



**Univerzita Karlova v Praze
Fakulta sociálních věd**

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BAKALÁŘSKÁ PRÁCE

The Czech Bond Market – Still an Emerging One?

Vypracoval:

Vedoucí:

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Abstrakt:

Práce se zabývá českým trhem dluhopisů. Klade si otázku, zda jej zařadit mezi vyspělé trhy nebo stále ještě mezi trhy nerozvinuté. Práce přistupuje k tématu z různých pohledů. Vychází z historického vývoje, kde si všímá rozvoje obchodování s dluhopisy i přes nepříznivé výchozí podmínky. Dále jsou popsány základní instituce vstupující do regulace, legislativního rámce i do tržních mechanismů. Práce udává přehled obchodovaných a používaných instrumentů a v závěru popisuje trh pomocí měřitelných ukazatelů. Je sledován jak objem emitovaných dluhopisů tak objemy obchodů na burze. Autor srovnává veličiny se sousedními státy. Trh je dále popsán z hlediska délky doby do splatnosti emitovaných titulů, výskytu emisí v cizí měně a struktury emitentů. Sledovány jsou i údaje o výnosech a autor zjišťuje že se zásadně neliší od výnosů v ostatních státech Evropské Unie. V závěru práce autor konfrontuje získané poznatky s úvodní otázkou, tedy zda patří český trh dluhopisů mezi vyspělé trhy. Po zvážení faktů se přiklání k názoru, že jej lze zařadit již mezi vyspělé trhy.

Abstract:

The paper deals with the Czech bond market. It attempts to give the reader an insight into various market components and segments. The author starts with a brief description of the history, which started soon after the Velvet Revolution. The paper continues with a description of the involved institutions that set the rules, regulate and oversee the bond market. The market is also examined in order to give the reader a prospective on the issue of new securities and the mechanism of trading. Subsequently an up-to-date overview of available debt instruments is given. Lastly the market figures are analyzed and where possible compared with data from other countries. The market size is evaluated as well as the liquidity of trading on the stock exchange. The author also observes the structure of the issuers and the duration of issued debt securities. The paper further focuses on the spread analysis. It is found out that the yield is almost identical as in other developed European markets. At the end the author summarizes the findings and tries to answer the question whether the Czech bond market belongs to the developed or emerging markets. After confronting the facts, the author concludes that the Czech bond market is becoming a vital part of the European market and can be considered as a developed one.

Project of Bachelor Thesis

Term of the bachelor exam: summer semester 2004 / 2005
Author of the thesis: Tomáš Honěk
Leader of the thesis: Prof. Ing. Michal Mejstřík CSc.

Theme: The Czech Bond Market – Still an Emerging One?

Goal of the paper:

The thesis is going to analyze the Czech capital market, in particular the bond market. It is going to approach the topic from various viewpoints. It will try to describe the primary as well as the secondary market. The issue procedure and the variety of issuers will be covered as well. Consequently the thesis is going to analyze the market data. The author is going to examine the figures of market size, market structure, term-to-maturity as well as the yields. Also the yield curve and the spreads are going to be of particular interest. Lastly the author would try to find out whether or not is the Czech bond market still an emerging one.

Basic outline:

- Introduction
- Overview on the history and the past development
- Bond as an instrument of the capital market
- Issuers on the Czech bond market
- Legal setting and regulation
- Financial state of the market (size, variety, yield spreads, etc.)
- Conclusion

Main sources:

- Fabozzi, Frank J. (1997): HANDBOOK OF FIXED INCOME SECURITIES, 5TH ED.; *IRWIN, London*
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- Reilly K. Frank, Brown, C. Keith (2003): INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT, 7TH ED.; *South-Western, Mason.*
- Babel, Devid F., Santomero, Anthony M. (2001): FINANCIAL MARKETS, INSTRUMENTS, AND INSTITUTIONS; *McGraw-Hill, New York*
- Bloomberg
- Czech National Bank – www.cnb.cz
- Prague Stock Exchange – www.pse.cz

Signature of the thesis leader

Signature of the author

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1. Introduction

Economic magazines and newspapers regularly publish market and economic data of various countries. Some countries are listed in a section of *emerging markets*. The meaning of the definition is explained by Schemio (1999) in The International Encyclopedia of the Stock Market, which defines the *Emerging growth market* as follows:

... Emerging market countries are those countries experiencing or showing the potential for high economic growth, but frequently also exhibit substantial political, economic, and market-related risks.

Although many stock exchanges are actively working to create fair and orderly markets, they are often unable to eliminate such problems as insider trading, inadequate disclosure of corporate cross holdings, or undue political influence.

... Investing in emerging markets can be profitable but only if investors are prepared to add a proportion of long-term risk to their holdings.

If we try to look up some data from the Czech bond market in a recognized economic magazine or newspaper such as the well known The Economist¹, we really do not find it in the main section of “Economic and financial indicators”. The Czech Republic is finally found upon turning the page to “Emerging market indicators” section.

This paper will attempt to examine, whether the Czech bond market really belongs to this section. Cautious reader would remark, that it is the whole country which is listed in the section. It is true, but in order to analyze the complex system of a national economy, all the components have to be taken apart. The paper will try to analyze a single piece of the whole mosaic, the bond market.

The definition of the emerging market notes the risk from the lower economic and political stability. However, the Czech Republic has already entered the European Union and consequently is preparing to admit the euro as its legal currency. Both of it require

¹ The Economist, April 30th 2005

the acceding countries to modify its business, legal and financial environment according to the EU standard. The Czech Republic demonstrates a high level of convergence both in the legal environment and the economic indicators. Given the level of convergence to the EU and the progress made in order to be able to join the Eurozone, the economic and political environment seems more or less robust.

The definition also mentions an important trade-off between risk and revenue. It suggests that the extra portion of risk on the emerging markets is balanced with higher revenues. It is on the other hand hard to imagine a possible risk premium from holding the Czech bonds as the yields have recently been even below the levels of the German *Bunds*². A keen observer would certainly wonder how it is possible.

