STRUCTURED SECURITIES AND THEIR DEVELOPMENT IN LITHUANIA

Arvydas PAŠKEVIČIUS*, Ovidijus SAČILKA
International Business School at Vilnius University, Lithuania

Abstract. *The principal purpose of the article is to introduce structured securities, their particular features and advent into the Lithuanian financial market. The authors of the article address the premises and preconditions for the appearance of structured finance and structured securities, interpretations of related concepts and the global development trends.*

The system of structured securities is being designed on the basis of the principal methods of the composition of structured securities. The focus of the paper is on the group of financial instruments, including structured securities, currently designed and offered in the Lithuanian market.

The article presents an analysis of the Lithuanian market in structured securities comparing it to traditional saving and investment instruments, issue volumes including the best and worst samples in terms of return rates, risks inherent to secondary securities markets and peculiarities of price calculation, also aspects of adaptation to market demands as well as the trends of its further development.

Key words: *securities, structured bond, financial instrument, structure, options, primary and secondary markets*

Introduction

The last decades have been characterised by a rapid development and proliferation of all kinds of financial innovations requiring an increase in financial literacy and education of investors and eventually leading to the appearance of structured finance. Structured finance as one of the most modern techniques of the financial industry has largely reshaped the entire financial system. The extensive spectrum of structured finance, allowing combinations of a wide variety of financial instruments and creation of various linking patterns, yields a huge variety of types and sorts of structured securities. The resulting variety of structures offers choices for both institutional and private investors to identify investment instruments tailored to the personal needs of each investor. The rapid pervasion of structured securities in global financial markets eventually brought them to Lithuania.

* *Corresponding author:*
Finance Department of International Business School at Vilnius University, Saulėtekio Ave. 22, LT-10222 Vilnius, Lithuania;
e-mail: arvydas.paskevicius@tvm.vu.lt

The objective of the paper is to offer an analysis of the structured financial markets of Lithuania in the context of an overview of the global market in structured finance.

The principal tasks in attaining the objective defined for the present paper included analysis of the preconditions for the appearance of structured securities in Lithuania, relevant Lithuanian issuers, the volumes of securities of the type being analysed issued thereby, and a comparison of such securities with other financial instruments, calculation of the return rate of structured securities and its impact upon the value on the basis of specific structured securities.

The preconditions for the appearance of structured securities, their further development trends and categorisation were analysed on the basis of research papers of outstanding finance experts, such as F.J. Fabozzi, A.A. Jobst, M. Choudry, also articles in field publications by specialists in structured finance in addition to statistical information provided by various institutions. The structured securities constructed and distributed in Lithuania are analysed with reference to the information provided by issuers and securities supervisory authorities.

Methods used in the present study include a comparative, logical and systemic analysis of the document content and data, a survey based on historical data analysis, and mathematical testing.

1. The concept of structured security and its emergence preconditions

Structured finance represents one of the most recent techniques in finance industry and has established itself in different financial sectors, such as financial economics, financial mathematics, personal finance, corporate finance, intangible asset finance; furthermore, it has been increasingly affecting the entire financial system. Structured finance is a broad field whose definition and delimitation have been interpreted and comprehended with a good amount of ambiguity. The single material feature of this kind of securities is their ability to construct a range of structures containing combinations of different financial instruments and creating diversified linking patterns. These financial solutions generate a multitude of new securities that are commonly referred to as structured securities.

Several currently officially used definitions of structured securities can be distinguished on the basis of legal normative documents:

- according to Basel II[1], Capital Rules for Securitisation, structured securities are defined as securities that are designed using securitization instruments (replacement of a loan portfolio by securities) (Perraudin, 2006);
- according to the International Financial Reporting Standards, structured securities are defined as a combination of financial instruments generated by combining different derivatives including a range of asset classes (e.g., equities, commodities, loans, etc.);

[1] The draft Basel III regulations do not include changes in the definition of structured securities.

- according to the explanation produced by the Lithuanian Securities Commission; structured securities are synthetic investment products derived by combining conventional financial instruments and derivative products (Lithuanian Securities Commission, 2007).

The preconditions that facilitated the appearance of structured securities include the constantly increasing level of education and literacy, and complex needs of investors, increasing risk appetite and the demands from the business community to seek funding not only by means of conventional equity and debt securities, but also by alternative financial instruments. The roots for the appearance of structured securities are often associated with convertible bonds. The first convertible bonds were issued by American railway companies in the 19th century. At that time, this was an extremely rapidly growing sector of economy. Convertible bonds were viewed as a method to attract additional funds required for railway construction projects. A special feature of a convertible bond was its exchangeability into equities of the bond issuer. Similarly to regular bonds, convertible bonds were issued for a defined maturity with a fixed rate coupon and the right to exchange the bonds for a predefined number of shares. Such bonds had the features of debt and equity securities. A characteristic feature of debt securities is their enhanced security and stability, while equities are distinguished by their higher expected return rate. Convertible bonds were offered as a product combining both features (Hutchinson, Gallagher, 2004).

The outset of a series of more complex structured finance techniques should be related to the rise of the real property in the seventies of the American markets and in parallel the resident loan portfolio (Bernanke, 2007). The overall situation yielded several preconditions conducive to the appearance of structured financial products.

At first, it was a real wave of the borrowing. Trigged in the USA, the trend quickly affected the entire world whereby people started living on credit – purchasing housing, cars, any amenities and even luxury goods on borrowed moneys. Borrowers were entitled to repay the loans through an extended period of time, though with an interest. The longer the repayment term the higher interest was charged. Within the finance system, lending started becoming an extremely profitable occupation. This being quite obvious triggered a fast growth in the number of institutions selling loans (credits). Since the demand in crediting facilities was largely concentrated in relation to immovable property (hereinafter IP), this was naturally increasing the prices in the sector. The IP speculations that sprang provoked the further increase in IP prices and induced borrowing needed to acquire housing. The trend was largely inspired by the belief that the IP prices would continue growing and anybody would be able to sell the property any time later at an even higher price. The borrower risk assessment was becoming increasingly relaxed. Loans were granted even it being absolutely obvious that the recipient would not be able to repay it. This gave rise to the development of the subprime immovable property

market. The market itself created grounds for the emergence of new structured loan-backed products which were treated as backed by assets acquired on the basis of a loan and whose value was related to IP prices. A distinctive feature for the products was that the products were secured not by a single specific loan, but rather by a number of loans, or even more often by a loan portfolio composed of several loan products. This was employed as a facility to alleviate the risk inherent to new products, as any single or several bad loans in the portfolio would cause only insignificant, if any, harm to the product. Eventually this yielded a galaxy of structured securities backed by a range of different assets (*asset backed securities*) (Ackerman, 2007; Caselli, 2007; Cox, 2009, New York Times, 2007; Criado, Rixtel, 2008).

