THE USE OF FINANCIAL DERIVATIVES IN RISK MANAGEMENT PURPOSES OF NON-FINANCIAL FIRMS IN BOSNIA AND HERZEGOVINA[1]

Adnan ROVČANIN[2]
Aida HANIĆ[3]

Abstract

The financial system in Bosnia and Herzegovina is bank centered which follows the continental model, where banks play a leading role and in the case of BiH it means the bank participation of over 80%. The continental model assumes that banks are universal - financial supermarkets among others offer broadcasting services and sales of securities, finance and financial management. Previous research show that banks in BiH offer currency forwards, currency swaps and interest rate forwards which means that financial derivate market is organized as OTC market. Comparing to development countries, this market is not developed yet. The main reason can be found in the facts that BiH is a small country with economy in transition where non-financial firms are still not aware of the benefits in the use of these types of financial instruments and are focused on other ways of mitigating the risk. Also it is important to notice that most of the business operations are done in euro and because of the currency board regime, agency regulations on banks' net open position and a relatively small exposure to foreign currencies, except the euro, foreign exchange risk in BiH is low. Nevertheless, risk management is important for every firm so the main focus of this paper will be how BiH non-financial firms manage the risks that they are exposed to in terms of the use of financial derivate in their transactions.

---

[1] This paper is a part of research projects numbers 47009 (European integrations and social and economic changes in Serbian economy on the way to the EU) and 179015 (Challenges and prospects of structural changes in Serbia: Strategic directions for economic development and harmonization with EU requirements), financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.
[2] Professor at School of Economics and Business, Universityc of Sarajevo, Bosnia and Herzegovina, adnan.rovcanin@efsa.unsa.ba
[3] Research Associate, Institute of Economic Sciences, Belgrade, PhD student at School of Economics and Business, University of Sarajevo, BiH, e-mail: aida.hanic@ien.bg.ac.rs

Key words: *BiH, financial system, financial derivates, non-financial firms, risk management.*

INTRODUCTION

Derivatives are financial instruments whose value is based or derived from some underlying asset such as stocks, bonds, loans, interest rates, foreign exchange rates, commodities, mortgages and even weather disasters such as earthquakes or hurricanes. Latest research show that derivatives' trading is now worth $600 trillion -- ten times more than the total economic output of the entire world. Statistically, 92% of the world's 500 largest companies use them to lower risk. Historically, derivatives were developed to solve real world issues that needed to be solved for business and according to some studies, development of derivatives is linked to the Hammurabi law from the period 1792 to 1750 BC. However, economic history takes the beginning of the 19th century as the development of derivatives, primarily commodity derivatives, where it is necessary to emphasize the London Metal Exchange - LME and one that is still the most popular; the Chicago Stock Exchange or (CBOT - Chicago Board of Trade). 70s bring the emergence of financial derivatives that were created on the basis of experience with commodity derivatives.

There are three basic kinds of derivative securities: forwards and futures; swaps; and options but today there is a large number of derivatives that were developed from this basic types. Futures contracts and options are mostly traded on the stock exchange while forward contracts, swaps and various types of options are traded in OTC market's between financial institutions and their corporate clients. Although the primary function of derivatives is to mitigate the risks, on the financial market many investors use these instruments for speculative activities in order to make profits. That is why many economists believe that derivatives are to blame for the emergence of the global financial crisis in 2008, and some go so far as to argue that derivatives should be "expelled" from the financial markets because of a high degree of risk. However, it is important to note that the problem did not originate in derivatives as financial instruments but in the way they have been used especially in desire for quick financial gain ignoring the early warning signs that have appeared before the crisis. Bosnia and Herzegovina doesn't have market of derivatives. There are some types that are been offered on the market by banks but according to the developed countries it is insignificant. In this paper the authors show the use of this financial instruments in development countries, how emerging economies are using this types of financial instruments, and what are the reasons that Bosnia and Herzegovina and other transition countries from the region are not using and don't have the development market of financial derivatives.