Having on mind such hints the thesis is going to analyze the Czech bond markets from various viewpoints. In chapter 2, the reader is provided with a brief insight into the history. Although efficient financial markets are not influenced by the past values, the history of the development will help us to understand some specifics. For instance the transition from a centrally-planned economy to a market-economy largely influenced the formation and shouldn't be neglected.

Chapter 3 is going to introduce the institutions involved with the financial markets. At first the supervision is described. It is followed by the description of the legal environment and the tax laws. In this section also the primary and secondary market as well as the clearing system is described in detail. The fourth chapter proceeds with various types of debt instruments available in the Czech Republic.

Chapter 5 analyzes the market data. In this chapter the matter of the risk premium over the other markets is illuminated. Apart from that also the market size, liquidity and maturity is dealt with. The chapter also analyzes the yield curves and compares them with other markets.

The final chapter summarizes the evidence. The thesis isn't necessarily going to give the reader a decisive answer whether the Czech bond market really belongs to emerging or developed markets, as the definition isn't an exact one. It is going to provide a background in order to help the reader to draw some conclusion her or himself.

² German government bond

2. Brief History Insight

Although the new history of the bond market has begun in 1993, the debt securities were certainly known for a long time before³. The bonds were issued already during the Austria-Hungary and Prague had its own stock exchange in the 19th century⁴. The tradition was followed after the First World War; the independent stock exchange was opened and the bond market flourished. Everything was interrupted by the Second World War. After the war, however, the stock exchange didn't even re-open. The Communist Party gained power in 1948 and the market-economy was abandoned for a long half-century.

The political turnover came in 1989; democratic regime prevailed and the preparation to reinstall the market economy begun. On January 1st 1993, Czechoslovakia split into two independent countries. And thus the new history of the Czech bond market started. In the same year the Prague Stock Exchange was created and first government bonds were issued.

From the first moments, the setting for the newly-born bond market was not exactly favorable. The highest priority was given to the stock market. The bond market was perceived rather as a side-effect of the capital market creation. The main reason was the voucher privatization⁵. In the beginning also the issue activity was quite small. The public debt was on a low level and thus the government, which is now the number one issuer, didn't have a reason to enter the capital market with a need for financing.

The initial disadvantage later disappeared and the number of listed securities evened up, which can be seen on Graph 2-1. The bond market became a source of public debt financing, as the deficits of public finance emerged. The number of listed equities was affected by the process of delisting. Many of the equity issues were removed from

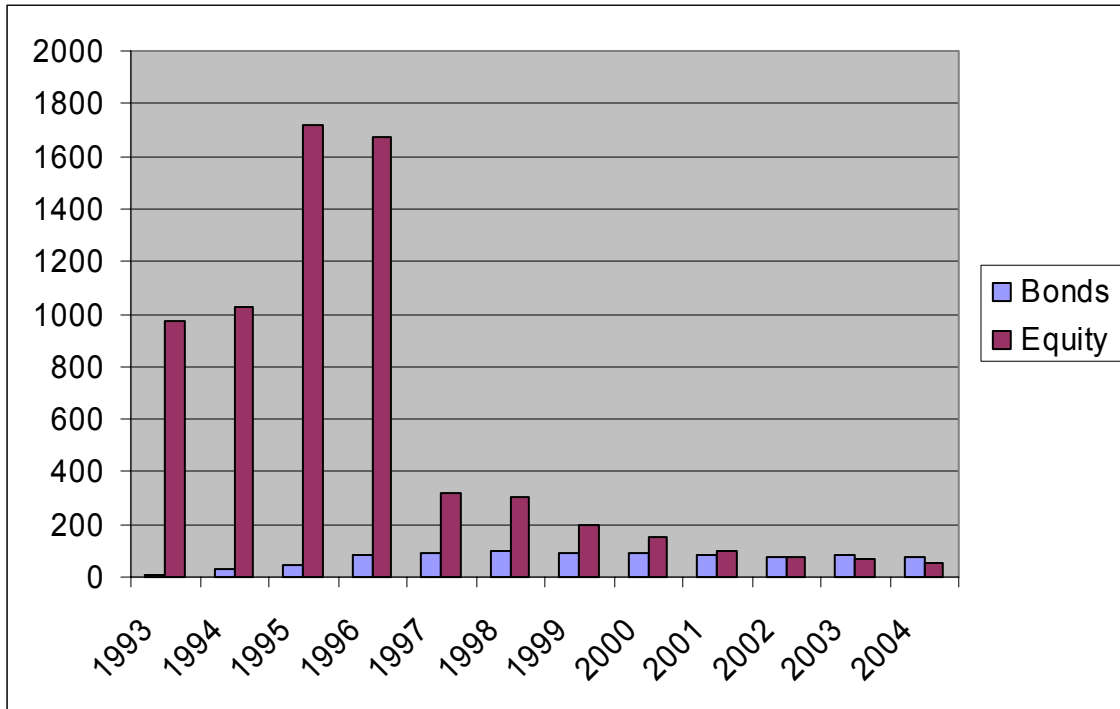
³ For further information about the history see Dvořáková (2003)

⁴ On March 23rd 1871 the Prague Stock and Commodity Exchange was created.

⁵ The voucher privatization (Kuponová privatizace) was chosen as the main method how to privatize the whole state-owned economy. There is a literature covering the topic, e.g. Mejstřík (1997)

trading either due to a low liquidity (or virtually no trading at all) or disappeared due to bankruptcy.