The second reason for the appearance of structured securities was trading in corporate risk. Corporate risk can be defined as a probability of the entity's bankruptcy, insolvency or decrease in its credit worthiness. The possibility to delineate the company's equity and its riskiness was another basis for the appearance and proliferation of structured financial products. Eventually the market witnessed the appearance of most diversified complex structured securities, for example, credit derivative contracts (Christie, 2007).

The third precondition is to be related to triggering by the new structured instruments of the investors to shift from conventional investment instruments (e.g., equities, bonds) to structured products. The new structures that were created merged into a single entirety of several financial instruments which added to a structured instrument some new, intriguing and attractive features. Structured instruments in terms of their return potential may several times exceed any conventional instruments since the new structure formed may carry an investment coefficient potentially adding to the fluctuations of a conventional investment instruments contained in the structure. The relevant financial instrument may yield to the investor a positive return both in case of an increase or decrease of the price of the underlying conventional instrument. An attractive feature of a structured product is its nominal value which is in all cases secured for the investor.

2. Types of structured securities

Structured finance provides for possibilities to merge different financial instruments linked in a huge variety of modes. The principal distinguishing feature of structured securities (hereinafter SS) is that they are not homogeneous. The composition of an SS includes at least two financial instruments that together produce a distinguished structure. The other characteristics of an SS are a secured principal or part thereof, a limited maturity, though these characteristics are not inherent to absolutely all structures. The diversity of structures offers both to institutional and private investors a wide choice of investment instruments tailored to their individual risk appetite and needs; therefore, SS are widely used for asset allocation for the purposes of portfolio diversification. This is the process of creating different structured securities that by their types may be categorised into four

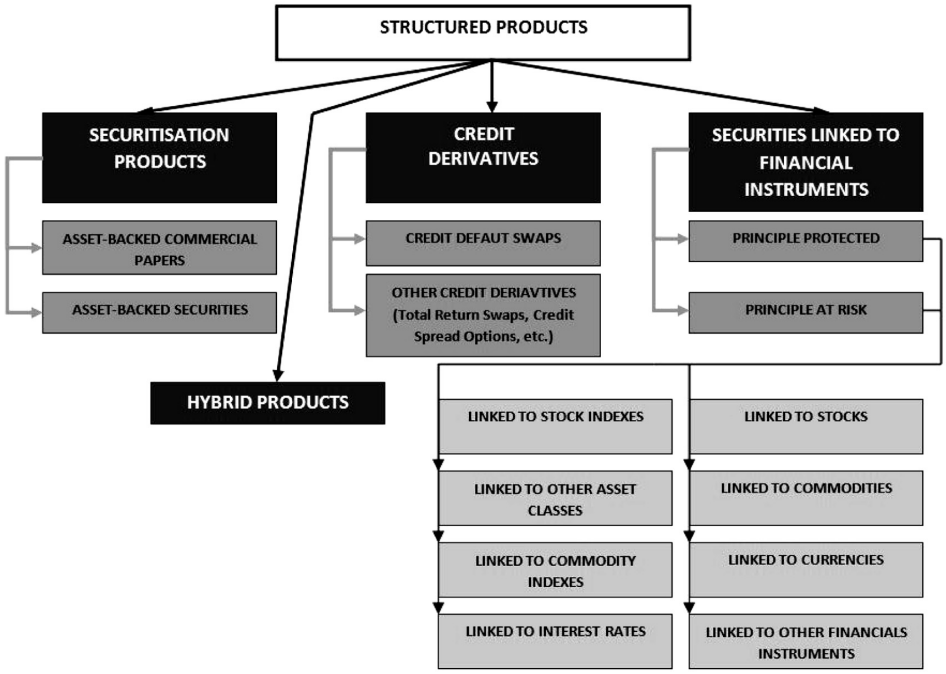

FIG. 1. **Types of structured securities**

Compiled by the authors on the basis of Jobst, Andreas A., What is Structured Finance Secutirization. net publications, www.securitization.net/pdf/StructuredFinance_20Oct05.pdf

different groups. As seen in Fig. 1, structured securities are classified into securitisation products, credit derivatives, hybrid products, and securities linked to financial instruments (Chomsisenghet, Pennington-Cross, 2006; Fabozzi, Anson, Davis, 2003; Jobst, 2005).

The essence of securitisation is the process of replacement of illiquid assets (different loans) by securities. The process enables creating different asset backed securities that are classified into asset backed commercial papers (ABCP) and asset backed securities (ABS). Securities of both types are constructed using the illiquid asset – loans. The difference between them, however, is that asset backed commercial papers are issued for shorter maturities – often for up to one year, while asset backed securities are issued for longer maturities, or they may be issued for undefined maturity. ABS can be distinguished into two main structured securities by type: mortgage-backed securities (MBS) and collateralized debt obligations (CDO). Both of these securities are formed in the process of securitisation. An essential difference between MBS and CDO is the underlying asset type. The underlying asset in the MBS structure is a pool of mortgages. The cash flows of MBS depend on the debtors' payments according to their liabilities. In the CDO structure, the underlying asset can be pooled of the other types of loans – credit card receivables, leases, student loans, etc. The underlying pool of assets in the CDO

structure can also consist of such instruments as government bonds, municipal bonds, corporate bonds, trade receivables, dealer floorplans, insurance premiums, etc. There are CDOs with the underlying of other CDOs – CDO backed by CDO. It is called CDO^2 (Jobst, 2005; Fabozzi, 2009).