1. DERIVATIVES MARKET IN ADVANCED ECONOMIES

Derivative securities (derivatives) are most simply defined as contracts whose value is derived from another underlying instrument where the principal never changes owners what means that the trade of basic instrument is being arranged such as the revise of cash flows, compensation of credit risk, the price difference etc. Derivatives market can be organized as exchange-traded derivatives and over-the-counter derivatives (OTC). The notion amount outstanding in the (OTC) derivatives market worldwide exceeds $640 trillion, with a collective gross market value of over $27 trillion. The exchange-traded market has another $60 trillion in outstanding notional. The growth of derivatives usage over the last two decades has been rapid in both advanced economies and emerging markets; in both OTC contracts and those that are exchange-traded; and across all underlying classes, including interest-rate, currency, equity, and the most recent addition, credit.[4]

Financial markets are very volatile. That includes that people who are trading with foreign currencies, oil and other commodities are expose to significant risk because all this elements are linked to such fluctuating prices. To reduce this risk, modern finance provides a method called hedging. Derivatives are widely used for hedging. According to that, there are several reasons to use derivatives:[5]

1. They help in transferring risks from risk adverse people to risk oriented people.
2. They help in the discovery of future as well as current prices.
3. They catalyze entrepreneurial activity.
4. They increase the volume traded in markets because of participation of risk adverse people in greater numbers.
5. They increase savings and investment in the long run.

Although derivatives are used for hedging, some people use it to speculate as well. In that term, there are some disadvantages of derivatives:[6]

1. **Raises Volatility:** As a large number of market participants can take part in derivatives with a small initial capital due to leveraging derivatives provide, it leads to speculation and raises volatility in the markets.

---

[4] Rangarajan K. Sundaram, „*Derivatives in Financial Market Development*“, International Growth Center (2013) p.2

[5] http://blog.ipleaders.in/types-of-derivatives-and-derivative-market/ (accessed: September, 26.2014).

[6] http://financenmoney.in/advantages-and-disadvantages-of-derivatives/ (accessed on September, 26. 2014.)

2. **Higher number of Bankruptcies:** Due to leveraged nature of derivatives, participants assume positions which do not match their financial capabilities and eventually lead to bankruptcies.
3. **Increased need of regulation:** Large number of participants take positions in derivatives and take speculative positions. It is necessary to stop these activities and prevent people from getting bankrupt and to stop the chain of defaults. In that case it is necessary to note that various economist considers derivatives are the main reason for global financial crisis in 2008. According to *"The Financial Crisis Inquiry Commission's (FCIC)"* derivatives market is a $600 trillion national value market that is completely unregulated and dark with enormous risk and reckless leverage especially in the case of CDS[7]. But before the crisis the benefits of financial derivatives were not only felt in industrialised countries, but also in the developing world. Credit default swaps meant that governments which had previously had problems issuing debt could borrow more cheaply.[8] Also many economists consider that derivatives as a financial instruments were and are not a problem but the way that investors used them to gain more profit taking more risky investments.

Nevertheless, how derivatives are important we can conclude from the report *„The Financial Development Report 2012"* by World Economic Forum that defines seven pillars included in the „Index" (Financial Development Index) highlighting the use and development of derivatives market in the sixth pillar;

1. Institutional environment: encompasses financial sector liberalization, corporate governance, legal and regulatory issues, and contract enforcement
2. Business environment: considers human capital, taxes, infrastructure, and costs of doing business
3. Financial stability: captures the risk of currency crises, systemic banking crises, and sovereign debt crises
4. Banking financial services: measures size, efficiency, and financial information disclosure
5. Non-banking financial services: includes IPO and M&A activity, insurance, and securitization

---

[7]Credit Default Swap - A swap designed to transfer the credit exposure of fixed income products between parties also referred to as a credit derivative contract, where the purchaser of the swap makes payments up until the maturity date of a contract. A CDS is considered insurance against non-payment. A buyer of a CDS might be speculating on the possibility that the third party will indeed default.

[8]http://www.economist.com/blogs/freeexchange/2009/01/derivatives_and_development (accessed on September, 28. 2014.)

6. **Financial markets: encompasses foreign exchange and derivatives markets, and equity and bond market development**. *Derivatives markets are an important aspect of this pillar because they can significantly improve risk management and risk diversification. More developed derivatives markets can enhance the confidence of international investors and financial institutions and encourage these agents to participate in these markets.*
7. Financial access: evaluates commercial and retail access

The results of the report conclude that the top 10 economies in overall Index ranking, that includes this 7 pillars, are represented in table below.

Table 1. Top 10 economies in overall Index ranking

Country/Economy	Rank (2012)	Rank (2011)
Hong Kong	1	1
United States	2	2
United Kingdom	3	3
Singapore	4	4
Australia	5	5
Canada	6	6
Japan	7	8
Switzerland	8	9
Netherlands	9	7
Sweden	10	11

Source: The Financial Development Report 2012

According to the report of the Bank for International Settlements, *"BIS Quarterly Review"* from April 2013, derivative markets in the 32 countries analyzed had a value of 1.1 trillion USD, which is about 4% of the GDP of the countries analyzed. Derivatives in advanced economies are used for the most part to trade interest rate risk (around 66% of overall turnover) with FX and equity market derivatives turnover accounting for only 28% and 6%, respectively.

