



# The Scale and Risks of Financial Innovation: The Case of Derivatives, ETFs and Securitization

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**Abstract** This study examines the risks and amount of three financial innovations: derivatives, ETFs and securitization. Collected data shows that most of these innovations are used for speculation purposes and not for risk management. This in turn reshapes financial markets and makes them more vulnerable to financial crises.

**Keywords** – Financial innovation, Financial innovation risks, Derivatives, ETFs, Securitization.

## I. INTRODUCTION

Innovations always were one of the most important factors, impacting economic growth. New technologies gave opportunities to increase productivity of employees, to reduce incurred costs, to expand services or to propose new products for the society. The creation of innovation became important factor for the companies, which seek to revive the company and make it profitable. From a macroeconomic perspective innovations help to increase competitiveness of country.

In the finance sector, innovations play a very important role due to importance of this sector not only regionally, but also globally. The finance system helps to distribute limited resources in time, make the conditions to implement financial decisions and satisfy people consumption needs. In this system financial institutions participate facilitating the allocation of financial resources, payment for the goods, services, manufacturing resources and reduce various risks. Therefore financial institutions should be monitored and controlled by regulatory organizations, in order to ensure stability, transparency and reliability of financial markets.

Currently, researchers and economists pay more attention to financial innovations especially due to global finance crisis, which has become debt crisis in some countries. Researches are made regarding the benefit and risks of financial innovations. However, it can be noticed, that most researches are related to the benefits of financial innovation and less emphasis is put on their risks.

Even considering risks of financial innovation in the scientific literature, a lot of attention is given to the market value of financial instruments, without paying too much attention to the nominal value and its meaning. This situation is especially obvious in derivatives.

That is why **the problem** arises – what are the risks of financial innovation? **The object** of this paper is the risks of financial innovation. **The aim** of this paper is to analyse the risks of derivatives, ETFs and securitization.

**The objectives** of the article are as follows:

1. to present general risks of financial innovation;
2. to reveal theoretical and practical aspects of the topic about derivatives, ETFs and securitization;
3. to investigate the nominal amount of derivatives, ETFs and securitization;
4. to establish the meaning of nominal value number and what it tells us about stability of financial system.

**The method of research:**

1. analysis of scientific literature;
2. analysis of statistics data.

## II. RISKS OF FINANCIAL INNOVATION

Financial innovations have never avoided uncertainty and risk, that they will be harmful to economy. By creating financial innovations society is trying to better manage various risks, diversify those risks, reduce losses, increase income, profit and so on. However, financial innovations often do have negative aspects, which become noticeable only in distressed environment.

As Oliver Wyman notices (2012) [13], innovations can add uncertainty that can provide negative results. These kinds of results cannot be perfectly predicted, because it is not known how innovations will react in stressful situations. Mingyou Wang (2009) [12] says that risk is secondary product of innovations. Prasanna Gai and others (2006) [14] observes that financial innovations as well as higher stability of macroeconomic environment could have lowered the possibility of financial crises in developed countries, but the outcome of these crises is much more severe. Prasanna Gai and others (2006) [14], Harald A. Benink (1998) [3] notice, that innovations can increase debt level (because of too easy access to loans), fluctuation of assets prices. This in turn may make financial system more unstable and more vulnerable. Some of financial innovations, for example securitization, gave possibility for financial mediators to lower capital requirements demanded by regulatory agencies, while the level of the

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risk they face almost didn't change. Because of this financial mediators could have taken too much risk (Dai Junxun, 2007) [6].

Karl-Erik Sveiby (2012) [11] states, that financial innovation became riskier both theoretically and practically. A lot of financial innovations became more complex, less transparent and less clear, and users of these innovations couldn't estimate the risks of these innovations due to the lack of information about them.