The next class of structured securities is credit derivatives (CD). This class includes two major groups. One group of CDs includes credit derivative swaps only as specifically important derivative instruments in structured finance. The second group is considered to include all other credit derivative contracts (Community Reinvestment Act, 1995).

Another type of SS covers hybrids or hybrid securities. These securities are often found among all other structured securities as they carry certain features inherent to all other structured security types; however, specialists in structured finance distinguish hybrids as a separate type, as their structures generate exotic architectures by combining different characteristics of financial instruments. Combinations of most diversified financial instruments eventually yield the new features that are not inherent to other types of SS. The appearance of such securities was triggered by the desire to generate higher returns without assuming any additional risks and by the need to transfer the risk exposures (Bessis, 2002; Choudry, 2004).

Figure 1 distinguishes another type of SS. The last type of SS represents financial instrument-linked securities. These structures of SS are designed by using derivative financial instruments and debt securities. Ordinarily, the most frequently used types of derivative financial instruments are options, and in the case of debt securities these are

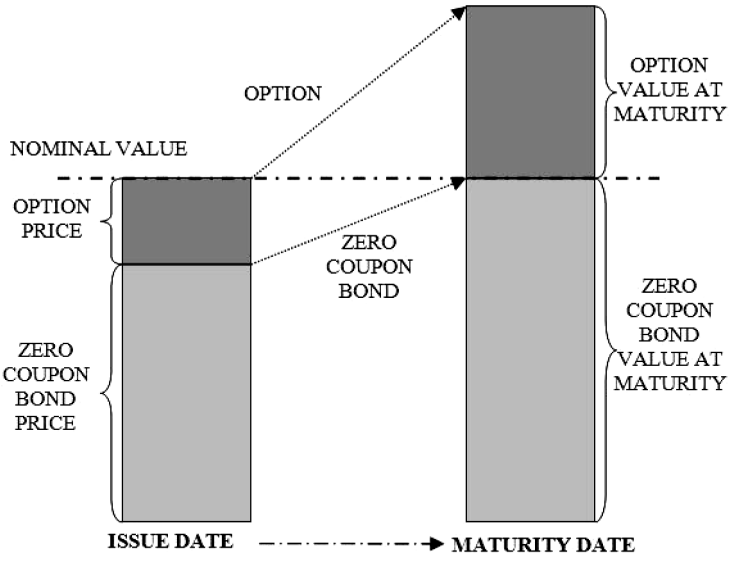

FIG. 2. **Example of the structure of a financial instrument-linked SS (principal protected)**

zero-coupon bonds. These SS are distinguished into two main groups: principle protected and principle at risk types (Crawford, Young, 2009; Jobst, 2007).

The SS of protected interest guarantees the nominal value of a security at the end of the investment period (maturity). In parallel, an investor is also provided a possibility to generate additional gain the amount whereof directly depends upon the change in the value of the linked financial instrument in the course of the predefined investment period. Figure 2 presents an example of a principle protected SS. The example shows the structure of the security at issue and at redemption.

In the example above, one of the instruments is an option. The latter may include equity, equity index, mixed, different asset class indices, products, commodities, currencies, interest rates and other financial instrument options. Figure 2 shows the scenario whereby an institution X issues SS the structure whereof consists of two components: a zero-coupon bond and an option granting the right to purchase in the future equities of the Y company. At the issue date, the price of the bond corresponded to its nominal value, for example, LTL 100. The price is equal to the discounted value of the zero-coupon bond at issue, for example, LTL 94. The remaining LTL 6 represent the price of the option contract. The guarantee is attached to the nominal value of the security – LTL 100. The validity term of the security is 3 years. Upon the expiry of three years, the securities are redeemed at their nominal value which is represented by the price of the zero-coupon bond plus the option contract value at maturity. Its value depends upon the change of the underlying position – the shares of the Y company in the three years' period. When the value of the shares has augmented by 10 percent, this will be considered the value of the option, and the amount from the principal shall be added to the nominal value. In this case, the security redemption price shall be LTL 110 (100 + 100 x 0.1). Where the price of the Y company in the course of three years declines, the value of the option contract at maturity would be equal to zero, and only the principal of the security would be secured. The principle of structuring the SS with principal at risk is similar to that of the SS with principal protected; however, in this case the investor receives no guarantee of recovery at maturity of the nominal value of the investment (Blumke, 2009).

3. Lithuanian market in structured securities

The structured securities constructed and issued in Lithuania can be assigned to the type of financial instrument-linked securities with principal protected (see Fig. 1). The underlying assets with which the securities are linked are often represented by a basket of equities or products, or their indices. In much less common cases, the underlying asset is selected to be composed of different class asset indices, currencies or other instruments.

In terms of their risk and return rate, structured securities distributed in Lithuania may be assigned after the category of conventional savings means – deposits and bonds.

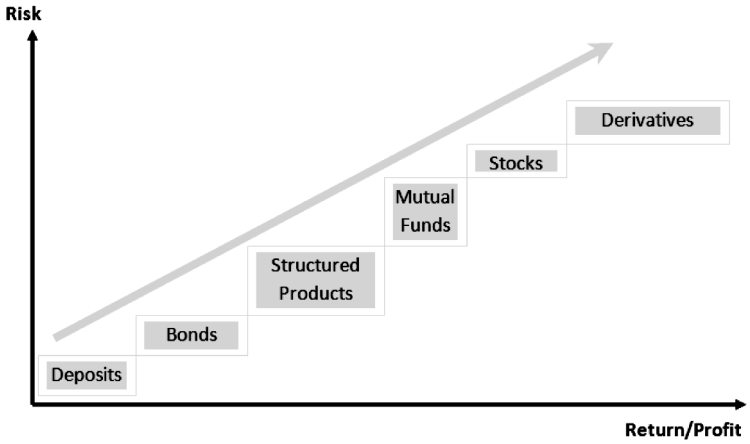

FIG. 3. **Comparison of the risk profile and return rate of structured bonds with other financial instruments**

As seen in Fig. 3, structured securities occupy a niche among the risk-free or low-risk saving and investment instruments, as well as among very high-risk investment instruments. SS is an instrument designed for the investors that tend to avoid risk and seek returns higher than those generated from deposits or conventional bonds.

