

Branko Živanović¹
Kobilarev Mina^{2*}

JEL: M24
DOI: 10.5937/industrija45-14079
UDC: 005.334:336
334.012.46(497.11)
Original Scientific Paper

The Usage of Financial Derivatives in Financial Risk Management by non- financial Companies in Serbia

Article history:

Received: 19 May 2017
Sent for revision: 22 May 2017
Received in revised form: 5 Juny 2017
Accepted: 22 Juny 2017
Available online: 10 October 2017

Abstract: *In this paper we analyse the research results on corporate risk management practices, notably in light of the derivatives use in the large Serbian non-financial companies. The principal aim of this paper is to examine whether Serbian companies employ derivatives to manage risk and to what degree, and to explore the main rationale behind the companies' not employing these instruments, as well as to suggest possible enhancements of risk management practices. Furthermore, we have investigated the key reasons why financial derivatives are very useful for Serbian companies for hedging financial risks. Additionally, this paper provides a comparative overview of the use of derivatives between Serbian companies and the companies in Croatia and Slovenia in order to ascertain whether Serbian companies employ derivatives in order to manage risk to the same degree as their Croatian and Slovenian counterparts. This paper will include findings and provide evidence that FX rate and referent interest rates (such as 1w- 2w repo rate, Beonia and Belibor) are markedly volatile, which opens vast possibilities for the use of financial derivatives, given that these financial parameters determine the price of a credit arrangement for companies and the quality of import and export cash flows.*

Keywords: *risk management, financial risk, financial derivatives, corporate finance, hedging, risk management practices in Serbia, FX rate, interest rates.*

¹ Belgrade Banking Academy

² minakobilarev@gmail.com

Upotreba finansijskih derivata u upravljanju finansijskim rizicima nefinansijskih kompanija u Srbiji

Apstrakt: U ovom radu analiziramo rezultate istraživanja prakse upravljanja rizicima u privrednim društvima, naročito u svetlu korišćenja derivata u velikim srpskim nefinansijskim kompanijama. Glavni cilj ovog rada je da istraži da li kompanije u Srbiji koriste derivate u svrhe upravljanja rizicima i u kojoj meri, da ispita glavne razloge zašto srpske kompanije koriste derivatne instrumente, i da predloži moguća unapređenja njihove prakse upravljanja finansijskim rizicima. Pored toga, ispitivali smo ključne razloge zašto su finansijski derivati veoma korisni za srpske kompanije za zaštitu od finansijskih rizika. Takođe, u radu je dat komparativan pregled upotrebe derivata između srpskih kompanija i kompanija u Hrvatskoj i Sloveniji, kako bi se ispitalo da li kompanije u Srbiji koriste derivate u svrhe upravljanja rizicima u istoj meri kao i hrvatske i slovenačke kompanije. Rad sadrži nalaze i pruža dokaze da su devizni kurs i referentne kamatne stope (kao što su jednonedeljna–dvonedljna repo kamatna stopa, Beonia i Belibor) izrazito volatilni, što otvara široke mogućnosti za upotrebu finansijskih derivata, s obzirom na to da ti finansijski parametri utvrđuju cenu kreditnog aranžmana za kompanije i kvalitet uvoznih i izvoznih novčanih tokova.

Ključne reči: upravljanje rizicima, finansijski rizik, finansijski derivati, korporativne finansije, zaštita od deviznog rizika, praksa upravljanja rizicima u Srbiji, devizni kurs, kamatne stope.

1. Introduction

Derivatives being long-lasting financial instruments, they have been used quite extensively in the last two or three decades. Ever since the 1980s, corporates in developed countries have the growing need for financial derivatives to hedge against various financial risks in everyday work in extremely tumultuous business environments. Corporate risk management is becoming today much more significant and sophisticated. The concern present over the past decades relating to volatile capital and financial markets and the effect on the operations and profitability of corporates necessitate the identification and managing of the exposure to risk sources such as share and commodity prices, interests rates, foreign currencies. In light of the globalisation, the importance of risk management is much higher because firms venture into the international realm of business and are thus more sensitive to exchange rate volatility. Researches into the use of these instruments have been manifold, while the overall conclusion suggests that firms do depend on the derivatives in the context of their strategies of risk management.

Although risk management was launched in the 1990s, as stated by Culp (2002), there is today inevitable alignment with the contemporary corporate finance theory. The emphasis of modern companies is placed selectively on risk transfers, triggers employed to control capital cost, in terms of integration of risk management and financing decisions by using products across corporates, including the replacement of costly paid-in capital with more affordable sources of capital, ensuring the injection of funds only when indispensable. Those types of products can be useful only if a company employs sound risk management – where corporate and risk management decisions are not adopted irrespective of one another, but in an entirely integrated manner, aimed at enhancing the company value.

Throughout the 1980s and 1990s, derivative instrument markets and novel mixes of such basic instruments (swaps, options, futures, forwards) evolved extremely rapidly, with many firms intensively participating in derivative markets. As the matter of fact, that was the start of the revolution of financial derivatives. From that very period, we have witnessed a massive expansion of the quality and range of OTC and exchange-traded derivatives (Allen and Santomero, 1998), whilst at the same time the market depth has deepened. As the derivatives market was developing, proactive risk management became a significant aspect of contemporary corporate strategies, as confirmed by the fact that financial experts in corporations worldwide view risk management as one of their primary goals. Efficient corporate risk management became the crucial competitive advantage in almost each sector of industry as Bartram (2000) concluded. By resorting to risk management, managers assume that they impact on companies' exposure to interest rates, exchange rates, and commodity prices, while investors are likely to pay due attention to such exposures.