Picture 1. Derivatives turnover in advanced economies

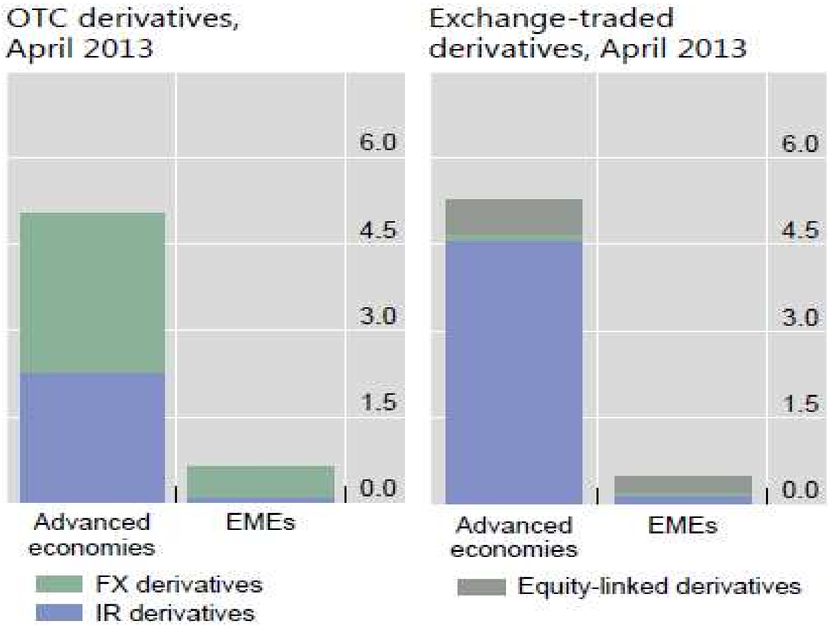


Table 2. OTC market FX turnover in advanced economies

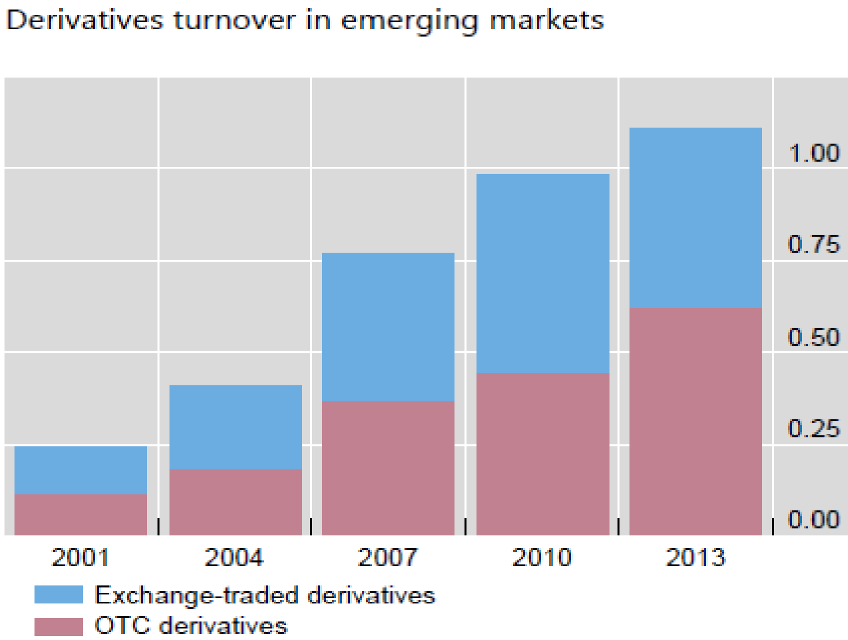
	2007.	2010.	2013.	Growth 2010. – 2013.	Global share
Advanced economies	5,984.4	7,173.4	9,599.2	33,8	179,6
US dollar	2.845,4	3.370,0	4.652,2	38,0	87,0
Euro	1.231,2	1.550,8	1.785,7	15,1	33,4
Japanese yen	573,4	754,2	1.231,2	63,3	23,0

