by options (68% of companies were involved in options use in 1995). The fact that swaps are mostly used derivative type does not come up as a surprise. Reason why swaps are most used is probably that most companies are exposed to some sort of interest rate risk. Whether through their liabilities (various types of loans and debts they are committed to repay) or through their assets (loan and claims they expect to receive payments from in the future). As the repayment of these loans on one or the other side of balance sheet is heavily dependent on interest rate (either fix or variable) it is essential for the company to be able to connect repayments to the future cash flows. Therefore companies sometimes need to exchange fix interest rate for variable or visa versa. Swaps are most convenient and accessible instruments for firms to achieve such a goal. As name suggest swaps enable companies to swap current or distant cash flows (to achieve fix or variable interest rate).

As we know swaps are most used only for interest rate exposures. Most companies included in the survey used over the counter forwards. This conclusion is in contradiction with Grant and Marshall's finding that swaps are mostly used derivatives in the UK. Why most companies, according to Mallin, Ow-Yong and Reynolds [22] survey used forwards?

Reason for this is similar to that why companies utilized swaps. Forwards again can be used to secure fix interest rate in the future. This gives companies certainty what their future cash flows will be. They can adjust expected cash flows to meet the payments in the future based on interest rate that is known today. Moreover forwards can do same job in terms of fixing of future exchange rate. This is very important for many companies (especially larger companies which are involved in cross border trading) as it again allows them to calculate exact future cash flows deriving from particular transaction because they know today what will the future exchange rate be.

On the other hand, forwards are not standardized instruments, thus they are not tradable and they also lack liquidity as they are tailor made for current needs of particular company. Use of forward instruments increases costs of transaction in exchange for certainty of future money inflows or outflows. Despite all these ways how to employ

various types of derivatives in terms of lowering risks some companies are rather more "risk loving" or they are exposed to some other reasons that prevent them from using derivatives. The results of primary research also are presented on page 58 -64 inside of dissertation Cisaf [7]. Next section deals with reasons for non-usage of derivative instruments.

## 1.7 Previous Findings on Non-derivatives Users

Several studies all around the globe solve why are derivative instruments not used by companies. Results, not surprisingly, show that mostly mentioned reason for non-use of derivatives is not significant exposure to financial risks. It is clear from Mallin, Ow-Yong and Reynolds's [22] survey that 51.6% of UK companies do not use derivatives for this reason. Even more companies (72%) stated this low significance of exposure as one of their 3 main reasons for not using derivatives. Presumably, another reason in the row for not using derivatives is high cost of these instruments. Just over 16% of UK firms claimed this as their main argument not to use derivatives. Thirdly, "exposure managed by other means" appeared to be mentioned by 14% of companies as a purpose of not using derivatives.

Naturally, it was expected to find out that not every company uses derivatives. Especially small to medium sized companies which are not exposed to risks to such a huge extent those bigger companies are. Smaller companies do not necessarily have to be publicly owned so if they are not there is one less reason for them to hedge (possible decline in market value of the firm). Smaller and medium companies also tend to be less leveraged, hence they are not exposed to interest rate risks to an extent their bigger peers are. Their international performance is limited and so exposure to exchange rate changes is smaller too.

What is of more surprise and certainly unexpected is that over one fourth of asked UK companies stated that they had have lack of knowledge about derivatives (Mallin, Ow-Yong and Reynolds's [22]). This fact has really surprised author of this paper as it was expected that companies in order to secure best performance would explore every possibility how to avoid unnecessary risks. Apparently, this is not the case in broad world.

The other survey Berkman et al. [4] shows that exposure being too small was stated by 60% of New Zealand companies as the reason for non usage of derivatives. 14% of companies, which participated in this research, mentioned that they use other instruments to hedge rather than derivative instruments. Similarly to Mallin, Ow-Yong and Reynolds's research, Berkman et al. concluded that 13% of questioned New Zealand companies quoted high costs as main purpose for non using derivatives.

Question that automatically comes up to the surface after reading previous is: what else have impact on whether companies employ derivatives of not? Another factor that might influence companies' derivatives usage is industry sector companies are in. The results of primary research are presented on page 56 - 57 inside of dissertation Cisař [7]. In terms of non-usage of derivatives results from previous studies and results from our primary research, they are in agreement.