However, as it is noted by economists Oliver Wyman (2012) [13] and Ben S. Bernanke (2009) [2], financial innovations are important and needed for economy, because thanks to it, it is possible to achieve benefits in these sectors: improve financing and growth of private economics; improve effectiveness and markets accessibility, education of users; to distribute risks across various economic sectors. Financial innovations increase funds accessibility, facilitate trading, decrease transactions costs, increase liquidity. This situation allows the economy to develop faster, the prices become more competitive. Because of this financial innovations shouldn't be forbidden or fully controlled, though society must understand its risks and the need to control these risks. Oliver Wyman (2012) [13] and Ben S. Bernanke (2009) [2] offer many solutions how to control risks of financial innovations. The most important recommendations are the necessity to increase financial innovations transparency, encourage communication with financial mediators so their needs and endeavours controlling innovations risks are understood.

## II. DERIVATIVES

A typical derivative transaction does not require any payment of the principal financial instrument at maturity. Precisely for this reason, derivative financial instruments are under consideration for managing financial risk, risk taking. As J. Gregg Whittaker (1987) [10] writes, derivative financial instruments create obligations that are not reflected in the company's balance sheet (Francesca Taylor, 2007) [7]. Therefore investors, regulatory authorities and the company's management face difficulties assessing the risks taken.

For derivatives early cash flows are not typical between the parties. This means that two different parties, which have concluded such a transaction, agree on the transaction amount (principal amount), but during the conclusion of the transaction they do not need to exchange that amount. Principal amount is relevant to the calculation of the actual market value of the transaction, which subsequently is exchanged later between parties. However, this derivatives feature means that this instrument has a relatively high leverage, in other words, derivatives provide a loan, which makes it possible to increase the rate of return (or loss) from the underlying asset. Derivatives leverage means that sudden and large fluctuations, such as the global financial crisis can quickly bring significant

losses for the counterparty, and thus increase the counterparty's risk. Acquisition of derivative contract is subject to very low commissions. This in turn provides them with an excellent risk management and speculative characteristics. On the other hand, whereas no cash flows were exchanged at the beginning of conclusion of the contract, it becomes more difficult to assess possible risk of loss. For this reason, derivative financial instruments must be carefully monitored and managed.

Derivatives work just like the money multiplier. When a central bank prints money, commercial banks and other financial institutions lend that money to their customers many times, and thus artificially increase the amount of money in the country. Derivatives also artificially increase the amount of money, because the person, who purchases such a product, actually gets a loan, called a lever. However, there is a difference between money multiplier and derivatives: many of these financial instruments are settled in cash rather than delivering the same underlying asset. Additionally, it is common practice to exchange net cash flows. Therefore, the actual derivatives multiplier effect for money supply is not so high.

Derivatives are characterized by a number of risks:

1. Price risk;
2. Basis risk;
3. Liquidity risk;
4. Counterparty's risk;
5. Other risks.

Price risk arises when the prices of underlying assets change. If the changes are unfavourable, the derivative may become unprofitable. Price volatility is higher for those instruments that have leverage, longer term or options features. Therefore, for derivatives such risk is very high, because most of these tools have a lever, reaching 10 or more.

Basis risk is the risk that the correlation between the prices of two instruments, which are used to manage the risk of each other, may change. For example, if a bank uses interest rate swaps, priced according to LIBOR curve, which is used to hedge the base interest rate of the loan portfolio, the change in the base rate and LIBOR will not always be the same. The same risks apply to derivative financial instruments: the price of futures, forwards and other contracts is impacted on two main factors – the changes in underlying security prices and the difference between the interest rates of two countries. For example, if the U.S. company has an open position in British pounds, it can buy future contract to manage the risks. The price of such future contract will fluctuate due to the USD/GBP exchange rate and due to the changes in U.S. and UK interest rates.

In general, the basis risk represents a very small risk of derivatives and its risk exposure is direct: if derivative's maturity is shorter, basis risk is also lower.