In contrast, as argued by Tufano (1996), the professional public is rather little aware about corporate risk management, although practically three-fourths of companies embraced some mode of financial engineering techniques by which they can manage their exposure to exchange rates, commodity prices and interest rates. At the same time, theoreticians tend to further advocate corporate risk management principles, whereas practitioners test whether practice is aligned with theory. Only basic data are disclosed by companies in regard to their risk management and, consequently, the majority of empirical analyses rely on questionnaires and crude data to make a difference between those using and those not using financial derivatives.

Overall derivatives usage has been increasing dramatically in the last few years, with only slight decline in 2016, according to the Bank of International Settlements – BIS (The 2016 Triennial Survey). "Trading in foreign exchange markets averaged \$5.1 trillion per day in April 2016. This is down from \$5.4 trillion in April 2013, a month which had seen heightened activity in Japanese

yen against the background of monetary policy developments at that time. For first time since 2001, spot turnover declined. Spot transactions fell to \$1.7 trillion per day in April 2016 from \$2.0 trillion in 2013. In contrast, the turnover of FX swaps rose further, reaching \$2.4 trillion per day in April 2016. This rise was driven in large part by increased trading of FX swaps involving yen. The share of trading between reporting dealers grew over the three-year period, accounting for 42 per cent of turnover in April 2016, compared with 39 per cent in April 2013. Banks other than reporting dealers accounted for a further 22 per cent of turnover. Institutional investors were the third largest group of counterparties in FX markets, at 16 per cent. In April 2016, sales desks in five countries – the United Kingdom, the United States, Singapore, Hong Kong SAR and Japan – intermediated 77 per cent of foreign exchange trading, up from 75 per cent in April 2013 and 71 per cent in April 2010.” BIS - Triennial Central Bank Survey-Foreign Exchange turnover in April 2016 (2016, p.3)

Emerging economies, Serbia included, feature financial derivatives as entirely novel instruments, with many companies still unaware of the significance of their use and the methods of financial risk exposure management. In light of this, it is necessary to ascertain the degree of the use of derivatives in Serbian companies for concrete aims of managing financial risks. Thus, the focus of this paper is to ascertain the degree of their use in Serbia and to give a comparative overview of these practices in Serbian companies and their counterparts in other emerging economies – notably, Croatia, BiH and Slovenia. Furthermore, it gives an analysis of Serbian large non-financial companies so as to ascertain whether Serbian companies adequately employ hedging instruments, as well as to explore the main reasons why Serbian companies do not manage corporate risks or use derivative instruments. This is significant for the purpose of evaluating risk characteristics of firms that use different hedging instruments, notably from the perspective of monetary decision makers, investors, bankers and theoreticians. What this paper brings as the main contribution is the first empirical evidence of corporate risk management practices applied in Serbia. The exiting model e.g. Wharton surveys about derivative instruments used in the US by non-financial firms since 1994 (Bodnar et al., 1995; 1996; 1998) is included. In order to conduct the relevant analyses one scientific hypothesis is formulated, i.e.- H1: Serbian companies disregard the benefits of the use of derivatives, which is certainly not the case in Slovenian and Croatian companies, for instance.

Živanović et al., (2000) emphasize that the managed floating exchange rate regime in Serbia, belonging to the group of derived exchange rate models, is in use since 2000. Continuous local currency volatility, frequent NBS interventions in the interbank foreign exchange market, possibility of exchange rate destabilization in the Serbian very shallow FX market through speculative interventions by interest groups, leads us to the conclusion that the managed floating rate is unsuitable for Serbian companies (importers and

exporters) due to high volatility and that they are in need of FX volatility preventive measure. Given the mentioned, financial derivatives are an ideal solution for hedging financial risks resulting from foreign exchange, interest and price risk.

2. Literature Review

A crucial role is played by derivatives in aiding companies to manage risk. They therefore often have an important place in companies which try to protect themselves from financial market volatility. Nowadays, derivatives have emerged as a constitutive element of all business models. The majority of large companies, particularly those active internationally, use derivatives to hedge risks. Many of them employ these contracts to hedge exchange rate, interest rate (in order to lower the borrowing cost) and commodity price risk. These risks are inherently experienced by these companies and they are not a product of financial transactions.

Using derivatives in order to manage risks has been explored in a number of surveys. Many studies document the scope and method of the use of derivatives by non-financial companies. They are usually based on questionnaires such as the Wharton survey of the US non-financial firms (Bodnar et al., 1998; 1996; 1995). According to the survey carried out by Bodnar, Hayt and Marston (1998), which was undertaken in the US by the Weiss Center for International Financial Research of the Wharton School and CIBC World Markets, derivatives are used by at least 50 per cent of non-financial firms in the US. In terms of the type of hedging instruments, forward (72 per cent) and OTC options (37 per cent) are used more than exchange-traded futures and options (17 per cent and 14 per cent respectively). FX is the risk most commonly managed with derivatives, being done so by 83 per cent of all derivative users. This is followed by the interest rate risk, with 76 per cent of firms. Commodity (CM) risk accounts for 56 per cent and equity (EQ) risk for only 34 per cent. As indicated by survey results, risk management activities and decisions are made at the central level and the horizon of hedging is commonly below one year.