Graph 2-1: Number of listed securities on the PSE



Source: PSE, 2005

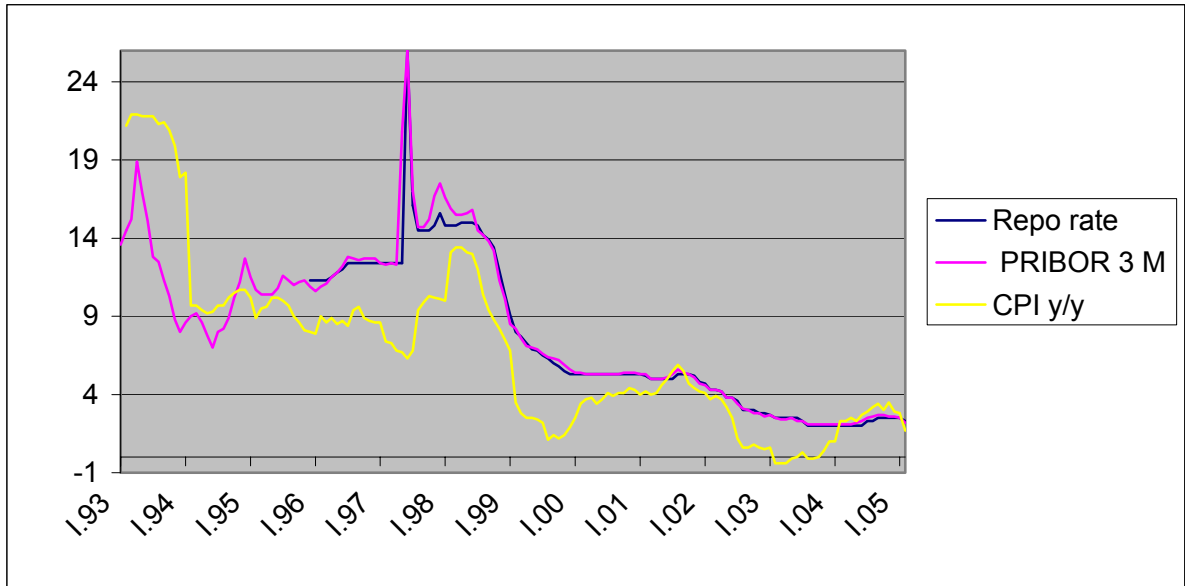
One of the early corporate issuers according to Dvořáková (2003) was the energetic firm ČEZ with its ČEZ 16.5% 98⁶ and ČEZ 14.375% 01. Among the first banks issuing debt securities was Komerční Banka (KB 23% 95).

Also the macroeconomic development and stabilization became more favorable to the bond market. The lower rate of inflation and its better predictability allowed for lower interest rates, more accurate pricing and consequently for more efficiency. The next graph shows the development of the consumer price index (CPI), the key Czech National Bank short term interest rate (monthly averages of the 14-day repo-rate) and the market short term interest rate (3M PRIBOR)⁷.

⁶ The bonds are commonly denoted by an abbreviation. The figure stands for the name of the issuer (ČEZ), followed by coupon rate (16.5 %) and the year of maturity (1998). The notation is used further in the text.

⁷ The 3M PRIBOR is an inter-bank lending rate with a term-to-maturity of 3 months.

Graph 2-2: Macroeconomic data: inflation (CPI; y/y), 14-day repo-rate and 3-month PRIBOR rate



Source: ČNB (2005), Bloomberg

The Czech Republic entered the EU on May 1st 2004. Not as a single action, but through the whole process of convergence towards the European Union it had a significant impact on the Czech bond market. The market experienced a yield convergence, legislative harmonization and attracted new investors as well as issuers. The European markets are getting more interconnected and thus investors diversify their portfolios and enter other than domestic markets as well.

Foreign companies and institutions finance their projects in the Czech Republic through the domestic market in order to raise local currency. The biggest foreign issuer is the European Investment Bank. It is worth noting that there are also Czech issuers offering bonds on the foreign markets. First of them was the capital city Prague which issued bonds worth 250 million USD in 1994. The first corporate issuer was ČEZ, which also became the first in the region to issue bonds denominated in foreign currency, as notes Dvořáková (2003). Lately even the Czech government offered foreign currency denominated bonds.

3. Institutions

3.1. Supervision

The institutional setting of a capital market is a crucial condition for its good function and positive development. The developed capital markets with the leading US market can profit from a long history and a long evolutionary (almost Darwinian) process of development. The Czech capital market does not have such an advantage. As was noted in the historical outline, the market economy was suppressed for a long half-century, as the communist regime took power. The institution of a free capital market was entirely abandoned.

After the fall of the communist regime, it was a great question and task, how to rebuild the functioning capital markets. There was a strong belief in the market self-regulatory and self-equilibrating processes. However, there is also a need for an official regulatory and legislative body.

There are three main institutions overseeing the Czech capital market, Czech Securities Commission, Ministry of Finance and the Czech National Bank. They have various rights and duties over the bond market as well.

The main regulation and prudential supervision lies on the **Czech Securities Commission**⁸ (Komise pro cenné papíry, SEC). It was created⁹ on April 1st 1998 as an independent supervisor of the capital market (before that the task was carried out by the Ministry of Finance).

The commission is led by a collective body, the presidium. It consists of the chairman and four members of the presidium. All five commissars are appointed by the President of the Republic upon the advice of the Government. They serve five-year terms and can be reelected only once.

To prevent the interference of interests, members of presidium are not simultaneously allowed to be members of the parliament or senate, judges, state prosecutors nor can they hold a function within a political party. Further they are

⁸ The following information is based on the SEC web-site, www.sec.cz (2005)

⁹ The Parliament of Czech Republic created the Czech Securities commission by the law no. 15/1998 Coll.

prohibited to perform any other earning activity, or to be bounded to a subject that the commission oversees and regulates.

The Commission has the main goals of:

- investor protection;
- transparency of the capital market;
- repression of the financial crime;
- preparing the Czech capital market for the integration to the European Union structures;
- investor education and training;
- support of issuance activity.

The Commission protects the investor by the information duty enforcement, identifies the risks of malfunction of statutory bodies and management and the risk of fraud. The Commission can not on the other hand prevent investors from losing money (as capital markets naturally involve some portion of investor's risk), thus the other goal is to educate the small investors about the potential risks of investment.

The transparency and further development of the market still needs an additional improvement. As a burden from the mass privatization the market is still too fragmented and has too many participants. In this field the Commission has to promote further consolidation. The consolidation is also necessary in the settlement and clearing system, which is treated in more detail further in the text. Last but not least the Commission has a right to approve the issue condition and the prospectus.