Liquidity risk is the risk that the value of the derivative financial instruments will be lower due to a lack of liquidity. Liquidity risk is influenced by the depth of the market and the speed of the transaction execution. The deeper the market, the more opportunities exist to sell a



financial instrument for its real value. Future transactions are relatively liquid, because their terms are usually shorter, they are standardized products and traded in exchange market. However, forward contracts are much less liquid, because they are concluded between two different parties and it may be difficult to find counterparty willing to enter into the opposite side of the transaction. Open position is closed within a maximum of one working day in large, liquid markets. However, closing a position can take a lot longer in less liquid markets. As a result, the company may suffer unexpected losses.

Counterparty risk is the risk that the counterparty may default on its obligations. Due to derivatives leverage sudden and large fluctuations can sharply increase the counterparty's risk. For example, if the underlying asset price changes by 1%, while the derivative's leverage is 10, so a loss for one of the party's in the transaction may increase by 10% per day. However, in the fourth quarter of 2008 the U.S. S&P 500 index fluctuated more than one percent. One day it fell 9% and the next day it rose about 12%. Because of such fluctuations and high leverage in derivatives, it's possible to experience 100%, or even higher loss during the day and lose all invested funds. In this case, the counterparty may be incapable to fulfil their commitments and to refuse to carry out the transaction.

Many economists quite often try to emphasize, that market value of derivatives contracts is more important than nominal value. However, precisely the nominal value of derivatives reflects what amount of underlying assets is traded in those transactions.

In assessing the amount of derivatives it would be appropriate to define certain theoretical limits. Considering derivatives nature, they should be used for risk management, i.e. in pursuance to prevent against adverse changes in the markets. So under normal economic conditions, market participants would use derivatives only when they have underlying asset, i.e. they would seek to manage the risks involved. If market participant has derivative contract without the basic underlying asset, such situation already is speculation, which is defined as risk taking. Similarly, if market participant has underlying asset, but he buys derivative in order to increase its exposure to that asset further, such situation is also a speculation.

If derivatives' users would seek to hedge the risk of underlying asset, then theoretically the derivatives nominal value should not be more than double that of all the major financial instruments (shares, commodities, foreign exchange, etc.) value. For example, the analysis of simple commodity future transaction can be seen that if some counterparty sells a raw material for the other party in the contract, it will have an interest to hedge against the fall in raw material prices. The opposite situation will be for the buyer of raw material. Therefore, if a party A sells 800 thousand U.S. dollars worth of raw materials to party B and both hedge against negative price changes in raw materials, then they both conclude future contract worth of 800 thousand U.S. dollar. Thus two future transactions

occur in the market of 800 thousand U.S. dollars of raw material with a total nominal value of 1.6 million U.S. dollars, i.e., double that of the value of raw materials. This is the maximum theoretically possible value of derivative instruments. However, it should be noted that in practice it's hard to achieve derivatives value twice the size of underlying assets due to three reasons:

1. First of all, not all markets participants manage risk and not all markets participants, that are managing risks, are using derivatives for hedging purpose;
2. Not all major assets may have two opposing counterparties (excluding derivatives sellers – dealers). For example, the counterparty A, having certain sovereign bonds, may seek to hedge against adverse changes in interest rates or the credit risk of government bonds. In this respect, there is no counterparty B (except dealers).
3. Not all derivatives contracts are concluded by dealer. Usually the dealer has two separate derivatives contracts with A and B counterparties. However, if a broker helps to conclude a transaction, then he brings counterparty A with a counterparty B, helps them to conclude a derivative contract takes a small commission fee.

Therefore, after the definition of the theoretical derivatives limit, it is possible to examine the actual derivatives situation. Derivatives nominal value can be compared with the world's gross domestic product, because the gross domestic product shows the value of all created goods and services. GDP is one of the most popular comparable indicators, besides it's very difficult to accurately calculate the value of money and capital market, i.e. underlying financial instruments (raw materials, stock, bond, currency, and so on.).