## 1.8 Risks Which Companies Hedge

As a matter of fact, many authors agree, risk hedging is the most important reason for usage of derivatives. This fact automatically raises the question of what risks do companies exactly hedge by using derivative instruments. Mallin, Ow-Yong and Reynolds considered this question in their research. They came up with some interesting results. The account earnings fluctuations were stated as significant hedging objective for 53% of asked companies. Secondly, 38% of firms declared cash flows managing as most important hedging strategy. This fact is in contradiction with Bodnar's et al. [6] suggestion, that cash flow hedging is "number one" among hedging objectives in the USA. Moreover, Mallin, Ow-Yong and Reynolds [22] add that one sixth of companies do not even consider hedging against cash flow fluctuations in their hedging strategy in the UK.

Comparison of risks being hedged by UK and US companies shows different results. So, the question remains: why is there so big difference in risk hedging strategies in the UK in comparison with the US? This question becomes even more interesting if you consider globalization process in the last decades. Why are these firms having different preferences when choosing what is the most important to hedge when they exist in the

same global environment? What makes these companies so different? The answer might be in another process which has arisen along with the globalization. It is regionalization. One would say that these two terms are in contradiction to each other, but apparently they are not. As globalization is gaining momentum and huge multinational corporations (MNCs) or multinational enterprises (MNEs) want to win recognition in different countries, they usually have to obey regional laws, traditions and peoples' way of life in general to become successful. MNCs and MNEs very often cooperate with regional agents and suppliers to achieve lowest possible prices. All these factors speed up regionalization process in the world along with globalization. And this may be one of the reasons why companies, operating in certain areas, have so specialized hedging needs different to other firms engaging in other regions.

The other point in this discussion is that United Kingdom and United States of America are similar in the sphere of law, peoples' behaviour and most importantly in way financial market works. However, the UK companies' attitude to risk should in general and historically be more conservative than USA's. This assumption is partly exemplified by researches in the USA (Bodnar et al. (during 1995 - 1998) – 50% of companies used derivatives, Phillips [26] – 63% of firms were involved in derivatives usage) and by researches in the UK (Grand and Marshall [16] – 90% of companies used derivative instruments, Mallin, Ow-Yong and Reynolds [22] – 60% of asked firms utilized derivatives). Just simple average of USA's results gives us 56.6% of companies using derivatives in oppose to those in the UK where average percentage of companies that used derivative instruments was 75%. This might mean that UK companies are more risk averse. The results our primary research is presented on page 65 inside of dissertation Cisař [7] and they are in agreement.

## Partly Conclusion

To conclude previous surveys and researches that have been done in the derivatives usage area we can say that two main surveys took place in the UK. Grand and Marshall's survey and Mallin, Ow-Yong and Reynolds's survey both show that derivatives are used by more than half of UK companies (in first research 90% and in the second one 60% of respondents used derivatives).

This literature review has provided systematic insight into what is known about derivative usage so far, either in United Kingdom or worldwide. Research of actual derivative instruments has shown huge number of these instruments being available for companies to use for hedging purposes. It has been pointed out that firms in UK tend to use external hedging techniques more than internal (at least in case of bigger firms). They make less use of internal hedging techniques despite their lower cost.

Main conclusion, drawn from this part of paper, is finding about how many companies actually use derivatives for hedging. It has been clearly put forward that more than half of companies in the UK use derivatives. Numbers in various studies varied from 60% to 90%. Among reasons for not using derivatives, one very bewildering fact arose. More than one fourth of UK companies declared that they lack knowledge about derivative instruments. Among derivatives, swaps are most used ones in the UK followed by forwards. Results about futures usage vary among different authors as well as about options usage. It should be noted that despite literature and surveys described in this chapter, there is still not enough done in order to understand derivatives utilization by companies. Moreover, most of researches took place more than 10 years ago. Since that time much has changed in financial world and many new types of derivatives has been invented or even the old ones has been developed. Studies about derivatives are very important and are gaining on importance as time moves on. This research has thrown up many questions in need of further investigation. As current crisis in world financial markets has shown derivatives lack appropriate legislation and the rules that exist are, rather, insufficient. Further studies should focus on the area of derivatives regulation by various institutions. Accounting of derivatives is still not very clear and creates another possible area to closely look at. It is possible to assume that similar situation applies to Slovak Republic. Due to non existence of any pertinent derivatives surveys in Slovakia, it is virtually impossible to address all the above discussed factors. However, there are institutions, e.g. Technical University of Kosice, in particular Faculty of Economics, which plan to conduct similar surveys (to those conducted worldwide and described in former part of this

paper) in Slovak Republic. Methodology of this study is currently being prepared at the Faculty of Economics Technical University of Košice. As a result of lack of available direct surveys on derivatives in Slovakia, authors of this paper were left with only secondary data available for scrutiny.