Source: BIS Quarterly Review

2. DERIVATIVES MARKET IN EMERGING ECONOMIES

Generally derivatives markets are small in emerging markets. Mostly this market is form like an OTC market, and globally compared to 2010 had a growth of 40% and a realized profit from 380 billion USD in 2010 to 535 billion in 2013. It is important to notice the participation of IRD[9] in the total value of the OTC market, which in the period 2010 - 2013 had an increase of one third of the daily average USD 84 billion of realized income and a share of 15% in the value of the OTC market. On the other hand, as compared to developed countries, this percentage is lower by 4% and earnings in developed countries has a share of 19% in value of the OTC market. Less participation IRD reflects less the depth and liquidity of the money markets of emerging countries.

Picture 2. Derivatives turnover in emerging markets



In contrast, most represented derivatives in emerging countries in the field of FX contracts where the most significant activities in currencies such as Chinese renminbi, Mexican peso, Turkish lira and Russian rouble.. This emphasizes the higher level of importance and the exposure to foreign exchange rate in developing countries than developed countries. Although this market is developing really fast

[9] IRD – interest rate derivatives is a financial instrument based on an underlying financial security whose value is affected by changes in interest rates. Interest-rate derivatives are hedges used by institutional investors such as banks to combat the changes in market interest rates. Individual investors are more likely to use interest-rate derivatives as a speculative tool.

in emerging countries, the highlights of derivatives market in emerging countries can be found in following:[10]

1. Emerging market countries can benefit from derivative products because in many emerging market countries, the growth of institutional investors, including pension funds and insurance companies, has outstripped issuance of investible domestic assets creating a supply/demand imbalance. Derivatives can help fill this gap.
2. Emerging market countries face several challenges in developing derivative markets. These include relatively underdeveloped markets for the underlying assets; lack of adequate legal, regulatory, and market infrastructure; and restrictions on the use of derivatives by local and foreign entities.
3. In many emerging market countries, legal codes and accounting rules are silent on all or certain types of derivatives, fail to identify the regulatory jurisdiction over derivatives, or make derivative contracts unenforceable.
4. Regulators in emerging market countries should develop appropriate policies on the operational and credit risks of trading derivatives. Regulators often fear that derivatives will increase, rather than reduce, risk and, as a result, they adopt a conservative stance.
5. It is unclear whether exchange-traded or OTC derivatives are preferable for emerging market countries.
6. Exchange-traded derivatives reduce counterparty risk and make price and information transparency more accessible to a wider range of market participants, but they require cash market liquidity to develop. On the other hand, OTC derivatives are not so dependent on cash market liquidity, but entail more counterparty risk and are less accessible.
7. In some emerging markets, capital account restrictions have shifted derivatives trading by foreign investors to offshore markets. This has several implications. It reduces the ability to monitor the transactions, and limits many smaller investors, such as small- and medium-sized companies, from hedging their risks, due to higher transaction costs and limited market access.

Emerging economies have become very important participants in international financial flows, leading to greater demand for their products as well as for their currencies, which affects the further development of derivatives markets in these countries where they generate high daily turnover of trading, especially on the OTC market. However, although the market is constantly increasing in relation to

---

[10] OECD/World Bank/IMF, *Use of Derivatives for Debt Management and Domestic Debt Market Development,* (Paris, 2007), p.5

developed countries that percentage is still small, which means that further development is still required.

3. FINANCIAL SYSTEM OF BOSNIA AND HERZEGOVINA AND THE USE OF DERIVATIVES

Monetary policy in Bosnia and Herzegovina is based on the principles of currency board where Convertible Mark (KM) is permanently tied to the euro at a ratio of 1 euro = 1.955830 KM. The currency board is applied in a rigid form, which means that the central bank uses only management functionality required reserves. In 2013 in Bosnia and Herzegovina there was a slight recovery in economic activity. According to the CBBH11 data, nominal GDP in 2013 amounted to BAM 26.12 billion being an increase of 1.5% compared to the previous year. Using the consumer price index (CPI) as the deflator, real GDP growth in the 2013 is estimated at 1.61%.

Table 3. Macroeconomic indicators in BiH in 2010. – 2013.

	2010.	2011.	2012.	2013.
Nominal GDP (mil. of BAM)	24.750	25.474	25.900	26.297
GDP per capita (mil. of BAM)	6.440	6.634	6.745	6.862
Public debt (in % of GDP)	25,40	25,60	27,50	28,30

Source: CBBIH

If we consider the structure of BiH financial system, it is important to notice that the country has a bank-centric financial system which follows the continental model and includes the participation of banks about 80%. Continental model assumes the model of universal banks - financial supermarkets that offers broadcasting services and sales of securities, financing and financial management.