In the Lithuanian market, structured securities are created and distributed by several credit institutions: AB SEB Bank (SEB), AB Swedbank (Swedbank), AB DnB NORD Bankas (DnBNord), A/S Danske Bank Lithuanian branch (Danske Bank), Nordea bank Finland PLC Lithuanian branch (Nordea), AB Bankas Snoras (Snoras), AB Ūkio bankas (Ūkio bank).

The Lithuanian market of securities offers financial instrument-linked securities of two major types – structured bonds and investment deposits. Actually, the principal difference between the two sub-types lies in the name only; however, when offering them to investors, financial institutions assign more intriguing marketing names to attract investors. The first structured securities in Lithuania were issued by SEB in December 2004 and were called "Equity-linked bonds" (hereainfter SASO) (SEB, 2010). Approximately a year later, such linked bonds, called "Pelno sertifikatai" ("Profit certificates") were also offered by DnBNord (DnBNord bank, 2010). The structured bonds issued by Danske Bank, Snoras and Ūkio bank were offered to the public without any specific names (Danske bank, 2010; Snoras, 2010; Ūkio bank, 2010). Seeking to distinguish itself in the market, Swedbank offered its structured securities as investment deposits (Swedbank, 2010). The Nordea bank in its offering included both investment deposits and structured bonds (Nordea, 2010). The latter two have two major differences. An investment deposit is insured by the mandatory deposit insurance and is attributed to deposits rather than to securities. Investment deposits, including those related to financial

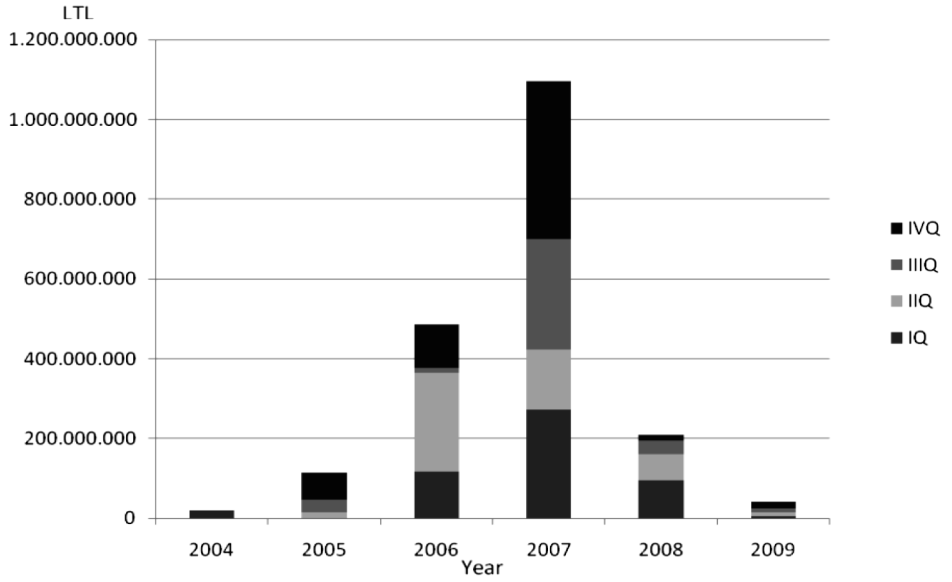

FIG. 4. **Volumes of issues of structured securities by nominal value in Lithuania, 2004–2009**

Compiled on the basis of data provided by the Lithuanian Central Securities Depository, http://www.csdl.lt/lt/index.php

structured, are accounted as part of the overall deposit pool and, in view of insufficient information available, they are excluded from the scope of our survey.

Figure 4 shows that in 2004, SEB bank was the first in Lithuania to issue structured securities of the nominal value of LTL 20 mill. In 2005, such securities were offered to the market by DnBNord bank, and the nominal value of SS issued by both banks then reached LTL 113 mill. During 2006, structured products in the Lithuanian market were expressly growing in popularity, where the nominal value of all SS issued accounted for LTL 0.5 bill., further reaching the record figures of LTL 1.1 bill. in 2007. Furthermore, the market was then joined by one more important player – the Danske bank. During 2008, in view of the global financial crisis, the number of issued SS decreased nearly five times and accounted for LTL 200 mill., however, in that year the Snoras bank also entered the structured securities market. The year 2009, marked by the overall economic decline, recorded the offerings of the SS of only LTL 40 mill. in value. Nordea started offering SS in Q I, 2008 and by the year 2010 recorded 32 issues of SS. The above issues fall outside the scope of the survey as the Nordea bank operates in Lithuania as a branch of the Finnish bank and does not provide the relevant data in the Lithuanian market.

According to the data provided by the Lithuanian Central Securities Depository until 2010, the SEB and DnBNord banks were holding the largest shares in the Lithuanian structured bond markets. Jointly, the banks had issued structured bonds for nearly LTL 2

bill., dividing the 98 percent of the total market into nearly equal shares. The remaining share of about LTL 25 mill. of the market was held by the Snoras and Danske banks.

4. Examples of return rates of Lithuanian structured bonds

The return rates of the most popular structured bonds – SASO – were quite diversified during the period concerned.