The Czech National Bank¹⁰ oversees the banking sector and thus constitutes an important particle of the regulation and development of the financial markets, as the banks are among the biggest players on the market. The issuers are also obliged to inform the CNB about the main characteristics of the issue. Those are the date of issue, place of issue, nominal amount, form of the security and its yield and maturity.

The Ministry of Finance¹¹ has not only legislative powers but also is a big player on the bond market. The Ministry prepares the state budget and takes care of the debt. It

¹⁰ www.cnb.cz (2005)

¹¹ www.mfcr.cz (2005)

issues through auction the government bonds that form the largest part of the primary as well as the secondary market.

It oversees and regulates the financial and capital market with the exception of the regulation granted to the Securities Commission. Among others has also the competence over the tax code and laws, protection of the foreign investment and is responsible also for the accounting and audit standards.

At the end also the market self-regulation should be mentioned, it is an important piece of the financial market institutional setting. The official regulation is certainly important as there is strong necessity for a functioning and efficient environment. However, from some point the regulation becomes restrictive in terms of efficiency. The market participants have a strong incentive to regulate themselves and thus not create a need for the official regulators to step in. The Securities Commission is also aware of this fact and mentions the self regulation promotion in its objectives: “The Commission also expects the market and its participants to assume a significant share in improving the reputation and market safety of the Czech Republic and themselves contribute through certain standards of reputable conduct (or best practice). In other words that the self-regulatory institutions should become an important element in regulatory activities in the Czech Republic.”¹²

¹² www.sec.cz, (2005)

3.2. Legislature

The tax code which sets the environment for the capital market and banking is relatively new. Of course there were such laws prior to the Second World War to which the lawmakers could refer to, but that time seemed already too remote. The laws were thus written in the 1990s. The main acts are¹³:

Securities Act no. 591/1992 Coll.,

The act defines the main aspects of securities. Further it sets the rules for the exchange and trading.

Act no. 256/2004 Coll. on Undertaking on the Capital Market

States what the stock exchange is and defines the organization. It clarifies the trading activity, issuance and enlisting of securities, information disclosure, price quoting and clearing and settlement.

Act no. 190/2004 Coll. on Bonds

The act specifies the aspects of bonds, their types, issuance and repayment.

Act no. 189/2004 Coll. on Collective Investment

The act defines the investment company and the open investment fund and further sets the rules for investor protection, opening and closing of the investment fund.

Securities Commission Act no. 15/1998 Coll.

Creates the Czech Securities Commission and specifies its duties, rights, organizational structure and funding.

Recently substantial changes to the law code were brought about by the *Undertaking on the Capital Market Act*. This law summarized and partly replaced the *Securities Act* and the *Stock Exchange Act*. The overview is provided by the Box 3-1.

¹³ English translations are according to Securities Commission web pages, www.sec.cz (2005)

Box 3-1: Entrepreneurial activity act¹⁴

The main elements of Entrepreneurial activity on the capital market act:

- The act contains new treatment of the protection against the abuse of secret and internal information by the *insiders* in trading with investment tools on the capital markets of EU member states.
- Insiders may not use the knowledge of such information to gain profit on the capital markets for them or other person.
- Every issuer of publicly traded securities is obliged to keep a list of all persons having access to secret information. Upon request, the list has to be shown to the securities commission.
- Persons involved in decision making of the issuer have to inform about all own transactions with the securities of the issuer. These transactions can be found on the SEC web pages.
- Information duty to report all suspicious trades lies upon all market participants

3.3. Tax Code

One of the important institutional settings which vary from country to country is the tax duty levied on bonds. It constitutes part of the transaction costs of investment on the financial market. The setting can thus attract new investors or, in the bad scenario, cause them to leave and seek better return on their investment in other country. Important is not only the absolute tax rate, but also the structure and stability. An environment of not transparent and difficult to understand tax code can be prohibitive as well. Frequent changes of the system are not favorable either.

¹⁴ Comstock (2005)

3.3.1. Cash flow analysis

Before proceeding further with the taxing, it will be beneficial to have analyze the basic types of cash flow from the fixed income securities¹⁵.

Let us present three situations:

1. plain-vanilla bond bought at par value;
2. zero-coupon bond bought at discount;
3. plain-vanilla bond bought with premium.¹⁶

These three situations are depicted in detail in the following table:

Table 3-1 Bond cash flow

market value	nominal value	coupon rate	frequency of coupon payments	settlement date	maturity date	YTM	modified duration
100	100	5%	1	1/1/2000	1/1/2005	5.00%	4.33
78.35	100	0%	1	1/1/2000	1/1/2005	5.00%	4.76
121.65	100	10%	1	1/1/2000	1/1/2005	5.00%	4.05

source: own calculation

As we can see from the table, we assume three bonds with the same maturity of 5 years. For the simplicity, the bonds (their prices and coupons) are constructed in a way to yield¹⁷ identically 5 % p.a. However, although these bonds yield the same interest, the cash flows vary dramatically.

In the first case, there is a plain-vanilla bond with a coupon rate of 5 %. The bond is bought at the initial price (principal price, or alternatively market price) of 100¹⁸. The nominal value (also called face-value) of the bond which is repaid at the time of maturity 5 years later is also 100. Thus the bond is bought at par value, without any premium or

¹⁵ For more thorough treatment see e.g. Brown and Reilly (2003)

¹⁶ Plain vanilla bond yields periodically a fixed coupon payments whereas the zero-coupon bond doesn't have coupons at all. For more information about fixed income securities see i.e. Fabozzi (1997)