Fig. 1 demonstrates collected data from International Monetary Fund [9] and the Bank of International Settlements [1] about world GDP and derivatives volume. Bank of International Settlements publishes statistics of OTC derivatives since 1998. Until 2012 it was collected from 11 countries, that presented such information (Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, United Kingdom and United States), and the largest global companies trading with such financial products. Since 2012 two additional countries, Australia and Spain, were included into the statistics.

According to the Bank of International Settlements [1], total nominal value of OTC derivatives in 2012 June totalled 639 trillion, and decreased by 1% compared to previous year during the same period. According to this institution, such decline was influenced by the increase in U.S. dollar's value relative to other major foreign currencies. Considering derivatives market value, it decreased to 25 trillion dollars. It can be seen that in 2008 derivatives market value composed 57.63% of the world GDP, and in the first half of 2012 this ratio fell to 35.62%. These are very large numbers and may indicate about negative derivatives impact on the global markets.

Since 1980 the world's GDP grew by more than 6 times, but the derivatives nominal value grew much faster. As soon as derivatives were created, their nominal value exceeded 600 trillion dollars in just a few decades. Comparing 2011 with 1998, world GDP grew by more than 2 times during this period, while the derivatives volume – more than 8 times. There is a tendency that OTC derivatives share among all derivatives steadily increases, although this trend slowed down since 2010. Comparing these instruments with global GDP, it is easy to notice that in 1998 derivatives nominal value exceeded global GDP only by 2.66 times, while in 2011 – 9.27 times. Moreover, most economists admit that the real nominal value of derivatives may be much higher, as they are off-balance and little controlled instruments. Indeed, currently there are only a small number of world countries that report derivatives statistics to the Bank of International Settlements, so it is very likely that the actual amount of derivatives is much higher in the global financial market. It is believed that derivatives nominal value may be over 1 quadrillion (1,000 trillion) globally. If that is true, then the derivatives volume would exceeded world GDP more than 14 times.



Source: prepared according to IMF and BIS data

Fig. 1 Change in nominal value of derivatives and world GDP (in billions of U.S. dollars)

Going back to the theoretical limits, that were described in earlier, of derivatives, it can be seen, that if they were used only for risks hedging, then derivatives should not exceed the nominal value of 139.80 trillion U.S. dollars in 2011 (twice as large as the volume of GDP). According to this criterion, if all such amount would be dedicated for risk management, then 78.42% of derivatives would be used for speculative purposes. Considering only such theoretical calculations, estimated speculative derivatives part is already significant.

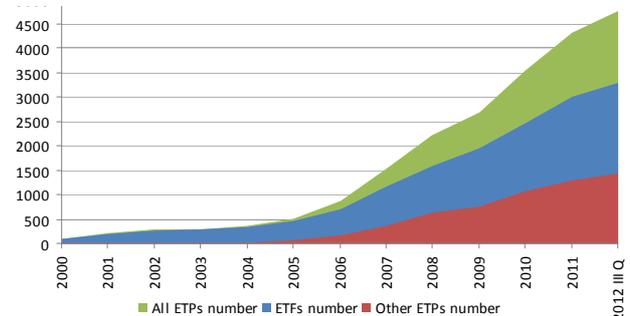
It should be noted that the estimated amounts of speculative derivatives is only theoretical maximum of their values. It was mentioned in the beginning that it's hard to achieve that maximum number, which in turn means that real speculative derivatives part among all the derivatives should be higher. In practice it's hard to estimate the purpose of derivatives use because it is difficult to know if companies have the underlying asset and if they use derivatives to reduce the risk or to increase the risk.