Different studies have been conducted across the world – Japan (Yanagida and Inui, 1995), the UK (Grant and Marshall, 1997), New Zealand (Berkman, Bradbury, and Magan 1997), Belgium (DeCeuster et al., 2000), Germany (Bodnar and Gebhardt, 1999), Italy (Bodnar, Consolandi, Gabbi and Jaiswal-Dale, 2013), Sweden (Alkeback and Hagelin, 1999), Switzerland (Loderer and Pichler, 2000), Hong Kong and Singapore (Sheedy, 2002), Canada (Downie, McMillan, and Nosal, 1996), the Netherlands (Bodnar, Jong, and Macrae, 2003), Croatia and Slovenia (Miloš Sprčić, 2007) and Serbia (Kobilarev, 2014)

The comparative study by Bodnar and Gebhardt (1998) used responses to the 1995 Wharton School survey of derivative usage among US non-financial firms and a 1997 companion survey on German non-financial firms. The study draws on a comparative subsample of companies from the US study in order to make comparison with German firms in terms of size and industry structure. Namely, 78 per cent of the German companies employ derivatives, as opposed to 57 per cent in the case of US companies. Excluding such significant total usage, groupings by industry and size show comparable results in the two countries. Both in the US and Germany, the use of FX derivatives is most usual and is followed by interest rate derivatives, while commodity derivatives hold the third place. According to survey results, both the US and German non-financial firms generally employ simple financial instruments. Currency forwards are the most popular, while OTC instruments (forwards/swaps and options) are dominant. US firms use futures much more than German ones. OTC currency options are by far most widely used instruments in US companies. Exchange traded options are rarely used by US firms, while German firms do not use them at all (which could be explained by the lack of these options in German futures markets). Interest rate derivatives hold the second place – the most common such derivative is the swap ranging from floating to fixed rate, in both countries observed. Among interest rate derivatives, forwards and OTC options are used to a lesser degree, occupying the second or the third place. Exchange-traded interest rate instruments are not commonplace in either country. The use of commodity derivatives is less frequent, though a greater choice of these derivatives exists in US firms. German firms employ forwards in order to hedge commodity risk, while US firms opt rather for futures, swaps, or options.

The recent paper by Kozarević, Kesetović, Kokorović and Čivić (2012) explores the derivatives use in by companies in Bosnia and Hercegovina on the two samples: banks and companies. Generally and on the basis of information given by banks, financial derivative users and export/import companies, the authors ascertained that the main reasons for the poor use of derivatives are the absence of information about the ways of using them and the lack of awareness about the advantages of their use in risk management. This holds true for employees both in companies and banks. Besides, an important restrictive factor of larger derivatives usage is the few business operations implemented by BiH companies on the international market, and no major movements on the BiH currency market because of the central bank's currency board (i.e. fixed exchange rate of the Bosnian convertible mark against the euro and, as result, the low level of currency risk facing companies, including exchange rate risk). BiH companies most usually hedge risks with regard to revenue and the volatility of cash flows, including the need to safeguard their balance sheets.

The reasons why BiH companies do not use derivatives for hedging financial risks concerns the company size (measured by the annual turnover), including the intention to restrict the volatility of cash flows or revenues or to safeguard financial ratios. BiH companies probably decide against derivatives because of the lack of awareness and a higher price of the derivatives portfolio maintenance; costs relating to financial risks are probably not the reason. Still, the derivatives offer in BiH is reasonable, and there are plans to launch additional products such as interest rate swaps. Also, many companies opt to apply the existing and novel financial instruments in their future business. Still, if they wish to upgrade their financial risk management practices, because of higher costs (arising chiefly from banks' provisions and targeted profit rates) and regardless of their positive experience, BiH companies should use exchange-traded derivatives of advanced countries rather than derivatives on the local OTC market

Kobilarev (2014) conduct a research on risk management practices in large Serbian non-financial companies on the sample of 172 companies. According to the research results it can be concluded that most of the sampled companies manage interest rate, exchange rate or commodity price risk, whereas the exchange rate risk has the strongest impact on the performance. At the same time, interest rate and price risks are not a strong source of concern. Furthermore, Serbian non-financial companies implement primarily simple instruments for risk management, such as natural hedging. In respect of the derivatives use, currency forwards and swaps and interest rate swaps are predominant. Moreover, there is weaker presence of interest rate and commodity derivatives usage among Serbian companies compared to foreign exchange derivatives. The evidence shows that the main motivation of companies to employ derivatives is to have stable and predictable cash flows. The costliness of financial instruments and weak exposure to financial risks as well as the supply of risk management instruments traded on the domestic financial market or offered by financial institutions is insufficient are among the most important reasons why Serbian companies do not use derivatives.

Financial risk management practices and derivative usage in large Croatian and Slovenian non-financial companies were explored by Miloš Sprčić (2007) on the sample of 157 Croatian companies and 189 Slovenian companies. Namely, Miloš Sprčić (2007) analysed if the intent to employ financial derivatives in the surveyed companies serves to display the company's features which that are relevant in making financial risk management decisions. Based on these findings, it is possible to conclude that forwards and swaps are the most significant derivatives in both these countries. Futures which represent standardised derivatives, including structured derivatives, are more significant in Slovenian than in Croatian companies. In contrast, exchange-traded and OTC options are not important for managing financial risks in either country. Miloš Sprčić (2007) carried out a comparative

analysis to establish the discrepancies between risk management practices in Slovenian and Croatian companies. Namely, Slovenian companies employ all types of derivatives, particularly structured ones, to a greater degree than Croatian companies. According to the survey, hedging rationales have a poor degree of the foreseeable nature in financial risk management decisions both in Croatia and Slovenia. The decision to employ derivatives in Croatian non-financial companies pertains merely to the ratio of investment expenditures to assets, which underpins the expensive external financing hypothesis. The decision on the derivatives use in Slovenian companies depends only on the company size. It is possible to claim that features of Croatian and Slovenian firms are similar to other South-eastern European countries, whereas the research findings may be the basis for generalisation. Thus, the survey findings also imply a wider comparison across countries in the region. What the Miloš Sprčić's (2007) paper offers as an advantage is that it gives an incentive for further research to step away from the current hedging rationales, which have demonstrated their inadequacy in accounting for financial risk management decisions in Croatian and Slovenian companies.