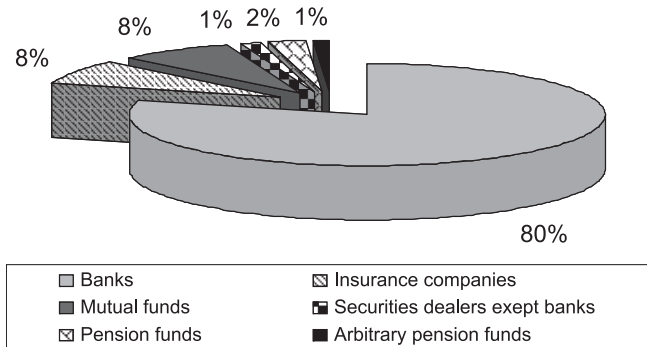
Deriving from this part of paper there is substantial difference between utilization of different types of derivatives. On one hand, there are forwards and swaps which seem to be favoured by companies for hedging purposes and on the other options and futures which seem not to receive such a degree of attention by companies. This might be interesting area for future detailed research.

## 2. Volumes and Trends in Using Financial Derivates in Slovakia

It is vital to note that Slovak companies discovered derivative instruments within last 10 years. Non-financial firms usually utilize derivatives to manage foreign currency exposures on their balance sheets. Derivatives are mostly used by large companies which, in many cases, are fully owned by foreign entities or investors. It can be safely assumed that general trends in terms of derivatives utilization are similar to those described in paragraph 1.1 of this paper mainly due to financial markets globalization. Currently, it is not possible to convey pertinent analysis of how size of firms impacts their usage of financial derivatives (as it was shown in paragraph 1.4. of this paper) or what exact types of derivative instruments are utilized by companies (as it was shown in paragraph 1.6. of this paper) in Slovakia based on official information which are available from companies themselves (e.g. annual reports, financial statements). Statistically not relevant information about derivatives utilization in non-financial companies can be found in some academic thesis. Therefore, it is virtually impossible for authors of this paper to conclude how many companies take advantage of financial derivatives in Slovak Republic in the same way as it was described in paragraph 1.2. this paper.

Concluding first part of this paper, it becomes clear that studying financial derivatives in terms of factors mentioned in paragraphs 1.1 through 1.8. should be subject of future research papers in Slovakia. Relevant information on derivatives

**Fig. 1: Financial market assets structure and management**



Source: [24, p. 61]

usage can only be obtained for banking sector in Slovak Republic. Therefore, authors of this paper will only consider these in further part of this study.

Most important question is thus as follows. What is the volume of derivatives trading in Slovak Republic? To be able to effectively answer this question we need to obtain relevant data.

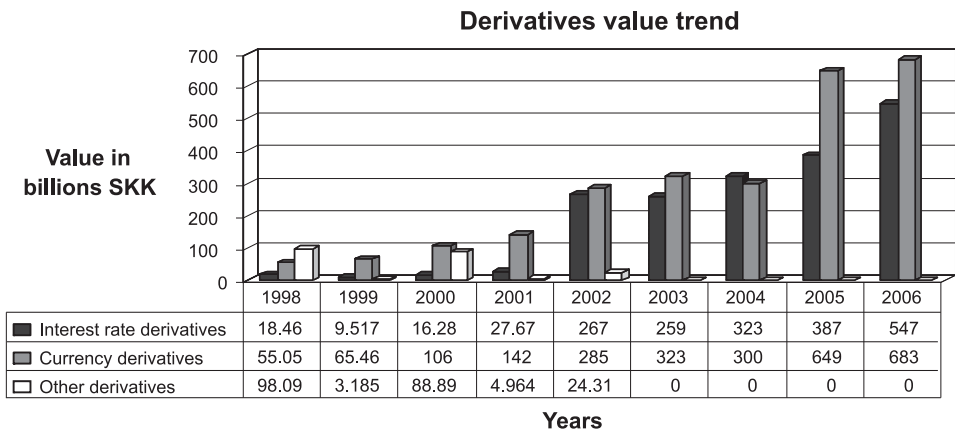
Derivatives trading in Slovakia usually encompasses banks (as one of the counterparties) (see figure 1) and therefore it is safe to assume, that derivatives trades information obtained from off balance sheet items of the banks represent true picture of derivatives trading trends in Slovakia. According to National Bank of Slovakia, banks in Slovak Republic are responsible for managing