From the presented data it can be seen that derivatives now can be more accurately described as speculative

instruments although they were created to manage the risks. Financial innovations like derivatives, exchange traded funds, algorithmic trading only increases speculation. Obviously, the existing high amount of speculative derivatives distorts financial markets. It shouldn't be possible to conclude contracts in a properly functioning system for a larger nominal amount than there are underlying assets in reality. From that perspective, derivatives volume is far too large and poses a serious systemic risk. If suddenly due to unforeseen circumstances derivatives market would collapse, it would seriously hurt global financial system, society's confidence. Existing derivatives leverage would also decrease and thus would greatly reduce liquidity; most countries would face declining economic growth or even in a recession. That is why derivatives market should be regulated.

### III. EXCHANGE TRADED FUNDS

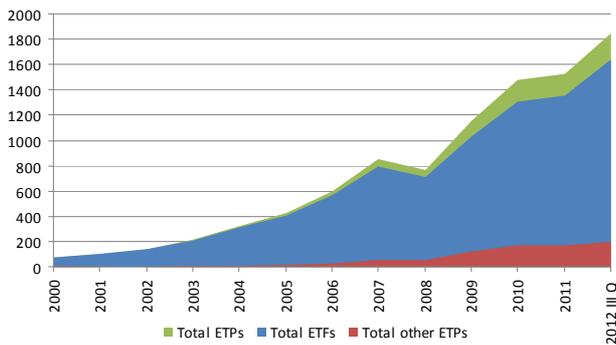
ETFs are one of the most rapidly growing sectors among funds management companies. It is predicted that in 2015 its assets under management will reach 5 trillion U.S. dollars. ETFs are useful for market participants because they are liquid and allow for the possibility to diversify investment portfolio with lower costs. It is possible to have active trades for all the time in exchange. According to Morningstar trades in these financial instruments compose one third of all USA stock exchange market.



Source: prepared according to BlackRock data

Fig. 2 Change in ETFs number since 2000 (in billions of U.S. dollars)

At the end of the first half in 2011 [4] there were about 2825 ETFs, which had about 1442.7 billions of U.S dollars of assets under management. Estimating all ETFs, there were 4748 ETPs in total (3297 of them were ETFs) globally in the end of third quarter 2012 [5]. The total ETPs assets under management were about 1845.4 billions of U.S dollars (about 1644.1 billions USD was from ETFs). About 70.5% of assets under management ETFs were quoted in USA stock exchange. For the past 18 years the number of ETFs has risen more than 1200% and their assets under management have risen by about 2100%.



Source: prepared according to BlackRock data  
 Fig. 3 Change in ETFs assets under management since 2000 (in billions of U.S. dollars)

These financial instruments also have weaknesses. An employee of Switzerland bank suffered 2.3 billion U.S dollars loss in 2011 while using these instruments to speculate on EuroStoxx, DAX and S&P 500 indexes. A lot of deals of ETFs in the Europe are being done over the counter, despite the fact that they are quoted in stock exchange. The requirements for over the counter market are less strict, so there are more opportunities to cheat.

ETFs risks can be highlighted as:

1. Return replication error risk;
2. Counterparty risk;
3. Pledge risk;
4. Currency risk.

The first risk means that during some time the return of ETFs may be lower than the return of indexes or other underlying assets. In part this is caused by ETF's fees, although they are lower compared to mutual funds' fees. Furthermore, ETFs results are affected by partial physical copying, applied restrictions on investable securities, some funds kept in cash, hedging currency risk exposure, changes in index composition, transactions costs while purchasing and selling securities, etc. Difference between ETF and underlying asset return may be seen in inverse and leveraged ETFs, which are becoming popular among speculators. Market participants started to create more complex and diverse financial instruments to satisfy investors' needs. Currently, it is easier to benefit from the decline in securities value or to earn double or triple times the return than underlying index. However, such financial structures have many drawbacks. Considering the structure of these instruments, their return changes according to preset rules only during one trading day. This means that it is possible to suffer a loss during longer time period, especially, if market does not have clear trend and fluctuates around the same level. For example, if the underlying index falls down from 10 to 9 (by 10%) during the first day and the increases by 11.11% during the second day, then the final index value would be 10. If investors use inverse ETF, they would earn 10% during the first day and would lose 11.11% during the second day. The final value of such ETF would be 9.78 or 2.2% less than in the beginning. It is known that the value of equities and other assets has a tendency to increase during long term period due to inflation, which means that inverse