3. Metodology

Kobilarev (2014) examined the biggest non-financial Serbian companies as they can access the markets of derivatives and are likely to have developed the function of risk management. The sample does not cover financial companies as the majority of them function as market makers, which is why their drive to use these instruments differs from that of non-financial companies. Kobilarev applied the following criteria in the selection of companies – the Serbian companies needed to meet two out of three conditions required by the Accounting and Audit Law³ that relates to large companies - 1) average value of total assets amounting to over EUR 5,000,000 in RSD equivalent, (2) income in the last 12 months exceeding EUR 10,000,000 in RSD equivalent and/or (3) an average number of employees per year over 250. We have included 172 Serbian companies in the sample that have satisfied the criteria. The main benefit of the samples is the fact that it is impossible to generalise evidence into a wide range of companies across industries.

In corporate sector data were collected by means of a questionnaire consisting of 34 questions. The structure of the questionnaire mainly follows the 1998 Wharton Survey of Derivative Usage by U.S. non-financial firms but with some modifications in respect to Serbian financial market. In early May 2012, the questionnaire was sent by post with the cover letter to 172 Serbian

³ Accounting and Audit Law (RS Official Gazette, No. 062/2013).

managers engaged in financial risk management decision-making in listed companies. In conclusion, 62 companies responded to the questionnaire, which resulted in the overall response rate of 36.05 per cent. This is considered an appropriate rate of response in comparison to other studies (e.g. the response rate of 21 per cent is stated in the 1998 Wharton survey of derivative usage, as stated in Bodnar, Hyat and Marston (1998).

Miloš Sprčić (2007) carried out the empirical research on the biggest Slovenian and Croatian non-financial companies. Selection criteria for the sample were largely similar for both countries. Croatian companies must fulfill two of three conditions stipulated by the Croatian Accounting Law⁴ concerning large companies. Slovenian companies became part of the sample if they fulfilled two of three conditions stipulated by the Slovenian Company Act⁵, also relating to big companies. Miloš Sprčić used the list of 400 biggest Croatian companies in 2005. Total 157 companies which met the criteria were taken in the sample. The GVIN electronic database was used for Slovenian companies. Based on selected criteria, 189 companies were taken for further analysis. By late September, only 19 Croatian companies responded. Therefore, a follow-up letter was sent, and as a result, the response rate rose from 12 to 31 per cent. In contrast, 41 Slovenian companies responded to the questionnaire. There was no further contact with potential respondents and the response rate was 22 per cent.

This paper analyses the research results regarding derivative usage in Serbian, Croatian and Slovenian companies, so we have included only several research results from the mentioned empirical surveys. In order to explore FX and IR rates we used the official data from the Bloomberg and the NBS which enabled the use of a descriptive statistical analysis using Excel programme in the present research.

4. Results and Discussions

4.1. Estimate of Volatility of Exchange Rate and Key Policy Rates in the Serbian Financial Sector

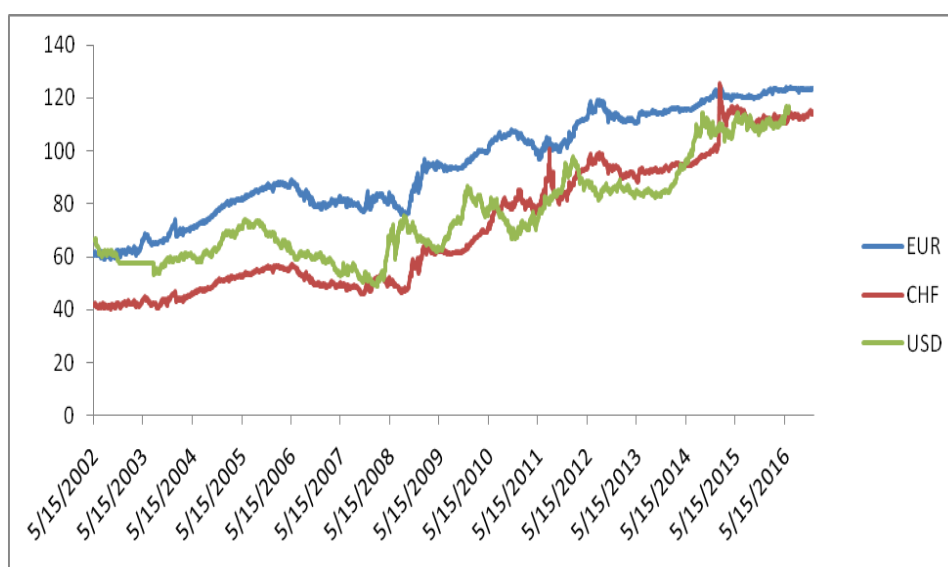
The local currency has since 2000s been characterized by constant depreciation against the euro. By way of exception of the year 2008 when dinar nominally appreciated, it can be concluded that in the period since 2001 the average annual depreciation rate has accounted for 4.8 per cent, while total depreciation of the local currency against the euro since the euro

⁴ In Croatian: Zakon o računovodstvu, NN 146/05.

⁵ In Slovene: Zakon o gospodarskih družbah, UL 15/05.

introduction to date has accounted for approximately 110 per cent. At certain sub-intervals in the observed period the national currency was extremely volatile, with its average fall exceeding the physiological corridor of 10 per cent. The most significant depreciation of the local currency was recorded in the following years: the depreciation was 11.23 per cent in 2003, 13.37 per cent in 2004, 10.37 per cent in 2008 and 11.63 per cent in 2009.