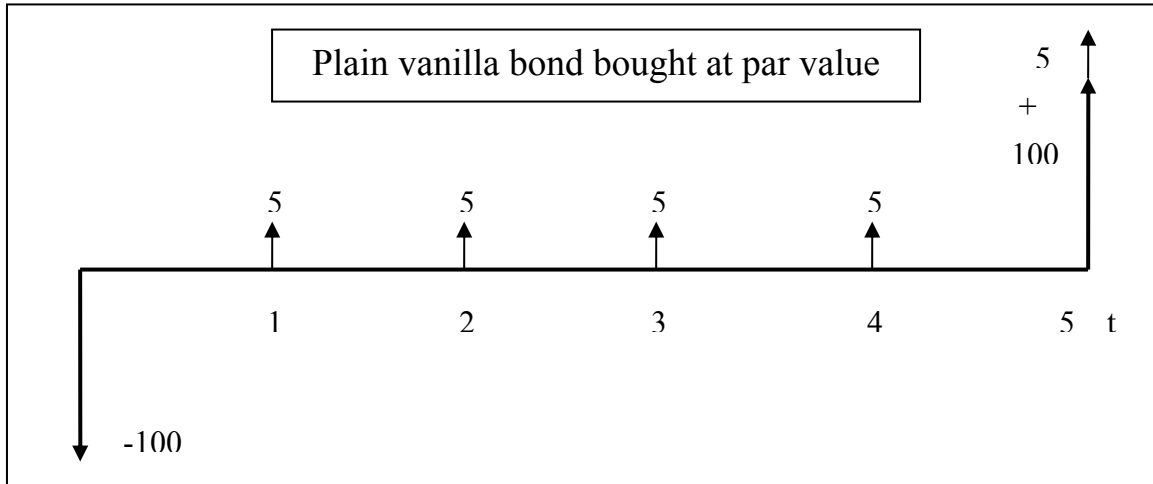
¹⁷ For the calculation of the yield to maturity the following formula is used:

$$PV = \sum_{i=1}^n \frac{CF_i}{(1 + YTM)^i}$$

¹⁸ The numbers in this section are more like units and are chosen in a convenient form with the main value being 100. For this reason, it is also easy to treat the figures as percentages.

discount. Under such condition the yield to maturity equals the coupon rate. The coupon is paid annually. For clarity, the cash flow is depicted in the diagram bellow:

Picture 3-1: Plain-vanilla bond cash flow 1



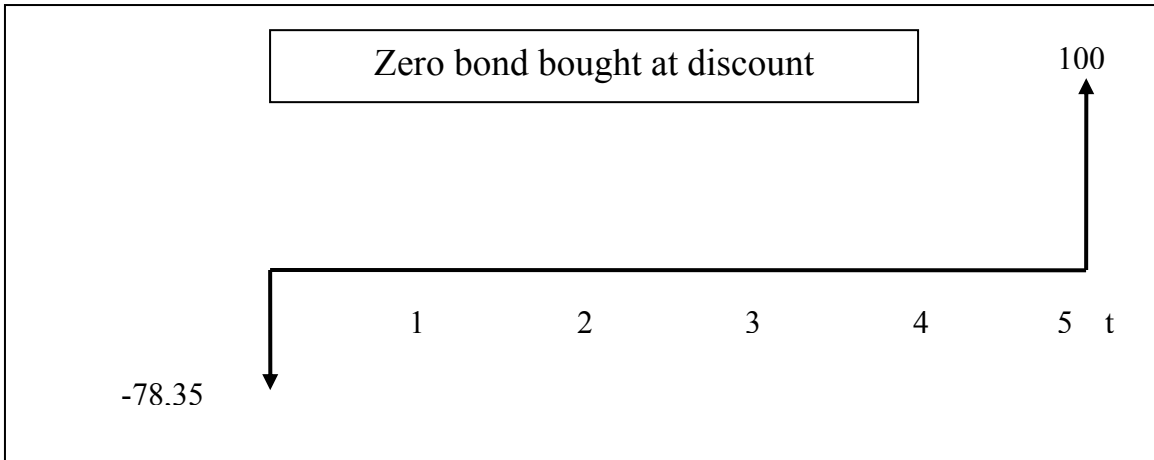
The security yields 5 each year (which is in fact 5 % from the nominal value of 100). The cash flows are:

- -100 in the time $t = 0$, which is the amount paid for the security (market value);
- 5 every year, coupon payments;
- 100 at the time of maturity, which is the nominal value returned to the investor.

In the second case (Figure 3-2), there is another type of bond, a zero-coupon bond. Such security doesn't yield any coupon payments. On contrary it is sold at a discounted value, in the above case assumed at 78.35. The number was not chosen randomly, because also this bond yields-to-maturity 5 %. It is identical with the previously described plain-vanilla bond, but with a completely different cash flow scheme:

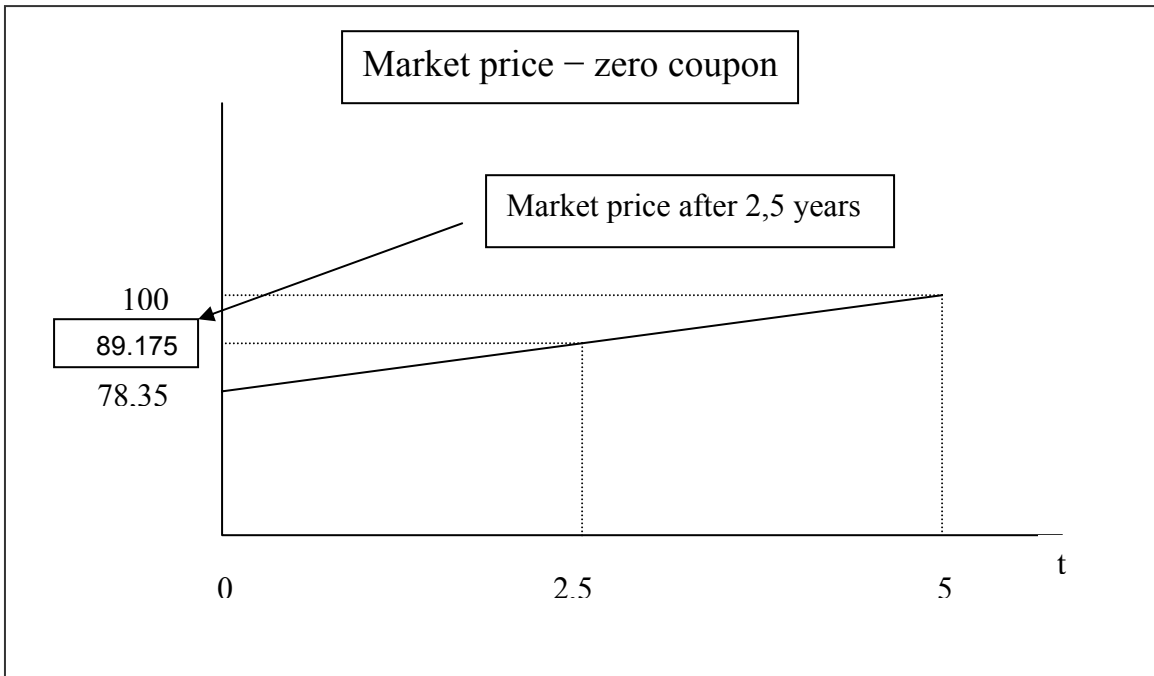
- -78.35 is the amount paid for the security in time $t = 0$. It constitutes of -100, the nominal value plus the discount of 21.65 which rewards the debtor for his investment.
- 100 is received at the end, it is the nominal value.