ETFs would be unprofitable for investors. Similar situation can be noticed among leveraged ETFs. Considering double leveraged ETF and situation in the above example, the investor would lose 20% during the first day and would earn 22.22% during the second day. The fund's final value would be 9.78. Consequently, if the market does not have clear trend and fluctuates around the same level, then leveraged ETFs would continue to decrease in value and return replication error risk would be higher. This means that inverse and leveraged ETFs are speculative, have high risk and are appropriate only for short term investing.

S&P 500 index increased only approximately 18%, DJIA – approximately 12% during the last 2 years. However, during the last 5 years, S&P index decreased approximately 5%, DJIA – approximately 4%. These numbers aren't very high in equities markets, especially if they are compared to historical equities return. Therefore, leveraged and inverse ETFs earn less return than passive investment in the index in these markets.

ETFs are created in two main ways: using physical replication and synthetic. In the first case, financial institution buys a basket of equities in proportion of their composition in the index. The company holds that basket and receives identical return. Such replication of index return is very convenient for liquid assets. However, it is expensive, because fees are higher when assets are bought directly in the market. Partial physical replication can be often seen among less liquid assets (for example bonds). In this way financial institution buys not all assets that are included in index composition. Usually it buys more liquid assets with different maturities, so that the total portfolio return differs only slightly compared to index return. Synthetic replication is more popular in illiquid or restricted markets. This method uses derivatives to get exposure to the asset. Synthetic replication is the most common in Europe and Asia, where less strict requirements are applied, compared to USA.

Synthetic copying is more risky because counterparty risk is generally higher. ETF that is using this method can easily lose its invested finances and suffer a huge loss. In order to avoid this risk it is better to pledge all or the highest possible portion of assets, thus guaranteeing the counterparty's ability to settle up. In practice, however, quality of pledged assets is often lower, and the pledge of assets usually isn't used in commodities and bonds markets. Thus losses could be very high.

In case of physical replication, counterparty's risk becomes significant when ETF lends its underlying assets to market participants. It is thought that due to increasing competition in the ETFs market, ETFs could try to reduce their costs by increasing actions of securities lending. In this way physical replication ETFs could be exposed to higher counterparty's risk.

The currency risk for ETFs exists in two ways: a) when market participants buy this financial instrument in different currency compared to their national currency; b) when ETF is quoted in local currency, but its underlying assets are from foreign country. In the second case currency risk isn't so obvious, but it still exists. The value

of ETF, which replicates foreign asset, depends on the value of foreign assets and on the value of foreign currency. Therefore, if the price of foreign asset increases, but the exchange rate of foreign currency decreases, then the value of ETF in local currency may decrease. Mutual funds and ETFs try to hedge their currency risk, however, it's quite common that only the currency risk of nominal position is hedged, and the change in assets value due to change in exchange rate is often left unhedged. To be more specific, simple formula may disclose this explanation better: return of ETF in the local currency (RV) = return of foreign asset in foreign currency (RU) + the percentage change of foreign currency ( $\Delta FX$ ) + return of foreign asset due to the change in foreign currency rate ( $RU \times \Delta FX$ ). RU is the nominal amount of foreign asset and this amount is usually hedged. ( $RU \times \Delta FX$ ) is the additional value of foreign asset and is usually unhedged due to difficulties controlling such additional value. Even if this amount would be hedged and currency risk controlled, the fund would experience higher costs due to risk management thus would reduce overall return for investors.