Graph 1. Middle RSD exchange rate movements against EUR, CHF and USD

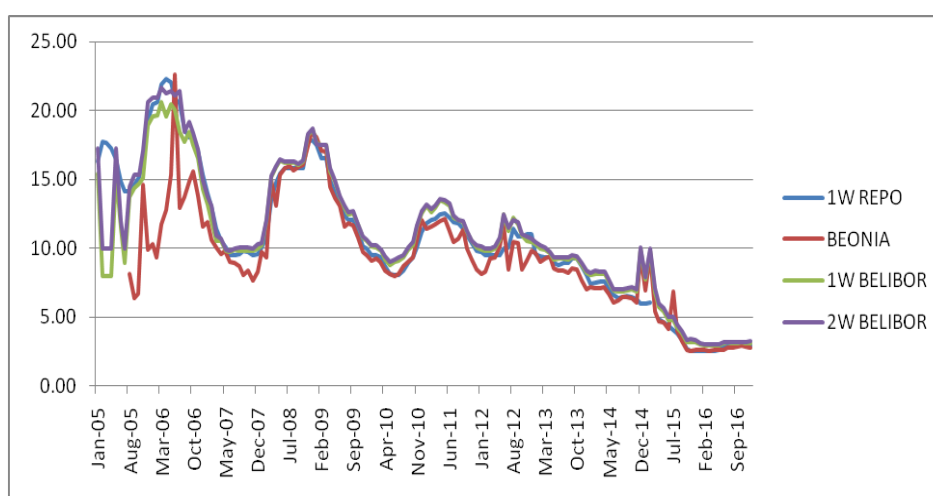


Source: Bloomberg, 2017

Uncontrolled volatility and unpredictability of the most significant interest rates (1w and 2w repo rates, BELIBOR and BEONIA) in the Serbian financial market indicate the necessity of interest rate derivatives usage for hedging interest rate risk. The fundamental interest rate of the NBS through the form of 2w repo has constantly changed its value and implicitly changed bank interest rates on loans to non-financial companies as elementary or start interest rate. Zivanovic et al specify that only in the period of one year as of 3 November 2008 it fell from the level of 17.75 per cent to the value of 10 per cent by 5 November 2009. The role of the start interest rate that determines the price of bank placements in the domestic banking sector has been taken over by 1w repo rate as the key NBS monetary policy rate, replacing thus 2w repo rate. The new key policy rate shows similar movement which is also difficult to predict. The maximum value of 1w policy rate was reached in March 2006 when it stood at 21.89 per cent, and in the following one year period it

declined to the level of 10 per cent. The minimum value of 2.89 per cent was recorded in December 2016. As a result of 2w and 1w repo rate movements, reference interest rates of commercial banks in the form of Belibor and Beonia can also be estimated as unstable and unpredictable since they are directly influenced by 1w and 2w repo rate movements. Movements of the respective interest rates can be seen in the graph 1.1.

Graph 2. *Historical overview of key policy rate movements in Serbia*



Source: Bloomberg, 2017

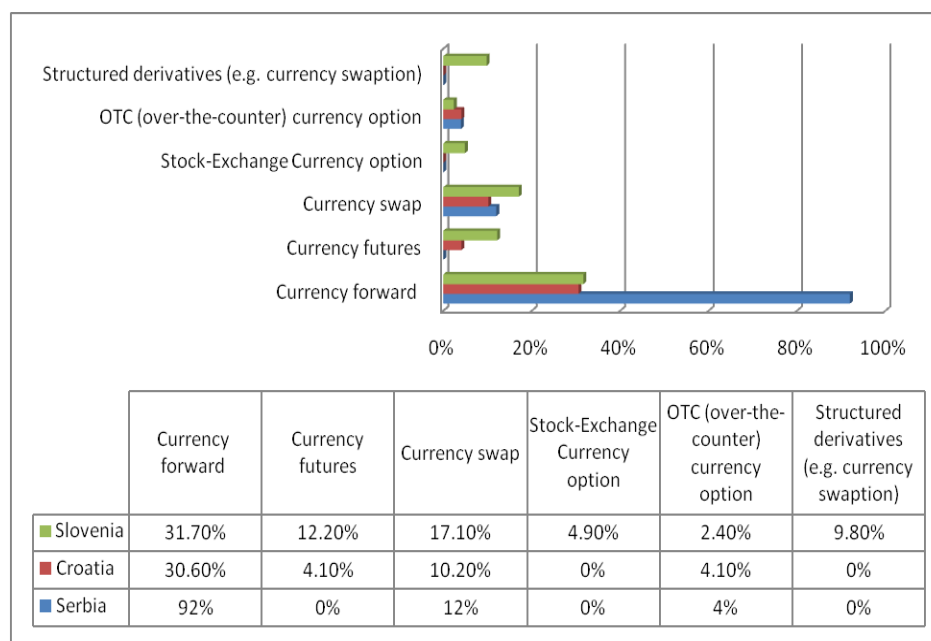
4.2. Derivative Usage in Large Serbian, Croatian and Slovenian non-financial Large Companies

According to the survey conducted in the Serbian corporate sector Kobilarev (2014) concluded that 64.5 per cent of respondents apply some form of risk management to manage interest-rate, foreign exchange or commodity price risk, whereas 40.32 per cent use financial derivatives among other instruments of corporate risk management, and 24.19 per cent manage corporate risks but without using derivatives as a risk management tool. As suggested by these results, the shallowness and relative openness of the Serbian economy creates an exposure of companies to financial risks, primarily exchange rate risk given Serbia's considerable reliance on imports, i.e. foreign trade.