Figure 5 presents an example of one of the best performing SASO called SEB VB Kinija. The underlying asset of this particular SS was index FTSE/Xinhua China 25. The index mirrors the prices of 25 major companies in the Chinese market. In this respect, the market was offered two 3 years' maturity limited volume bond issues. Bonds of LTL 100 in nominal value with the participation coefficient of 59 percent were offered under the maximum issue limit of LTL 10 mill. LTL 110 worth bonds were subjected to the 139 percent participation coefficient and the maximum issue volume fixed at LTL 5 mill. The issue distribution period lasted 6 weeks – from 1 June 2005 to 13 July 2005. At issue, the bond price was subjected to a discount and, varied by issues, the bond acquisition price was increasing every day up to LTL 100 or LTL 110, with an acquisition fee of

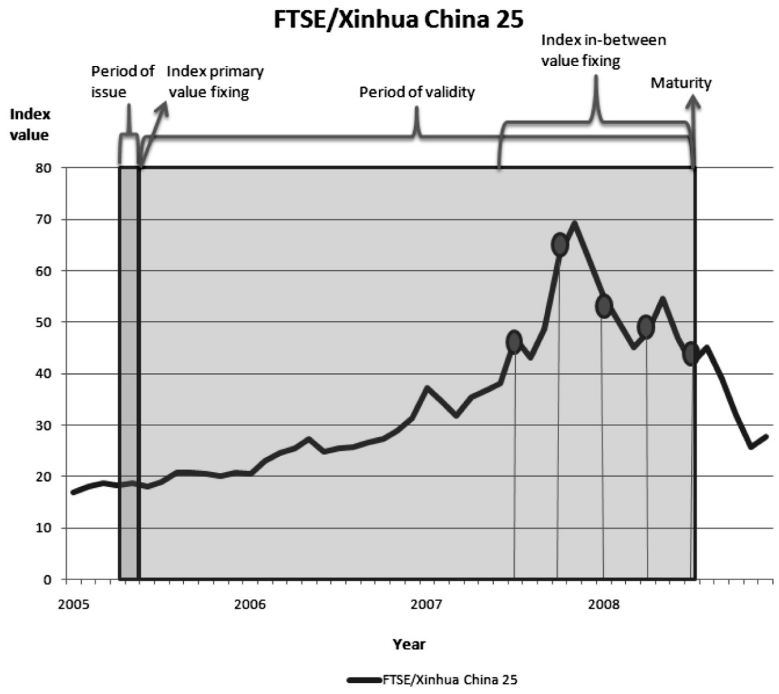

FIG. 5. **The best performing equity-linked bonds (SASO) issued by SEB bank**

Compiled on the basis of data provided by Bloomberg and the SEB bank website, www.bloomberg.com, www.seb.lt

1 percent from the nominal bond value. The bond effective date was 15 July 2005 when the initial index value was fixed. On that date, the initial index value was fixed at 19.2 point. The very structure of the bonds provided for five interim valuations every three months during the last years of bond maturity – on 15 July 2007, 15 January 2008, 15 April 2008, and 15 July 2008. Since the very bond effective date, the FTSE/Xinhua China 25 index started to immediately grow, and at the end of November 2007 it reached its peak value of 70 points. The value exceeded its original value by 265 percent. Then, from the highest point to the bond redemption date, the index value, though following a fluctuating pattern, started declining. The interim valuations recorded the following values: 47 (15-07-2007), 66 (15-10-2007), 53 (15-01-2008), 47 (15-04-2008), and 43 (15-07-2008). The arithmetic mean of the values was 52.2, which was by 166.7 percent on top of the initial value (SEB bank, 2010).

Thus, investors in the course of the 3 years' period from the first issue earned LTL 97.35 (LTL 100 × 166.7 × 59 percent – LTL 1), and from the second issue LTL 220.7 (LTL 100 × 166.7 × 139 percent – LTL 1 – LTL 10). This results in the annual return rate of the first issue of 32.45 percent, and 73.6 percent of the annual return in case of

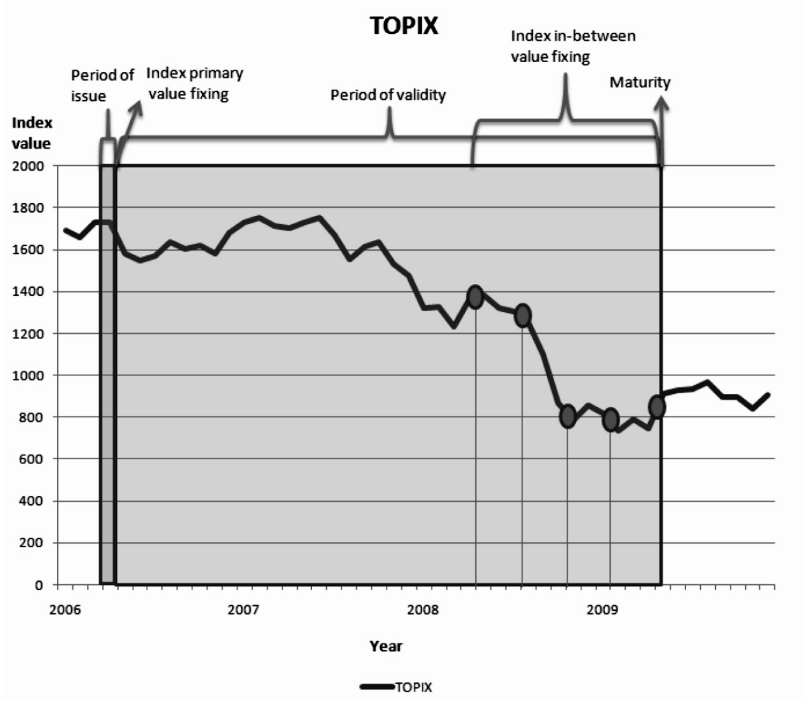

FIG. 6. **One of the worst performing SASO issued by SEB in respect of the value of the underlying asset**

Compiled on the basis of data provided by Bloomberg and the SEB bank website, www.bloomberg.com, www.seb.lt

the second issue. The first SASO issue SEB VB Kinija tripled the long-term return on equities (the average annual gain on top equity indices for a period longer than the last 50 years) that was recorded at 12 percent, while the second issue exceeded the number nearly 6 times (SEB bank, 2010).