Table 4. Share of financial institutions in BiH financial system (in %)

Sector	2011.	2012.	2013.
Banks	86,04	86,31	87,13
Investment funds	3,28	3,23	3,00
Insurance and reinsurance companies	4,43	4,77	4,86
Microcredit organizations	3,09	2,77	2,65
Lasing companies	3,15	2,91	2,36

Source: Agency for insurance in BiH – annual report

[11] Central Bank of Bosnia and Herzegovina

Analyzing this structure we can conclude that the financial system is not sufficiently developed nor sufficiently diversified. BiH has a capital market, with the two exchanges (Sarajevo Stock Exchange - SASE and Banja Luka - BLSE), but there is no developed money market.

Table 5. Turnover by trading months in first semester 2014 on SASE

Month	Turnover (KM)	Number of trades securities	Number of trades	% of overall
January	5.098.608	3.526.559	624	1,69%
February	41.173.630	3.674.929	721	13,69%
March	57.074.968	7.195.652	798	18,97%
April	43.457.236	4.818.304	690	14,45%
May	110.848.284	3.742.254	583	36,85%
June	43.175.708	4.789.448	530	14,35%
Total	**300.828.434**	**27.747.146**	**3.946**	**100,00%**

Source: SASE

When it comes to the impact of financial markets on the efficiency of investment in the economy of the country, it is necessary to point out that the dominant source of financing companies still represent a commercial bank loans, and that alternative financing instruments, such as securities, have a negligible role. The law that regulates the derivative markets, in Federation, the Law on the Securities Market only defines derivatives and financial derivatives emphasizing that this market is regulated only as a mandatory trading on exchanges that in BiH still does not exist but only in form of OTC market where banks offer their customers, for now, only three types of derivatives: currency forwards, currency swaps and interest rate swaps. It is important to note that not all banks offer all three forms of derivatives, but the offer is created in relation to the volume and the size of the banks themselves. Also because of fixed exchange rate, companies are not interested in the use of financial derivatives, but when it comes to mitigate the price risks, especially in case of exporters, then the derivative must be taken into account

In order to evaluate the demand for financial derivatives market of Bosnia and Herzegovina, (Kozarević & Jukan, 2011) did a research in the banking sector in BiH in terms of the type of derivative that are offered and do the companies in BiH use this type of financial instrument. The sample included 29 commercial banks, of which 19 in FBiH and 10 in RS noting that 10 banks in BiH (FBiH 6 and 4 in RS) offer derivative products to its customers. The biggest interest amongst the bank clients is for currency forwards. The research show a low supply of derivatives (34.48%), but also a low demand because the results show that bank which is the largest provider of derivatives in the financial market of Bosnia and Herzegovina, concluded only 10 contracts related to the derivative of the average value of around 750.000,00 KM or EUR 383,600.00. it is important to notice that the dominant users of derivatives are non-financial firms involved in production and distribution of oil and oil derivatives, furniture production companies, trading companies (especially trading companies that import from China), gas trading and supplying companies, and IT companies.[12]

Interest rate swap (IRS) is the most used derivatives by the companies in BiH. It means the exchange of one interest rate for the second stream without simultaneous exchange of principal. Coupon Swap (plain vanilla) is a substitute payments under fixed interest rate for payments under variable interest rates and vice versa. It is characteristic that in these derivatives exchange only interest flows while equity is used to calculate payments based on interest rates, exchange interest flows is done in predetermined periods during the swap and common variable interest rates are EURIBOR and LIBOR with maturities of three, for six months and one year. Businesses that commonly used interest rate swaps are companies that are already in debt, and have loans with variable interest rates. At the same time companies are aware of the risk of the possibility of rising interest rates and that such a way of borrowing funds become too expensive. Companies can protect themselves from rising interest rates, so as to replace its payments under floating rate payments at a fixed interest rate, and thus protect their businesses from adverse movements in interest rates. For example: a company borrows 1 million for a period of 4 years at a variable interest rate. Variable interest rate is three-month EURIBOR and fixed of 1.00%. The Company believes that it will be a rise in interest rates and wants to protect itself from the risk and fixed costs - has a two-year interest rate swap. The Bank provides a quotation for a fixed interest rate for two years from 2:45%.