Miloš Sprčić (2007) examined the practices of managing financial risk and using financial derivatives in big Slovenian and Croatian non-financial firms.

As shown by the survey, 65.9 per cent of Slovenian companies covered by the sample employ financial derivatives, vs. 43 per cent in Croatia. Kobilarev (2014) revealed that 40.32 per cent of companies use financial derivatives, so we have the lowest percentage of derivatives users in region. Thus, it is possible to accept our research hypothesis which claims that Serbian companies do not use the benefits of the derivative usage in financial risk management to the full degree as Croatian and Slovenian companies, as assessed in terms of the overall number of derivative users. Compared to Bodnar, Hayt and Marston (1998) who demonstrated that 50 per cent of US non-financial companies employ some form of financial engineering to manage financial risks, the conclusion does not differ from that in the Croatian case.

Graph 3. Currency risk management instruments used by Serbian, Croatian and Slovenian companies

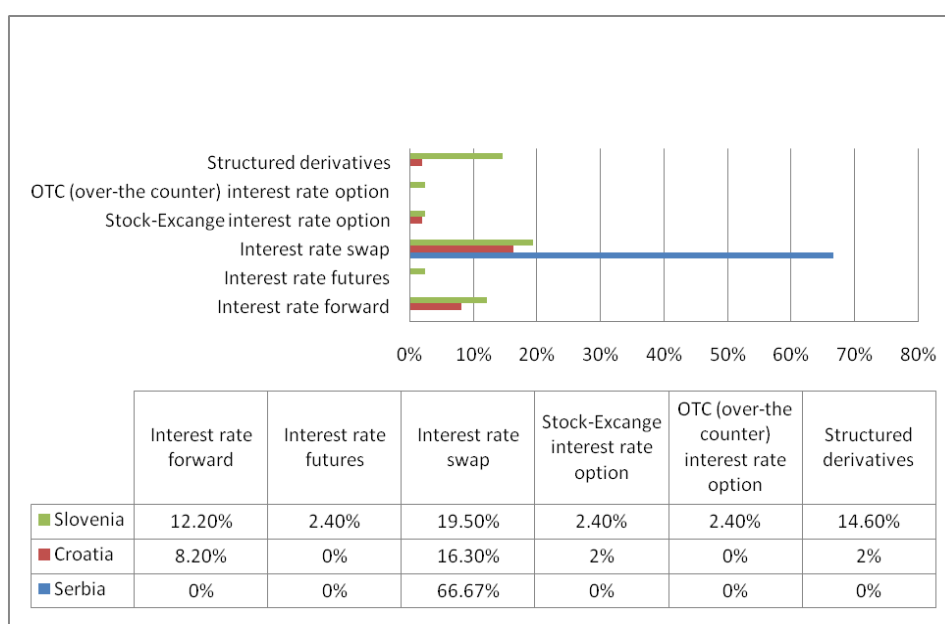


Source: Kobilarev (2014), *Hedging as a risk management approach in a transitional county: The case of Serbia*, PhD Thesis, GCU, p. 215 and Miloš Sprčić (2007), *The use of derivatives as financial risk management instruments: the case of Croatian and Slovenian non-financial companies*, *Financial Theory and Practice* 31 (4), p. 406

Serbian, Croatian and Slovenian companies use currency forwards most widely. The second place is taken by currency swaps. The companies,

however, do not use the derivatives such as the structured ones, as well as exchange currency options and currency futures. Currency futures and structured derivatives have become increasingly more commonplace in Slovenian companies, in contrast to their Croatian counterparts. As regards other derivatives, such as OTC and exchange options are not widely present in Croatia and Slovenia.

Graph 4. Interest-rate risk management instruments employed by Serbian, Croatian and Slovenian companies



Source: Kobilarev (2014), *Hedging as a risk management approach in a transitional county: The case of Serbia*, PhD Thesis, GCU, p. 220 and Miloš Sprčić (2007), *The use of derivatives as financial risk management instruments: the case of Croatian and Slovenian non-financial companies*, *Financial Theory and Practice* 31 (4), p. 407

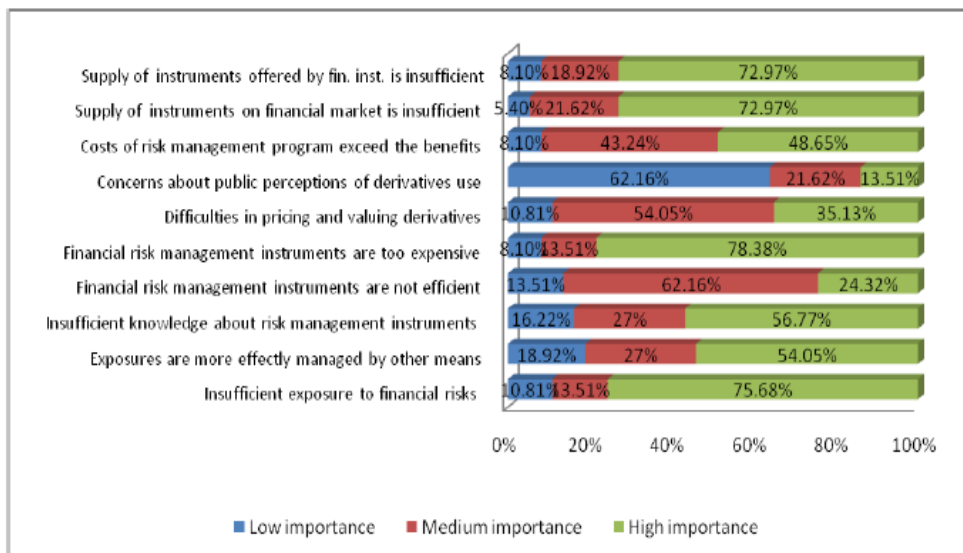
The Serbian corporate sector does not use to a significant degree interest rate derivatives as Serbia's financial system is bank-based. In terms of IR derivatives, only IR swaps are traded, but have a very low significance. However, it is expected that the interest in IR derivatives, i.e. swaps, will increase in the future due to the high variability of interest rates (e.g. EURIBOR) and along with the increase in economic activity of the Serbian corporate sector, notably the increase in exports and imports, and the development of the domestic financial market. Unsurprisingly, the interest rate swap received the largest percentage of companies indicating important

usage with 66.67 per cent. This is the only IR derivative which is used by the corporate sector in the Serbian market. Similarly to currency risk management, other derivative instruments are not so important in managing interest rate risk.