more than 80% of assets on Slovak money and capital market. Secondary role in asset management, in Slovakia, play insurance companies and mutual funds and therefore we will not take them into consideration for the purposes of this paper.

Figure 2 shows total volume of utilized financial derivatives in Slovak Republic between 1998 and 2006. Data are taken from banks' off balance sheet items.

It can be claimed, in general, that most of derivatives trading in Slovakia involves currency derivatives followed by slower trading in interest rate derivatives. According to Hanulak [17, p. 1] currency forwards are most used derivatives in Slovak Republic. Secondly, also relatively widely used are currency swaps. Currency options are

**Fig. 2: Value of traded derivatives growth in Slovak Republic**



Source: [17, p. 7]



according to this author used to lesser extent. In regards to derivatives contracts settlement, it is clear that most contracts are settled by physical delivery of the underlying asset. From the point of view we can confirm this tendency as it was shown in paragraph 1.6. first part paper dealing with problems of utilization financial derivative types.

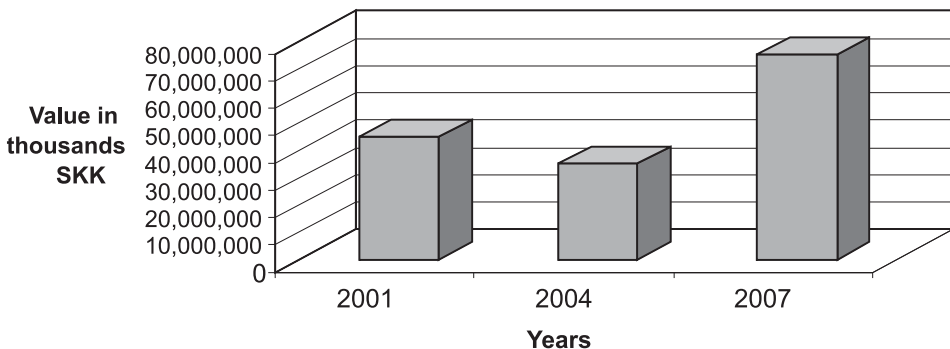
Slovak companies are, contrary to fully developed market economies, financed by banking sector. For this reason it becomes clear that non-financial companies mostly used currency derivatives (forwards and swaps) during this period in Slovak Republic. Therefore, it makes sense, to conclude that forwards and swaps most used derivatives in Slovakia, which concurs with results described in paragraph 1.6 this paper.

As you can observe on the above chart, even though Slovak derivatives market is relatively small it does not lag behind other world's derivatives markets in terms of directional trend. Volume of derivatives traded since 1998 until 2006 increased sixteen fold. Moreover this chart clearly shows to what extent is utilization of currency derivatives greater than use of interest rate derivatives in Slovakia (whereas in most other developed markets interest rate derivatives decisively override currency derivatives in use). During shown eight years, the average utilization of currency derivatives exceeded use of interest rate derivatives by 66.89% in Slovak Republic. Reasons for this were already explained in previous parts of this paper. Value of financial claims deriving from derivatives reached 1.230 trillion

SKK in 2006. It is vital, in academic paper, to use as wide spectrum of information as possible deriving from as many sources as possible in order to achieve objective findings. This is why the author of this paper looked closely at another source of information regarding derivatives, Triennial Central Bank Survey. This study is conducted by Bank for International Settlement (BIS) every three years. Current structure of this research has been followed since 1998 (overall this research has been produced since 1989, until 1998, though; it was focused only on currency derivatives). Triennial Central Bank Survey represents worldwide research that deals with OTC (Over the Counter) traded derivatives security wise and geographical location wise. For purposes of this paper's research, Triennial Central Bank Survey is an adequate vehicle even though it covers only OTC derivatives. The reason behind this is that virtually all of traded derivatives in Slovakia are OTC traded derivatives as there is no organized form of derivatives market in Slovak Republic.