Picture 3-2: Zero bond cash flow



The Figure 3-3 provides a hint on how the interest is realized¹⁹.

Picture 3-3: Market price development



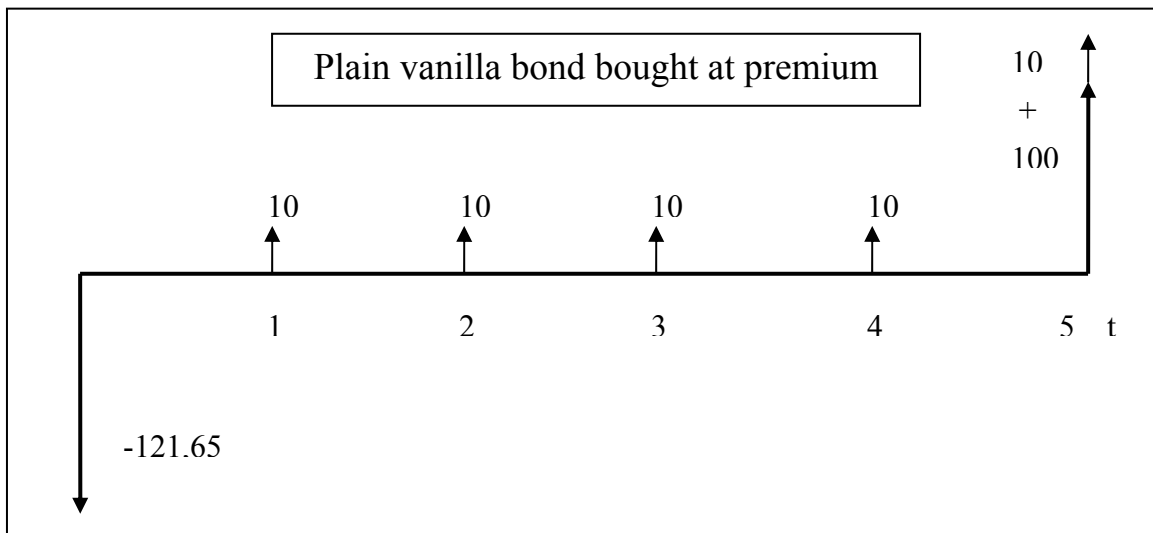
As the bond ages closer to the maturity, its price rises and converges gradually to its face value. At the time of maturity, it equals the nominal value, at which it is repaid. The picture shows that after 2.5 years the bond is worth 89.175 which is more than its

¹⁹ The depreciation of the discount is illustrated according to a simple linear model. In reality the depreciation is “covered” by the market price changes, which are less smooth due to other market forces.

initial price. It is caused by the decrease in the discount. If the bond is sold, the gain realized would be a reward for the investor for holding it (in fact for lending money to the bond issuer) for the period.

The last situation is a plain vanilla bond bought at a premium. As the reader can see, the bond has a coupon rate of 10 %, but its YTM is “only” 5 %. It is caused exactly by the premium at which it is sold. Situation of this kind happens in the real world quite often, or rather almost always with the coupon bonds. For the reason of an upward sloping yield curve, a 10-year bond yields more than a 5-year bond. Thus we can imagine the situation which is depicted on Figure 3-4 as follows. Originally a 10-year bond with a 10% coupon rate was sold at par value. At the time of the issue it yielded 10%. Then, five years later, the bond was sold. Due to the market situation, the prevailing interest rate on 5-year bonds (of similar characteristics as risk, etc.) was only 5 %. Thus the same bond with a coupon rate of 10% was sold at 121.65 and the outcome is an YTM of 5%.

Picture 3-4: Plain-vanilla bond cash flow 2



The cash flows from such transactions are somewhat, but not entirely similar to the first situation. There is one important difference:

- -121.65 is the market value paid for the security;
- 10 are the coupon payments each year;
- 100 is the face value repaid at the maturity.

Unlike in the first case, there is the premium which has to be amortized throughout the holding period. It is exactly an inverse situation in comparison to the

second case. From an accounting point the depreciation constitutes a cash flow each year. Thus the bond holder at the end of the first year doesn't have a cash flow of 10 (the coupon). He has to further subtract the proportional amount of the premium which is being amortized.

The same rule but with a different sign is applied to the case of the zero bond as well. The holder does not receive a null cash flow throughout the holding period, as it seemed from the picture. From the accounting standards he has a cash flow that equals the proportional part of the discount for that period of time.

3.3.2. Taxing bond revenues in the Czech Republic²⁰

There are differences in the treatment of bond revenues according to the bondholder. If the bond is bought and a gain is realized by a company, then it is treated according to *the corporate income tax*²¹. All revenues from holding, buying and selling securities are subject to the income tax (revenues from the capital possession). It means that the coupon payment during the holding period is taxed as well as the capital gain. From an accounting point we have to divide the cash flows into three categories:

- coupon payment;
- capital gain;
- amortization, if the bond is bought with premium or discount.