When it comes to interest rate risk in Slovenian and Croatian companies, the risk management strategy recognizes forward contracts and swaps as the most significant derivative instruments. However, contrary to currency risk management, interest rate swap is more significant than interest rate forward. In contrast to the results of the Croatian analysis, Slovenian respondents consider structured derivatives significant instruments of interest-rate risk management. Compared to other instruments, structured derivatives are all the more significant than interest-rate forwards. Other derivative instruments such as futures and interest-rate options do not play a significant role in managing interest rate risk in these two countries. Some 78.38 per cent of managers argue that the high costs of financial instruments influenced the decision not to hedge financial risks with derivative instruments while 75.68 per cent of managers named insufficient exposure to financial risks. Very important reasons that managers highlighted are the insufficient supply of risk management instruments traded in the domestic financial market and insufficient instruments offered by financial institutions, i.e. commercial banks (72.97 per cent of financial managers named these two reasons as very important). This is followed by other significant reasons that impacted the decision not to manage financial risks, these being the lack of awareness about derivatives instruments (56.77) and exposures which are most effectively managed by other means (54.05 per cent). (see Graph 5)

The first problem that has pre-empted Serbian companies from using derivatives is the costliness of financial risk management instruments (see: Hushalter (2000)). Transaction costs of hedging involve the trading costs, as well as the considerable price of information systems necessary for the provision of data needed to decide on the relevant hedging positions. In regard to forwards, futures, options, and swaps, this price comprises costs such as brokerage fees and the inherent cost of the bid-ask spread. Secondly, there is insufficient exposure to financial risks. It has been claimed that only companies with large enough risk exposures will probably have advantage from a formal hedging programme since the organisation of the treasury in terms of risk management implies considerable fixed costs (Dolde, 1995). Apart from economies of scale in obtaining information on hedging procedures and instruments, there are economies of scale in transaction costs related to financial derivatives trading as well. All this implies that there are significant set-up costs regarding the operation of a corporate risk-management programme. Therefore, many surveyed companies do not hedge at all, although they are exposed to financial risks, primarily because it is not an economically justifiable activity.

Graph 5. Reasons why Serbian companies do not use derivative instruments



Source: Kobilarev (2014), *Hedging as a risk management approach in a transitional county: The case of Serbia*, PhD Thesis, Glasgow Caledonian University, p. 207.

As indicated by Miloš Sprčić (2007), Slovenian and Croatian financial managers point out to the high costs of introducing and implementing risk management programs that outstrip the benefits as the most important rationale behind companies' not using derivatives. This can be linked to the concept of informational and transactional scale economies which signals that larger companies are more probable to hedge because of economically important costs of hedging (e.g. costs concerning the execution of transactions, engaging staff with necessary skills, obtaining relevant information and following hedge positions, etc.). As the matter of fact, for many companies (notably smaller), the insignificant advantages of a hedging programme could be exceeded by these marginal costs (see: Haushalter, 2000; Hoyt and Khang, 2000; Froot, Scharfstein and Stein, 1993;).

5. Conclusion

The local currency has since 2000s been characterized by constant depreciation against the euro. Živanović et al., (2000) emphasized that the foreign exchange policy pursued for over a decade now by the NBS is characterised by a managed float of the national currency, the dinar (RSD).

Due to economic underdevelopment and consequent low volume of economic activity, as well as owing to the Serbian economy's high dependence on the international market, the Serbian currency is exceptionally volatile and can depreciate by on average up to 10 percent annually. This is why Serbian businesses find themselves particularly in need of hedging their dinar-denominated positions.

The results of the conducted surveys show that 65.9 per cent of Slovenian companies covered by the sample employ financial derivatives, vs. 43 per cent in Croatia, and in Serbia only 40.32 per cent of companies use financial derivatives, implying that the Serbian corporate sector has the lowest percentage of derivatives usage in the region.

In respect of the derivatives use, currency forwards and swaps and interest rate swaps are certainly the most significant instruments in Serbia. Moreover, there is weaker presence of interest rate usage among Serbian companies compared to foreign exchange derivatives. Therefore, it may be concluded that over-the-counter instruments are prevalent among exchange-traded instruments. In terms of the types of applied derivatives, local companies generally use OTC derivatives that are costlier than exchange-traded derivatives, because there is no regional market for exchange-traded derivatives. This is associated with the non-existence of bonds and shares in companies' investment. As a result, capital market development should be encouraged in order to upgrade the derivatives market. In the case of derivatives, Croatian and Slovenian non-financial companies resort to forwards and swaps which are doubtless the most significant instruments in these two countries. However, futures that embody standardized derivatives and structured derivatives are more prominent in Slovenian than Croatian companies. Companies in neither country consider exchange-traded and OTC options significant types of financial risk management.

The high costs of financial instruments, the insufficient exposure to financial risks as well as risk management instruments which are traded on the domestic financial market or offered by financial companies are among the most important reasons why Serbian companies do not employ derivatives.