General finding of Triennial Central Bank Survey is that OTC derivatives trading is focused into two international centres that account for more than 59% of all worldwide derivatives transactions. The biggest role in derivatives dealing plays London where, according to the latest survey 2007 [21], 44% of global interest rate derivatives trades and 39% of global currency derivatives trades were carried out. Furthermore, strength of London as world's derivatives trading centre is increased by the fact that only 12% of all currency derivatives trades were conducted in

**Fig. 3: Average daily notional values of derivatives in Slovak Republic**  
**Notional value of OTC derivatives in Slovakia**



Source [31, p. 20]

Pounds Sterling or contained Sterling in currency pair. As for interest rate derivatives (denominated in single currency), 51 % of them were denominated in Euros.

In order to achieve goals of this paper, authors looked closely at what Triennial Central Bank Survey [31] had to offer about Slovak Republic. Slovakia was first time included in mentioned research in 2001 through National Bank of Slovakia (NBS). This is why information from only 3 surveys is available, namely from surveys in 2001, 2004 a 2007.

The USD denominated value of OTC derivatives traded in Slovakia has not changed in first two periods (2001, 2004). Drop recorded in chart 3 is a consequence of Slovak Crown's appreciation against the US Dollar in this period (SKK appreciated by around 30 % against US Dollar). Utilization of derivative instruments tripled in 2007 even though SKK had appreciated another approximately 30 % against USD. Data obtained from Triennial Central Bank Survey are almost in complete agreement with results of Hanulak (2006, pp. 7) survey, where we can again observe and uptrend in financial derivatives usage in Slovakia. Another agreement of these two surveys can be found while closely looking at years 2001 through 2004 where, according to both sources, trend in derivatives utilization has stagnated.

Triennial Central Bank Survey (2007, pp. 20) as well as Hanulak [17, p. 7] undoubtedly proved that usage of currency derivatives overwhelms usage of interest rate derivatives in Slovak Republic.

Because both of above described independent researches point out virtually same results, it can be concluded with a relatively high level of certainty that they reflect real state of financial derivatives market in Slovakia.

To further confirm previous statement, National Bank of Slovakia's direct data was used. This Slovak financial markets regulator publishes analysis of Slovak financial sector twice a year (as at the end of June and as at the end of December). When analyzing data from NBS we will again apply assumption that banks in Slovak Republic are one of the counterparties in almost all derivatives trades. For this reason, off balance sheet items of banks will be considered relevant data representing virtually all derivatives trading activity in Slovakia. Volume of derivatives trades is in semi-annual analysis of Slovak financial sector

represented by value of underlying assets that particular derivatives are tied to.

Again, increasing trend in derivatives usage is more than obvious between 2005 and 2008 according to this report. As it can be seen from figure 4, value of derivatives' underlying assets accounted for 1.2 trillion SKK at the end of 2005 whereas only two and a half years later this value reached unprecedented 1.855 trillion SKK which means an increase of more than 50 %. This finding is in agreement with two studies described in previous part (Hanulak [17] and Triennial Central Bank Survey [31]).