Being aware of the cash flow structure mentioned in the section above, it is possible to match these categories with the appropriate cash flows. The coupon payments all go into the revenues as does the capital gain. Then there is the adjustment of this figure for the amortization. If the security was purchased at premium, then the figure is lowered by the appropriate part of the amortized premium, so the premium at the end (time of maturity) converges to zero. If the bond is bought at discount, the same procedure is applied to the discount value. In the tax accounting there is a special stand-alone tax base, which takes in the capital gain revenues. All the cash flows from bonds are treated within this tax base, as are for example dividends, bank account interests, etc.

²⁰ The following section is based upon Láčová, Vančurová, Vítková (2002) and www.sec.cz (2005).

²¹ The Czech tax code is set by the law no. 586/1992 Coll.

Even though the zero coupon bond does not generate any payment throughout its life, it does for the accounting purposes. It is not surprising, that this cash flow is the amortized discount that goes into revenues.

There is one exception for the mortgage backed securities. Those securities are not taxed, as the government is trying to support the housing development (by lowering the costs of mortgages).

If instead we assume that it is a private person, that bought the securities, then we have to apply *the personal income tax*. However, for an individual investor is rather unusual to invest in bonds as they are. The bond market is more an institutional game, as the bonds have a large nominal values, etc. Individuals then can buy shares of an investment fund focused on the bond or money market. There is an incentive for those, who decide to invest rather than to speculate. The entire capital gain from holding shares of an investment fund is exempt from income tax, if the shares are held for a period longer than six months.

Most funds automatically reinvest their earnings and the investor participates on the growth in the form of growing share price. If on the other hand the fund decides to give the investors a revenue payment, it is taxed in the same way as for example the interest from a current account in a normal commercial bank.

For simplicity the Czech law sets, that persons should be taxed at the source of the capital gain (so called *withholding tax*). The reason for such practice is the fact that the capital gain consists of many small incomes. A single person can have monthly interest payments from several current accounts, coupon payments and dividends from many securities held. To avoid accounting errors the revenue is taxed by the payer and the person doesn't have to take care of it anymore.

4. Bond Market Structure

4.1. Primary Market

The “life” of a security begins on the *primary market*, which is the first part of the bond market. The most important securities in the term of the amount issued are the Czech government bonds. They are entirely issued through auction. The Czech Ministry of Finance publishes regularly the issuance calendar, where it announces the dates of auctions, the amount of issue and the expected coupon rate.

The auction is organized by the CNB. Not everybody can take part in the auction directly. Only so called *primary dealers* (see Box 4-1) are allowed to place their bids. Those are large financial institutions, which are then obliged to make a secondary market for the securities at all times (they have to quote prices and trade at these prices). The auction has two rounds. In the first round, called the *competitive*, the securities are sold to the parties according to the bid offered. The CNB satisfies the bids according to the price. The highest bids are served first and the auction is cut off in a pre-specified amount sold. Some amount to be issued is left for the second round, called *noncompetitive*. In this round the securities are sold at average price from the first round.

The corporate issuers and financial institutions usually pick a manager of the issue, which either organizes an auction or buys the bonds in the own book and sells them to other smaller investors on his own.

Box 4-1: Primary dealers

Participants of the primary auction of Czech government bonds:

- ABN AMRO N.V., Prague subsidiary
- Citibank, a.s.
- Česká spořitelna a.s.
- Československá obchodní banka, a.s.
- Deutsche Bank AG, Prague subsidiary
- Dresdner Bank AG
- HVB Bank Czech Republic, a.s.
- ING Bank N.V.
- Komerční banka, a.s.
- PPF banka a.s.

Source: CNB, 24. 2. 2005

4.2. Secondary Market

On the secondary market the already existing securities are traded. A functioning secondary capital market is a vital part of the whole economy as well. On a liquid secondary bond market, the long-term interest rates are determined.

The trade takes place through an organized public market which is in the case of Czech Republic the Prague Stock Exchange (PSE) and the RM-System (RMS). PSE is a regulated stock exchange based on the *member principle*, where only the stock exchange members are allowed to trade. The general public can place their orders through brokers. On the opposite, the RMS is an open platform, where everybody can have access (the turnover of bonds on RMS is anyhow minimal). The PSE lists on its three markets 79 bonds²². The three markets are:

- Main market;
- Secondary market;
- Free market.

²² www.pse.cz, April 24th 2005

The difference in the market segments of PSE lies in the requirements levied on the issuer. On the main market are traded securities of large companies with a substantially long history. The companies have also quite strict informational duties. On the secondary and free markets the conditions are looser.

The trading does not have to always take place on the organized market. On the bond market, such trading is quite common. Unlike equity, the bonds are held from a large part by big institutions for which it is sometimes convenient to trade directly among them. We refer to such transactions as *over-the-counter* or OTC market.

The ECB (2004, p. 21) observes that: “In reality, the vast majority of all transactions in long-term debt securities are ‘block trades’, i.e. OTC trades in which at least one party is a member of the PSE and which is registered (for settlement) in PSE’s trading system.” It estimates the volume to be 110 % of that carried out through the PSE.

4.3. Clearing and Settlement

When a trade is made on the primary or the secondary market, there has to be a transfer of the underlying security in exchange for money between the trade participants. For the market to be efficient, transparent and secure the so called clearing and settlement system has to be available. Necessary is also an institution that keeps records of the securities. The main parties involved in the clearing, settlement and registration are:

- Univyc, a.s.;
- Prague Securities Centre.

Every security has to be registered in the Prague Securities Centre, which serves as a central register and depository. All trades and security transfers have to be cleared with PSC, however it does not offer the possibility of a simultaneous cash clearance. For this reason the settlement itself is carried out separately, which has its transaction costs. The securities holders have to pay a fee for the services of the PSC as well as the fees connected with the settlement carried out by a special agency.

Major part of all settlements is carried out through Univyc, a corporation owned by the PSE. Univyc provides a safe settlement platform. The settlement itself consists of two transactions:

- transfer of money;
- transfer of securities.