As indicated by financial managers from Slovenia and Croatia, there are high costs of introducing and implementing risk management programs that surpass the benefits. Slovenian financial managers point out two problems as the most significant reasons why companies do not employ derivatives. Managers of Croatian companies agree on this issue – there are difficulties in pricing and valuing derivatives coupled with the high costs of introducing and implementing risk management programs that surpass the benefits.

The comprehensive analysis of the derivative usage in Serbia has demonstrated clear evidence that a more substantial use of hedging

instruments brings numerous benefits. If the majority of foreign currency needs are covered by hedging instruments, companies will be able to develop their financial plans regardless of currency developments. Elevated demand for these instruments may encourage more competition and reduce prices among banks. Moreover, increased use of forward instruments among banks also dampens exchange rate volatility in the interbank market.

Serbia is a country in transition and it is becoming increasingly open towards the international market, so a company in Serbia cannot remain isolated from the international developments. In the very near future along with the privatization, foreign direct investments, a large foreign company which should have developed risk management function will enter Serbian financial market, and therefore the need for hedging financial risks and use of financial derivatives will be increased.

References

- Alkeback, P., and N. Hagelin (1999). Derivative Usage by Nonfinancial Firms in Sweden with an International Comparison. *Journal of International Financial Management and Accounting* **10**(2), pp. 105-121.
- Allen, F. and A. M. Santomero (1998). The Theory of Financial Intermediation, *Journal of Banking & Finance*, **21**(11), pp. 1461-1485.
- Bank for International Settlements (2016), *Triennial Central Bank Survey, Foreign Exchange turnover in April*, Basel: BIS
- Bartram, S. M. (2000). Corporate Risk Management as a Lever for Shareholder Value Creation, *Financial-Markets, Institutions and Instruments*, **9**(5), pp. 279-324.
- Berkman, H., M.E. Bradbury, and S. Magan (1997). An International Comparison of Derivatives Use, *Financial Management*, **26**(4), pp. 69-73.
- Bodnar, G. M. and G. Gebhardt (1998). *Derivative Usage in Risk Management by U.S. and German Nonfinancial Firms: A Comparative Study*, Working paper 6705, Cambridge, MA: National Bureau of Economics Research.
- Bodnar, G. M., A. Jong and V. Macrae (2003). The Impact of Institutional Differences on Derivatives Usage: A Comparative Study of US and Dutch Firms, *European Financial Management*, **9**(3), pp. 271-297.
- Bodnar, G.M., G.S. Hayt, R.C. Marston and C.W. Smithson (1995). Wharton Survey of Derivatives Usage by US Non-Financial Firms, *Financial Management*, **24**(2), pp. 104-114.
- Bodnar, G.M., G.S. Hayt and R.C. Marston (1996). 1995 Wharton Survey of Derivatives Usage by US Non-Financial Firms, *Financial Management*, **25**(4), pp. 113-133.
- Bodnar, G.M., G.S. Hayt and R.C. Marston (1998). 1998 Wharton Survey of Derivatives Usage by US Non-Financial Firms, *Financial Management*, **27**(4), pp. 70-91.
- Culp, C. (1994). Structured Debt and Corporate Risk Management, *Journal of Applied Corporate Finance*, **7**(3), pp. 73-84.

Živanović B., Kobilarev M.: *The Usage of Financial Derivatives in Financial Risk...*

- Downie, McMillan and Nosla (1996). The University of Waterloo Survey of Canadian Derivatives Use and Hedging Activities, in: C. Smithson (Ed.) *Managing Financial Risk*, New York: CIBC-Wood Grundy, pp. 214-233.
- Grant, K., and A.P. Marshall (1997). Large UK Companies and Derivatives, *European Financial Management*, 3(2), pp.191-208.
- Kobilarev, M. (2014). *Hedging as a Risk Management Approach in a Transitional Country: The case of Serbia*, PhD Thesis, Glasgow Caledonian University, Glasgow.
- Kozarević, E., I. Kestović, M. Kokorovic-Jukan and B. Čivić (2012). The Usage of Derivatives in Financial Risk Management by Companies in Bosnia and Hercegovina, *Economic Review – Journal of Economics and Business*, 10(2), pp. 59-72
- Loderer, C. and K. Pichler (2000). Firms, Do You Know Your Currency Risk Exposure? Survey Results, *Journal of Empirical Finance*, 7(3-4), pp. 317-344.
- Sheedy, E. (2002). *Corporate Use of Derivatives in Hong Kong and Singapore: A Survey*. Working Paper, Sydney: Macquarie University.
- Miloš Sprčić, D. (2007). The Derivatives as Financial Risk Management Instruments: The Case of Croatian and Slovenian Non-financial Companies, *Financial Theory and Practice*, 31(4), pp. 395-420.
- Tufano, P. (1996). Who Manages Risk? An Empirical Examination of Risk Management Practices in the Gold Mining Industry, *Journal of Finance*, 51(4), pp. 1097-1137.
- Živanović, B., A. Cvejić and M. Kosanović (2000). Perspectives of managing corporate currency exposure using forward products in the Serbian commercial banking industry, published in the Conference Proceedings: *New Economic Policy Reforms*, Belgrade Banking Academy - Faculty for Banking, Insurance and Finance, pp. 298 – 316.
- Živanović, B., U. Vukoje and M. Kovačević (2011). Misconduct of The Key Policy Rate: The Case of Serbia published in the Serbian and European Union: Economic lessons From the New Member States, Chapter 10, pp. 147-163, Institute of Economic Sciences: Belgrade.
- <https://www.bloomberg.com/europe>
<https://www.nbs.rs/internet/english/>