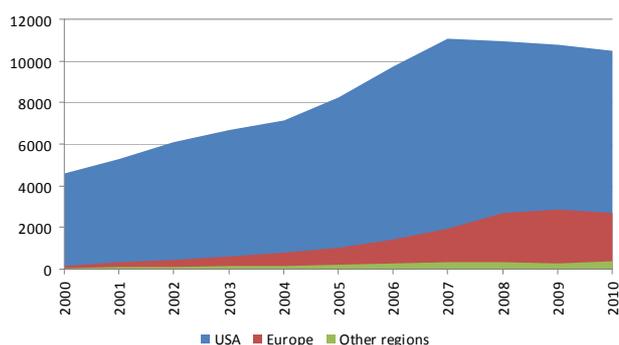
In general, ETFs increase the vulnerability of the market. The research shows that, currently, trade in ETFs reaches around one third of all trades. ETF's transactions are usually carried out by trading in bundle of securities or buying and selling huge quantity of different securities at the same time. Therefore the prices of securities in the basket in the index tend to move in similar pace during the full trading day. This situation increases correlation which isn't very useful for diversification purposes. Thus the efficiency of the markets decreases and the systemic risk increases.

#### IV. SECURITIZATION

Securitization and structural credits market has become very important for the development of countries and for the overall capital market. Securitization – it is financial innovation which started to develop in the eight decade in the last century. During securitization process, the company groups various credits according to specific characteristics, for example, mortgage, account receivable, consumer credit and so on. Those grouped credits are distributed into specific “portfolios” according to different maturities, amounts or other features. After that securities (bonds) are issued and backed by those specific “portfolios”. In this case the company may attract capital for its business and ensure that it will have enough resources to finance its daily operations or even long term projects. This process helps to reduce the risk and its concentration in banking industry, expands the sources of funds, and investors can diversify their investment portfolio better, because they can choose from more products according to their risk profile. Securitization helps to free up company's capital which then can be profitably invested into other business fields, for example,

provide more loans for society. Securitization market reduces lending interest rates, so it's a great benefit for society. Economists admit that in case of badly functioning securitization market, consumers, banks, issuers and investors face with less effective financial system, therefore activity of economy decreases, the number of unemployed increases.

According to SIMFA organization data [15] securitization market value amounted to 4.8 trillion U.S dollars in 2000. Its value reached 14 trillion U.S dollars in 2008. The value was 13.6 trillion U.S dollars in 2010, which means that this market grew approximately 2.8 times during 10 years.



Source: prepared according to SIFMA data

Fig. 4 Global securitization amounts outstanding (in billions of U.S. dollars)

According to SIMFA organization data [15], securitization market slowly decreases since 2007. In general, there are few reasons which impacted the decline of the market:

1. Inappropriate risk assessment – difficult calculation securitization methods;
2. Lack of transparency (the market is unregulated);
3. Market participants' loss of confidence.

International Organization of Securities Commissions emphasized these problems in the market of securitization: [17]

1. Over-reliance on credit ratings;
2. Lack of market participants' attention;
3. Inadequate risk pricing;
4. Inadequate analysis of securitized assets by regulatory institutions and other market participants; this situation caused excessive leverage in financial system.

During world financial crisis it was noticed, that many securitized financial instruments were priced incorrectly, because their risk was underestimated. In other words, these products were much riskier in reality than it was thought. Market participants trusted too much to independent international credit ratings agencies in 2007, and underestimated liquidity risk. When the price of real estate started to fall in the USA, many people, who had mortgage loans, were not able to pay back those loans and meet their liabilities. Thus, investors, who had financial instruments securitized by those mortgages, didn't receive their invested capital too, incurred losses. Confidence in



financial markets was dramatically shaken, thus liquidity decreased and market participants faced difficulties borrowing money by securitization method.

Securitization process has its own drawbacks. As mentioned before, securitization helps banking industry to attract capital and then use it to finance loans. Also, the risk is transferred to other market participants. Due to this reason securitization reduces the need for financial institutions to analyze and supervise customers, who receive the loan [8]. Thus systemic risk of financial market increases.