The company pays the loan - 3m EURIBOR + 1.00%
The company receives in interest swap - 3m EURIBOR
The company pays the interest rate swap - 2:45%
Net cost - 3:45%

This transaction is very simple and can help companies to protect themselves from risk exposure but the companies in BiH are still not aware of all benefits that derivatives offer. Also policymakers need to create the financial conditions for development of derivatives and their especially in terms of education so participants in financial market don’t consider derivatives something that is

[12]Emira Kozarević, Meldina Kokorović Jukan & Beriz Čivić, *The Use of Financial Derivatives in Emerging Market Economies: An Empirical Evidence from Bosnia and Herzegovina's Non-Financial Firms,* Research in World Economy (Vol. 5, No. 1; 2014).

complicated or the activity as undesirable speculation. FX market is very risky and this segment of the market requires a high degree of caution, taking the company's past experience, investment objectives, investment conditions, and considering that the BiH economy is small and mostly import-oriented, bh. companies are not important participants in international trade so that the volume of their transactions is significantly small compared to the large companies that use derivatives for the reduction of risk.

Bosnia and Herzegovina is not the only country with the lack of derivatives market. The same situation is in the neighborhood Serbia where there is no derivatives market. The law does not prohibits the development of this instruments and derivatives market but the current structure does not have the infrastructure for development of derivatives market. That means that transition countries still have a long path in including their financial systems in the world financial system.

CONCLUSION

Derivatives are an important financial tool of modern markets. To derivatives were able to exist in the financial market is necessary to secure financial infrastructure and a stable financial system. Derivatives are instruments that are widely used around the world. In addition to the basic functions of hedging, derivatives are used and for speculative purposes with the goal of quick profits. The derivative markets on a global level, are particularly organized as OTC, and it has a value of over 640 billion dollars. On the other hand use of these tools is growing every day especially in developing countries, particularly in the area of OTC markets. In April 2013, derivative markets in developing countries had a value of 1.1 trillion USD, which is about 4% of the GDP of the countries analyzed compared to 10.3 trillion value of this market in developed countries with a value of 24% of GDP. The most used are currency derivatives. When it comes to countries in transition, especially Bosnia and Herzegovina, derivative markets exists in the form of OTC where banks offer customers three types of derivatives: currency forwards, currency swaps and interest rate swaps. Reasons for lack of markets in BiH can be found primarily in the fact that the Law on Securities Market only defines derivatives and states that trading are on the stock exchange in order to completely omitting the OTC. Also even the company itself are not yet fully aware of all the benefits that derivatives offer during participation in international flows in order to minimize risk. Also because of the existence of the currency board companies are not inclined to protect against foreign exchange risk but must be taken into consideration price risk. Bh. companies are not important participants in international trade compared to large companies. Banks in BiH that offer derivatives to operate on the basis of its size and capital value, which means that not all banks offer their customers the possibility to conclude such agreements.

In the future, the hope is that the banks do more especially in the field of education of its employees in this area and that the company will offer new types of derivative securities as banks in BiH are very liquid and have the ability to offer these types of investments and their development, but it is necessary is to create a financial architecture that will be the basis for further development.

References

Acharya, V., Brenner, M., Engle, R., Lynch, A., & Richardson, M. (2009). Derivatives – The Ultimate Financial Innovation, 1–13.

Economic, W., & Surveys, F. (2014). World Economic and Financial Surveys Global Financial Stability Report.

Kozarevic, E., Jukan, M. K.(2014). Derivatives market development in Bosnia and Herzegovina: Present or (far) uture? International Journal of Management Cases (Vol 13) 637-646.

Prabha, A. P., Savard, K., Wickramarachi, H., Lin, S., Markwardt, D., & Zhang, N. (2014). Deriving the Economic Impact of Derivatives, (March).

Report, I. (2012). The Financial Development Report 2012.

Rousseau, P. L., & Sylla, R. (2003). Financial Systems , Economic Growth , and Globalization (Vol. I).

Sundaram, R. K. (2013). Derivatives in Financial Market Development, International Growth

Settlements, I. (2013). International banking and financial market developments, (December).

Spasojević, J. (2011). Uloga kreditnih derivata u tekućoj finansijskoj krizi. Udruženje banaka Srbije, 92-111

Web

http://blog.ipleaders.in/types-of-derivatives-and-derivative-market/

http://financenmoney.in/advantages-and-disadvantages-of-derivatives/

http://www.economist.com/blogs/freeexchange/2009/01/derivatives_and_development