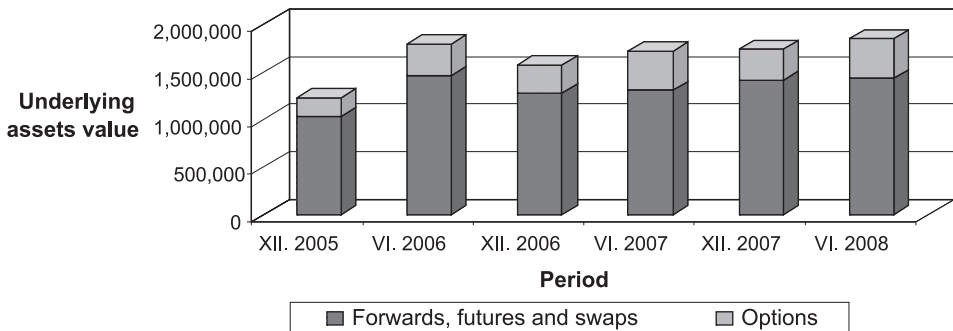
What is more important and derives from Slovak financial sector analysis conducted by NBS is the extent to which particular derivatives types are utilized. Methodology that NBS uses in its analysis divides derivative instruments into two categories, namely fix term operations and options. According to economic and legal advisory firm EPI [14], fix term operations are "those, where neither buyer nor seller can abolish the contract. Among unconditional, i.e. fix term operations, forwards, futures and swaps can be found." Fix term operations (forwards, futures and swaps) represent majority of used derivatives in Slovakia while only 19.5 % of all derivatives trades between 2005 and end of June 2008 comprised of options trades. Because derivatives stock exchange does not exist in Slovakia and because vast majority of companies are non-financial firms, it is rational to assume that forwards and swaps represent majority of fix term operations in Slovak Republic. According to some academic studies conducted in Slovak Republic, number of non-financial companies utilizing financial derivatives appears to be on the other end of the scale when compared to non-financial companies in United Kingdom (70 % of non-financial companies do not use financial derivatives in Slovakia). However, these results are not statistically valid due to small number of researched companies. It is very likely that futures account for only small minority of derivatives contracts traded by Slovak companies (this is because of their standardized character).

Very interesting conclusion that it was not possible to derive from previous two studies (because of insufficient depth of information) is that popularity of options is increasing at faster pace than interest in forwards, futures and swaps. Options' underlying assets value soared by 114 % during studied period while fix term operations'

underlying assets value gone up by only 40%. As a result of this it can be concluded that there is an increasing tendency in hedging by options. It is not possible to find out whether these options are exchange traded options or OTC traded options based on obtained data. Theoretically speaking, most of options contracts traded in Slovakia are probably an OTC contracts. Reasons for this assumption are similar to those used to substantiate subdued use of futures contracts.

of previously stated hypotheses. In parts of this paper it was hypothetically proven, based on available facts, how the relation between currency and interest rate derivatives should develop in the future. Facts used to prop up the argument were most of all admittance of Slovak Republic into Economic and Monetary Union (EMU) and transfer of monetary policy responsibilities from NBS to European Central Bank (ECB). As a result of aforementioned, interest in currency derivatives

**Fig. 4: Year over year changes in derivatives usage in Slovakia**  
**Year over year changes in derivatives usage**



Source: [25, p. 42 and p. 43]

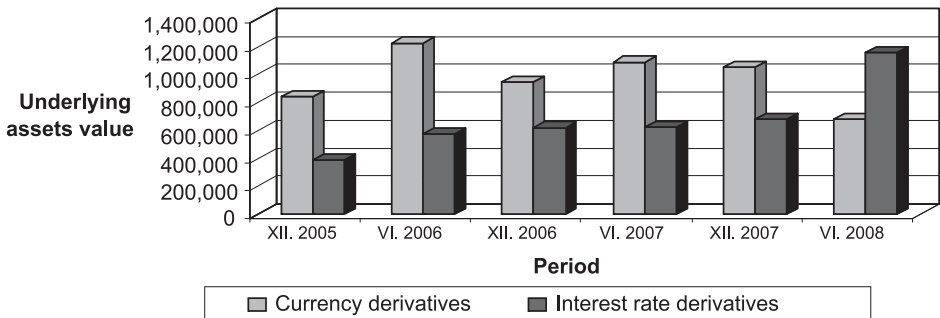
Another fact that derived from analysis of Hanulak [17] and Triennial Central Bank Survey [31] is that there is more currency derivatives used in Slovakia than there are interest rate derivatives. This can be observed from figure 5.

Further breakdown of NBS' analysis of Slovak financial sector allows us to empirically prove one

should decelerate and on the contrary trading in interest rate derivatives ought to accelerate (this would mean convergence to world's average relation between values of currency and interest rate derivatives). Figure 5 suggests that above described theoretical assumption applies in real financial markets. Value of currency derivatives'

**Fig. 5: Year over year comparison of interest rate and currency derivatives in Slovakia**

**Year over year comparison of interest rate and currency derivatives**



Source: [25, p. 42 and p. 43]

underlying assets has been declining during shown period whereas value of interest rate derivatives' underlying assets has been rising. Notably extraordinary is the substantial increase in use of interest rate derivatives and concurrent rapid decline in utilization of currency derivatives in the first half of 2008. It is exactly within this period that final date of Slovak Republic's admittance into EMU was decided. On the other hand it is necessary to add that some other important factors played their role in influencing development of currency and interest rate derivatives in Slovakia. Among these, for example, rapid changes in ECB's main interest rate expectations and current financial crisis are of significant importance.