Furthermore, the method of securitization functions like financial leverage. For instance, if commercial banks are required to hold 10% of depositors contributed capital in Central bank, then the amount of money in the economy increases by 10 times due to multiplier effect. In other words, if 100 EUR deposit is paid in, the quantity of money is increased to 1000 EUR in this hypothetical economy. Capital requirements are not applied on securities, issued during securitization method, so it is good for banks to borrow money from customers in this way. If 50% of deposits would be replaced by securitized bonds in the same hypothetical economy, then the initial amount of money would be the same: 50 EUR in deposits and 50 EUR in securitized bonds – the total amount is still 100 EUR. However, capital requirements are calculated only on deposits, therefore the amount of money is increased 20 times – up to 2000 EUR in this economy. Therefore, securitization artificially increases the amount of money and inflation in the economy.

The growing securitization market causes concern for the regulatory institutions and there is reason to be worried. It is known, that systemic risk increases when the bank becomes somewhat dependent on specific financial source. If customers suddenly stopped buying securitized bonds as it happened in 2008, it may become difficult to attract enough funds to the company and to maintain its liquidity. Securitized bonds are more risky and investors avoid risky securities when markets are falling. It is thought, that financial institutions securitized approximately 46% of all credits, which were given during 2005 – 2007 years, in USA [16]. In Europe, between 14%-55% of customers mortgages, which were given during 2000 – 2006 years, were financed by Residential Mortgage-Backed Securities [16]. These numbers indicate quite high dependency on securitization market.

Dependency on securitization market evolved due to constantly developing financial innovations, which provided a possibility to securitize more and more assets and liabilities. Finance specialists found this market attractive, because of possibility to earn high return from these financial instruments. Competition normally should have lowered profits from these transactions, but due to constant changes of these products and price-insensitive agents, who make decisions for investors, high profitability remained. It is thought, that increasing economy of scale, which was impacted by information accessibility and rising competence in financial markets, formed foundation for oligopolistic competition. These

features are old dysfunctions of financial markets. Investors' vigilance could help to eliminate these dysfunctions: the owners of assets should require higher return, which should be better corresponding to their assets risk; they should require agents to firmly comply with fiduciary rights. So it is important to control this market more carefully.

## V. CONCLUSION

The financial innovations have quite a lot of impact to financial system by changing its structure and its systemic risk. Newer and more advanced financial products are created, this in turn creates complexity and society isn't capable of properly evaluating their benefits and risks. Financial innovations are developing so fast that market participants aren't able to chase those technologies. Newer and more complex products will not necessarily be better and more beneficial to society and financial system.

After reviewing theoretical and practical aspects about derivatives, ETFs and securitization, it can be noticed, that these instruments have many risks. Some of them are very small and have low impact, for instance, basis risk, return replication error, but some of them are much higher and noticeable only in stressed situations. The more important risks that should be paid more attention are high leverage, counterparty's risk and price risk.

Many scientists investigate risks of financial innovation, however, they usually analyze market value of financial innovations, ignoring nominal value and its meaning. Reviewing the nominal amount of derivatives, ETFs and securitization, very high amount of their nominal value was noticed. Derivatives amounted to more than 700 trillion USD, ETFs to 1.5 trillion USD and securitization to more than 10 trillions USD in 2011. These numbers combined would exceed world GDP by more than 9 times.

Such high nominal amount of derivatives, ETFs and securitization indicates that most of these financial innovations are used for speculation purpose and much more rarely for risk management. This in turn has negative impact, because it causes larger prices fluctuation of underlying assets, promotes to form price bubbles, distorts financial markets and makes financial system more fragile. Despite the risks involved in using these financial instruments, their use for speculation is constantly growing.

So it is important that financial market participants would properly estimate their actions and implement financial innovations more carefully. Regulatory institutions should also try to participate in the development of financial innovations, communicate with financial intermediaries and try to manage financial innovation risks in advance.

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