Figure 6 presents an example of the change in value of one of the worst performing SASO titled SEB VB TOPIX. The underlying asset of these particular SS is the TOPIX index reflecting market prices of the major Japanese companies. In this case, the bank offered three 3 years' maturity issues at the acquisition prices of LTL 100, LTL 110 and LTL 115, nominal values LTL 100, and, respectively, participation coefficients of 90, 195 and 240 percent. The issue distribution period lasted nearly 5 weeks – from 23 March 206 to 27 April 2006. Similarly to all other issues, the bond acquisition price was subjected to a discount, and, depending on the issue chosen, the bond acquisition price was increasing on a daily basis to LTL 100, 110 and 115; each issue was subjected to an acquisition fee of 1 percent from the nominal value. The bond effective date was 27 April 2006 when the initial index value was fixed. On that date, the initial index value was fixed at 1729 points. The bond structure provided for five interim valuation dates every three months of the last of three years of the bond maturity – on 27 April 2008, 27 July 2008, 27 October 2008, 27 January 2009 and 27 May 2009. Immediately after the bond effective date, the TOPIX index started declining and recovered only by the end of 2006. During the first half 2007, the index value was fluctuating around the value of 1750 which represented the value just slightly higher than the initial one. Since mid 2007, the index value launched a rapid decline trend which was maintained up to the very end of the issue's maturity. The following interim values were recorded: 1331 (27-04-2008), 1295 (27-07-2008), 782 (27-10-2008), 805 (27-01-2009), 833 (27-04-2009). The arithmetic mean of the values was 1009.2, which was by 41.6 percent lower than the initial value (SEB bank, 2010).

In respect of all issues, in the three years' period investors recovered the nominal value of LTL 100 only; thus, they suffered a loss. The loss stemming from the first issue was represented by the commission fee, and the second issue yielded loss from the commission fee and the LTL 10 risk premium, in total about 10 percent (LTL 100 / (LTL 110 + LTL 1) – 1) × 100); the third issue yielded the commission fee and the LTL 15 risk premium, in total about 14 percent (LTL 100 / (LTL 115 + LTL 1) – 1) × 100). During the maturity of the issue, the bond price on the secondary market exceeded the nominal value by several percent only in the first half of 2007, while for the remaining time it stayed below the nominal value. The major factor that affected the decline in the index value was the global financial crisis that started in mid-2007. The recording of the interim values started only after the market prices had been heavily affected by the crisis. The last interim value was recorded at nearly the lowest level of the index throughout the entire term of validity of the issue. Following its lowest hit, the index value rapidly

leaped up. As a result, this equity-linked bond issue was one of the worst performers, as the major part of its validity coincided with one of the worst ever overall decline in the equity markets (SEB bank, 2010).

5. The Lithuanian structured bond secondary market

Lithuanian issuers of structured bonds maintain the liquidity of their issues within the bond maturity by establishing on a daily basis the bond redemption price on the secondary market. When establishing the bond price, issuers take into consideration all factors that may potentially affect the price of the bonds by the redemption date. A number of peculiarities of structured bond provide guidance for distinguishing the factors that affect the secondary market prices. The price is extensively affected by changes in the market, which in their turn have an impact upon the price of the underlying asset, changes in the interest rates, changes in currency rates or the issuer-related credit risk factors.

The changes in the market that affect the price of an option contract have been acknowledged to be the material factor affecting the price of a structured bond on the secondary market. The price of an option contract constituting part of the bond structure determines its participation coefficients and price fluctuations up to the redemption date. Options are priced according to the pricing model developed by the two Nobel Prize winners of 1973, Fischer Black and Myron Scholes, which was named after its inventors – the Black–Scholes model. Fischer Black and Myron Scholes developed the formula underlying the pricing of options (McMillan, 2002):

$$C_0 = S_0 N(d_1) - Xe^{-rT} N(d_2),$$

$$d_1 = \frac{[\ln\left(\frac{S_0}{X}\right) + \left(r + \frac{\sigma^2}{2}\right)T]}{\sigma\sqrt{T}},$$

$$d_2 = d_1 - \sigma\sqrt{T},$$

where: C_0 = value of call option,
S_0 = spot price of underlying asset,
N = cumulative distribution function of the standart normal distribution,
X = strike price,
r = continuously compounded domestic interest rate,
T = time to maturity of the option,
σ = volatility.

The larger the market volatility, i.e. the larger the fluctuation of the underlying asset price in time perspective, and the longer the maturity of the option contract, the more expensive is the contract.

Changes in interest rates affect the zero-coupon bond value until maturity. For example, when at the structured bond offering time the interest rate in respect of the offering currency is 5 percent, then within the bond maturity the interest rate falls below the 5 percent threshold, the zero bond appreciates, which means an increase in the value of the entire structured bond on the secondary market. And conversely, in the event the interest rates during the bond validity significantly exceed the threshold of 5 percent, the zero-coupon bond value declines and thus depresses the price of the entire structured bond on the secondary market.

The currency exchange rates are related to the structured bond distribution currency. Bonds are most ordinarily offered in litas, and the option contract contained in the bond structure is in all cases purchased in foreign currencies, most often in euro. The value of an option contract within the bond validity term until its execution is computed in euro; therefore, any changes in the euro–litas exchange rate would be immediately reflected in the bond price on the secondary market. In the event of devaluation of litas in respect of euro the price of litas-denominated bonds on the secondary market would increase, and any weakening of euro, would cause a decrease in the litas-denominated bonds on the secondary market.

The issuer credit risk is the risk related to the discharge of the obligations of the issuer of structured bonds, i.e. redemption of bonds at maturity. Credit institutions issuing structured bonds have assumed a number of other credit obligations. Any failure by the issuer to discharge, on a timely basis, its liabilities may significantly affect the price of structured bonds on the secondary market.

6. Adaptation of Lithuanian structured securities to the market and their future development trends

In the period from 2004 to 2010, structured securities in Lithuania in terms of their design structure remained nearly unchanged. The products actually maintained the same structure composed of a zero-coupon bond and the option contract. Essentially, it was only the features of the option part that have changed, which eventually added some different features to the bonds themselves.