## Discussion and Conclusions

Studies of derivatives are very important and are gaining on importance as time moves on. This research has thrown up many questions in need of further investigation. As current crisis in world financial markets has shown, derivatives lack appropriate legislation and the rules that exist are, rather, insufficient [11, p.9]. Currently there are still some legislative details which need to be finalized. Especially in relation to applying tax policy in the area of financial derivatives. Derivatives taxation on company's books also needs more attention. For example: how to carry out audit procedures in order to make a statement concerning financial derivatives.

Further studies should focus on the area of derivatives regulation by various institutions. Accounting of derivatives is still not very clear and creates another possible area to closely look at. Deriving from this paper there is substantial difference between utilization of different types of derivatives. On one hand, there are forwards and swaps which seem to be favoured by companies for hedging purposes and on the other options and futures which seem not to receive as much attention by companies. This might be interesting area for future detailed research. Apart from valid researches conducted by NBS, there are some dissertation studies concerning financial derivatives in financial and non-financial institutions that confirm these tendencies. However, methods used in these dissertations are not statistically sufficient in order for authors of this paper to be able to derive conclusions.

Furthermore, a system according to which companies decide which of hedging techniques (internal or external) to use is recommended to be examined in further details [see 29]. Following surprising discovery in companies' attitudes to risks (more firms expressed neutral attitude than negative) it is recommended that further research be undertaken to examine what are the causes of these unusual results. If word limit and time had allowed research and analysis would have been carried out to greater detail, in particular more possible relations between various variable would have been scrutinized. On the other hand it is clear that financial companies are exposed to similar risks as non-financial companies. Naturally, their exposure slightly differs from non-financial companies' hedging needs. Most of risks they are exposed to are the same, though. For instance, foreign exchange exposure could be as significant for financial firms as it is for non-financial firms. Moreover, one of the basic risk management strategies is to spread portfolio geographically and internationally. This obviously creates foreign exchange exposure as companies have to exchange domestic currency for foreign currency in order to be able to invest overseas. The same applies to interest rate risk. This type of exposure is probably even more important for financial companies to hedge, as many of their decisions are made based upon current interest rate levels. Even a small change in benchmark interest rate could cause extensive differences.

And our finally remark – nowadays we have to deeply research the decisions, thinking and behaviour management of the largest world banks and we would like to repeat: Human factor or subjective view of foreseeable future is what makes financial world unstable and vulnerable.

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**ABSTRACT****COMPANIES AND DERIVATES AS A TOOL TO HEDGE THEIR RISK****Radomír Čísař, Václav Dufala**

*In main part of this paper we describe and analyze some conclusions of previous studies regarding derivative instruments throughout the whole world. We attend more closely to the scale of derivatives utilization, types of derivatives used, risks hedged by these instruments and the main determinants influencing usage of derivatives. Furthermore, we discuss reasons for non-usage of financial derivatives among companies. Past and present state of derivative market in Slovakia is also analyzed. The emphasis of this paper lies on analysis and reasoning of results that have emerged from our primary research in UK and secondary research in Slovakia. Stronger competition among companies has arisen under globalization processes. New companies from emerging economies are also entering global markets. These are only some of number of reasons which make global business environment more risky and difficult to survive in. Hence the need for effective protection against risk or in other words hedging. Derivatives are definitely important area for companies to consider when coping with various risks. Caution should be applied when using derivatives due to the fact that it is very easy to deviate of the main purpose (hedging) and slip into speculation which might deteriorate company's position on the market. Risk management is nowadays inevitable part of every successful company and derivative instruments only contribute to further sharpen teeth of any risk manager. Main obstacles faced when attempting to conduct pertinent and statistically valid academic research in regards to financial derivatives in Slovak Republic is mainly insufficiently developed capital market which directly results from lack of liquidity and functionality, lack of investors, few initial public offerings, lack of trust of retail investors towards mutual investing and last but not least need to harmonize Slovak financial legislation with legislation of European Union.*

**Key Words:** hedging against risks, findings on derivatives usage in Great Britain and Slovakia.

**JEL Classification:** G15, G32.