The structure of the first-issue bonds by the SEB incorporated an option with the right to purchase in the future shares according to the equity indices from the stable and well-developed states (in equal shares: *S&P500, Dow Jones EURO STOXX 50, Nikkei 225*) for a pre-agreed price. Within that structure, the return rate depended on the rise of the equity-index prices. In the then market conditions, the participation coefficient was established at 70 percent. Potential investors viewed the offer as an attractive option due

to its potential to eliminate the equity price decline risk provided the investor is disbursed 70 percent of equity price gain. The entire limited volume issue was successfully distributed.

Right after the successful placement of the first issue, the market was overwhelmed with the feedback and comments on structured bonds and their exceptional qualities. Immediately after the placement of the first issue, the SEB in the course of a single month offered to the market another 5 new issues. Bonds again were linked to equity-indices. In respect of that particular issue, the target regions included some developing markets (India, China, Russia, Eastern and Central Europe) whose equity markets were relatively much cheaper than those of the well-developed regions. Also, for the first time ever, the market was offered issues with the risk premium that entitled to higher investment coefficients. Investors found it specifically attractive to invest into developing regions without subjecting the principal to any risk of loss. Investors were particularly favouring the possibility to invest a minor additional amount (5–10 percent) and obtain significantly higher participation coefficients. Therefore, all issues were successfully placed in the market.

Within one year from the first issue, the SEB bank has already placed nearly 20 issues of the total nominal value of nearly LTL 100 mill. Structured bonds firmly established themselves in the niche among deposits and investment funds. The niche was also sought by other banks. Thus, in the period from 2005 to 2010, another six banks launched structured product issues. In 2004–2008, among the most demanded issues of bonds were those linked to developing regions, specifically to China. The SEB bank alone, within the period concerned, in response to the market demand issued about 15 issues of structured bonds linked to the Chinese equity markets. Within that period, the market was also offered several issues related to the raw material asset class (in relation to the increase in the price of certain products). These issues were also highly demanded in view of the rapid increase in the prices of raw materials.

Nevertheless, financial difficulties and the fall in equity prices on the global scale, which started in 2007, reshaped the market demands in no time. In view of the augmenting price falls of different asset classes, the structured bonds the return rate whereof was dependent on the appreciation of certain underlying assets in the future were losing their popularity and eventually became completely unattractive. Right before the beginning of the global financial turmoil or immediately at its outset, the SEB bank issued several issues of equity-related bonds (*BNP Paribas Millenium 10 Europe Excess Return, UBS Comm-PASS Excess Return, Goldman Sachs DynaMO8 Excess Return, BNP Paribas Platinium EUR Excess Return),* the investment strategies whereof provided for the target of absolute return, i.e. through the use of derivative financial instruments and diversification of the portfolio by allocating to different asset class ensure gains both in view of declining or augmenting markets. Also, in view of the more vigorous fluctuations

of raw material prices and of currency rates, the Bank designed certain bond structures (issues were linked to EUR/USD exchange rates or the oil BRENT CRUDE FUTURE prices) with a possibility to generate returns both in view of an increase or decrease of the underlying asset prices, for example, in the range of fluctuations of 20–50 percent. However, under such scenario, upon reaching a certain limit the entire profit is lost, and only the nominal value of the bond is retained at the maturity date.

Issues better adapted to the market situation were successfully placed and distributed, however, at volumes much contracted as compared to the market rise periods. The data provided in Fig. 4 show a significant downfall in the volumes of structured bonds in 2008 and 2009. Starting from the late 2008, structured bond offerings by all Lithuanian banks were rather sluggish. This situation lasted until the second half of 2009 when the bond structures started offering new components able to better meet the changes of the market needs. The features of the new SASO include guaranteed high interests, possibility to invest in euro, and specifically high participation coefficients without paying additional risk premiums.

The possibility to include into the structures an extremely high interest made itself available in view of the increased interest rates in litas interbank lending facilities. Under that structure, at issue the price of a zero-coupon bond would become significantly lower, for instance, LTL 70. Having deduced the price from the nominal value of the structured bond of LTL 100, the major part of the remaining LTL 30 was used for the disbursement of interest. The balance could be used for the acquisition of option contracts. Next to high-interest rate bonds, the market was offered some interest-free bonds distinguished by high participation coefficients (up to 200–400 percent). In that case, the entire disposable funds were used to purchase option contracts. These structures also used options subjected to certain limitations (in terms of the change in the value of the underlying assets). Such contracts were cheaper, as the same funds could be used to purchase more options with restrictions than in the case of purchasing options free from any limitations. The employment of cheaper option contracts allowed using more of the disposable funds for the payment of interest, and part of the disposable funds could be used to purchase more options. As a result, investors could choose from three different bond issues – bonds with high interest rates, with higher participation coefficients, and those with a relatively high interest rates and relatively high participation coefficients.

At the end of 2009, issuers started offering bonds with certain even newer features. For that purpose, the basket was composed of 15 largest capitalisation companies from developing and emerging regions, such as BRIC (Brazil, Russia, India and China). The companies were equally weighted in the investment basket thus providing an advance guarantee that five of the best performing companies would account for a 30 percent appreciation in the basket value. This provided a surety to investors that as of bond redemption date, in any case at least 1/3 of the equity basket would have augmented by

30 percent. The gain was added to the percentage price change of the remaining entities in the basket, and the resulting arithmetic mean was included into the calculation of the bind return rate.

The examples presented above clearly demonstrate that the features of structured bonds in the future may change in response to the ongoing and pending market changes. With the situation in the market gradually improving, a return to market structures involving emerging equity markets might be expected, as those are still relatively cheaper and in a way more attractive due to such macroeconomic indicators as the GDP growth, public debt, budget deficit and others. With the current prevailing uncertainly concerning any further trends in the market, it is still most probable that issuers will be designing bonds containing in their structures financial instruments targeting absolute returns. It is also highly probable that the new structures will be involving larger numbers of innovations that under limited risk arrangements will enhance the guarantees for significantly higher, limited or unlimited, profits.

Conclusions

1. Structured securities are defined as non-homogenous financial instruments that appeared on the crossroad of the two principal aspects: 1) the need to meet the principal desire of any investor – to ensure higher return rates under lower risks; 2) search in the market for asset augmentation methods alternative to the traditional investment vehicles.
2. In terms of the structure design methods, structured securities are classified into four major groups: securitisation products, credit derivatives, hybrid products, and securities linked to financial instruments.
3. Such classification of structured securities into individual groups does not mean their complete delineation as completely different because securitization contracts and credit derivative contracts do have some common links. In hybrid structures, securities of different types and groups are combined to yield new structures.
4. In the Lithuanian markets, all kinds of structured securities in terms of their design methods are attributed to the group of securities linked to financial instruments. The most frequently designed structures include the principal protected security combining zero-coupon bonds and options. These financial instruments secure a loss limitation possibility and higher return rates.
5. In the Lithuanian market, structured bonds in terms of their probable risks and return rates, next to conventional saving and investment instruments, occupy an interim position among deposits, debt securities and equity funds.
6. In Lithuania, issuers of structured products are credit institutions. Since the very first issues of structured products in 2004, two banks – SEB and DnBNORD – steadily occupy the leading positions in the market in terms of the nominal values of the

securities issued. Issuers tend to attach to securities designed and issued thereby some special names, such as equity-linked bonds, investment deposits, etc. On the basis of the classification acknowledged in research, these investment instruments are conventionally referred to as structured bonds.

7. The analysis of the return rates of structured products offered in the Lithuanian market allows the conclusion that these securities may be less loss-making in view of the decreasing equity markets and prices of other asset classes; however, they may yield significant returns under a price increase scenario.
8. Structured bonds issued by Lithuanian issuers are maintained and supported in the secondary markets by their issuers. The secondary market price level is determined by the risks inherent to the zero-coupon bonds and option contracts.
9. The proven flexibility of Lithuanian structured bonds responding to the changing market conditions and investor needs give sufficient grounds to believe that the investment area represented by structured bonds and other financial instruments of the group will continue developing in Lithuania.

REFERENCES

Ackerman, R. (2007). MGIC by Abandon Radian, at: http://www.forbes.com/2007/08/10/mgic-investment-radian-markets-equity-cx_ra_0810markets10.html.

Bank of Lithuania, at: http://www.lb.lt.

Bernanke, B. S. (2007). GSE Portfolios, Systematic Risk, and Affordable Housing. Board of governors of Federal Reserve System, at: http://www.federalreserve.gov/newsevents/speech/Bernanke20070306a.htm.

Bessis, J. (2002). Risk Management in Banking. 2nd edition. New York: Wiley, 631 p., at: http://www.federalreserve.gov/newsevents/speech/Bernanke20070306a.htm.

Blumke, A. (2009). How to Invest in Structured Products. United Kingdom, John Wiley & Sons, 374 p.

BNP Paribas suspends funds because of subprime problems. (2007). New York Times, at: http://www.iht.com/articles/2007/08/09/business/09bnp.php.

Caselli, S., Gatti, S. (2007). Structured Finance: Techniques and Products. New Jersey, John Wiley & Sons, 206 p.

Central Securities Depository of Lithuania, at: http://www.csdl.lt.

Chomsisenghet, S., Pennington-Cross, A.. The Evolution of Subprime Mortgage Market. Federal Reserve Bank Of St. Louis, at: http://research.stlouisfed.org/publications/review/06/01/ChomPennCross.pdf.

Choudry, M. (2004). Corporate Bonds and Structured Financial Products. Butterworth-Heinemann, 416 p.

Christie, L. (2007). Homes:Big Drop In Speculation. CNNMoney.com, at: http://money.cnn.com/2007/04/30/real_estate/speculators_fleeing_housing_markets/index.htm.

Community Reinvestment Act. Federal Reserve Board, at: http://www.federalreserve.gov/dcca/cra/.

Cox, J. (2008). Financial Crisis Timeline. University of Iowa, at: http://www.uiowa.edu/ifdebook/timeline/timeline1.shtml

Crawford, P. J., Young, T. (2007). The end of the beginning. The Economist. August 25th-31th 2007.

Criado, S., Rixtel A. (2008). Structured Finance and The Financial Trumoil of 2007-2008. Document No.0808, Bank of Spain, at: www.bde.es/informes/be/ocasional/do0808e.pdf.

Danske bankas, at: http://www.danske.lt.

DnBNord bankas, at: http://www.dnbnord.lt.

Fabozzi, F. J. (2009). Bond Markets, Analysis and Strategies, 7th edition. United States, Pearson Education, 792 p.

Fabozzi, F. J.; Anson, M. J. P., Choudry, M. (2003). Credit Derivatives**:** Instruments, Applications and Pricing. New Jersey, John Wiley & Sons, 288 p.

Fabozzi, F. J., Davis, H.A.; Choudry, M. (2003). Introduction to Structured Finance. New Jersey, John Wiley & Sons, 400 p.

Hutchinson, M., Gallagher, L. (2004). Convertible bond arbitrage. Working paper, Dublin City University, at: http://www.efmaefm.org/efma2005/papers/114-hutchinson_paper.pdf.

Jobst, A.A. (2006). Asset securitisation as a risk management and funding tool. Managerial Finance. Volume 32, Issue 9. London, Barmarick Publications, pp. 731–760.

Jobst, A.A. (2005) What is structured finance. Securitization.net., at: http://www.securitization.net/pdf/Publications/StructuredFinance_20Oct05.pdf.

Lithuanian Securities Commission, at: http://www.vpk.lt.

McMillan, L.G. (2002). Options as a Strategic Investment. 4th edition. New York Institute of Finance, pp. 456–466.

Nordea bankas, at: http://www.nordea.lt.

Perraudin, W., Securitizations in Basel II. Risk Control Limited, at: http://www.riskcontrollimited.com/research_papers/Perraudin_ref6_2.pdf.

SEB bankas, at: http://www.seb.lt.

Snoro bankas, at: http://www.snoras.lt.

Swedbank, at: http://www.swedbank.lt.

Ūkio bankas, at: http://www.ukiobankas.lt