If both of these transactions are carried out simultaneously we refer to it as *delivery-versus-payment*. There are also transactions called *delivery-free-of-payment*. In such case there occurs only securities transfer within Univyc and the cash clearance is carried out by other subject.

The money transfer is realized through the clearance system of the Czech National Bank by debiting and crediting the accounts of involved parties. The transaction is more straight-forward if the customer is a subject with the banking license. Such company has its own clearance account opened in the CNB. His account is then used directly for the transaction. In case the customer is not a bank, it doesn't have a clearance account in the CNB. In such case the transaction is done through an account of some commercial bank. Such bank becomes then a so called *clearing bank* for the customer and their relation is contractual.

In the same moment as the cash transfer also the underlying security is transferred. Although most of the bonds traded are in the registered form, even the certificated bonds²³ can be settled within the system. The registered papers are kept in a depository. Univyc keeps track of such papers on auxiliary owner accounts and on the settlement date makes the transaction within these accounts.

As it was mentioned above the ultimate track of all securities is held by the PSC, thus Univyc also brings about the change of owners in the PSC registry.

4.3.1. Settlement of stock exchange transactions through Univyc, a.s.

The settlement mechanism of stock exchange transactions differs according to the type of transaction as the PSE differentiates between various types of trading. All PSE transactions are realized only in the system *delivery-versus-payment*.

All trades in the *SPAD trading system*²⁴ are irrevocable and are guaranteed by the Guarantee Fund. They are carried out normally in time $S=T+3$ ²⁵. The settlement takes

²³ The company MERO has a certificated bond MERO 10.4% 11 which is deposited at Česká Spořitelna.

²⁴ SPAD is a trading platform of the PSE. It is the most important market sector and amounts for the highest liquidity and turnover. More on www.pse.cz.

place three days after the contract realization. Upon the agreement of both sides the settlement can occur within the time span of T+1 to T+15. If one of the sides fails to fulfill the contract, Univyc waits 3 days, cancels the settlement and then realizes a substitute trade. In such case the possible price difference is covered by the party which defaulted on the previous contract.

Similar mechanism is assumed for the *automated trading*. As before, the settlement takes place in time $S=T+3$. If one of involved parties fails to provide the securities or fails to pay for the purchase, Univyc steps in as the default party and provides the missing securities from the guarantee fund for the automated trading. Then it refills the fund and charges the defaulting party.

Block trades are settled on a date set by the involved parties. Such trades are not guaranteed by Univyc. If one of the parties defaults on the agreement the trade is stopped or postponed.

With the progressing integration of the financial markets the competition is also getting tougher in the field of the services provided around the capital markets. The SCP and UNIVYC have no longer a monopolistic position after the introduction of the Eurobonds. Even Czech companies can nowadays issue their bonds outside the Czech Republic. There are many bonds denominated in CZK which are registered abroad, for example the bonds of the European Investment Bank and other financial institutions²⁶. Trade with such bonds is thus cleared with the Clearstream or Euroclear. These agencies have the major advantage, that they provide the clearing platform as well as they can serve as depository, which has a direct impact on the efficiency and costs. The UNIVYC is currently applying for the license of a central depository in order to provide both functions simultaneously.

²⁵ In the notation “T” stands for the time of trade and “S” for the time of transaction settlement.

²⁶ As of May 20th 2005 Bloomberg finds 82 CZK denominated bonds that are not traded in Prague. ABN AMRO Bank for example issued its floater AAB Float 08 which is traded in Luxembourg and settled through Clearstream.

To conclude the chapter, let us quote Dvořáková (2002, p.60), who suggests the possible future development of the institutions as well as the services provided:

“The new EU members including the Czech Republic have the bond markets relatively small in comparison to the more developed countries. Such predestinates them to rather adopt the institutional and legal settings used on the developed markets.”

5. Bond Market Securities²⁷

A developed bond market should embrace a wide range of different securities in order to serve all possible market participants. Issuers should have a room to find a funding for their activities, and issue debt securities which serve their demands the best. An efficient market should allocate in the most effective way the resources from the surplus units (the investors) to the deficit units (debtors, bond issuers). The investors should on the other hand have a wide range of debt products which match their desired cash flow, risk and revenue demands. A bond market, which offers such a variety of debt instruments, can have a good prospective of a further development and growth.

The range of different instruments available is not the single condition of a successful future development, but it can certainly provide the observer with a useful information about the state of the market.

5.1. Issuer

One of the most important characteristic of a bond is its origin, or rather the issuer. There are three large groups of issuers that raise capital on the bond market. Fabozzi (1997) mentions three distinct types of issuers:

- national government and governmental agencies
- municipal governments
- corporate issuers

In the Czech bond market the most prominent issuer is the central government. The central government issues bonds in order to finance the public debt. The authority

²⁷ In the section the following sources are used: Fabozzi (1997), Patria Finance (1999), Bloomberg data, PSE web-site (2005).

designated to manage the debt and to raise funds is the Czech Ministry of Finance. It issues the bonds in the cooperation with the Czech National Bank. There are also agencies created by the government which issue bonds backed by its full faith, for example Česká konsolidační agentura, which is an institution that served the government during the economic transformation.

The municipal governments are in the Czech market represented mostly by cities, which also issue bonds to finance larger development projects. Apart the large cities like Prague or Brno, also smaller municipalities can be found on the market. The selection is quite wide. Čáslav issued for example a variable rate bond and the north bohemian Liberec a bond with a call provision. There are trustworthy as well as more risky issuers on the municipal bond market. Rokytnice nad Jizerou issued bonds worth CZK 120 million in 1994, but later defaulted on its debts.

The corporate issuers are often divided into the corporate issuers and financial institutions. Further in the text such division will be held. There are various representatives of the corporate sector in the Czech market. Among the big ones is the energy producing company ČEZ or the car maker Škoda. Financial institutions are also quite actively issuing debt securities to raise funds in order to serve their clients. On the market the major Czech banks as Komerční Banka or ČSOB can be found.

Box 5-1: Types of bond issuers

Bonds according to the issuer:

National government:

The Czech government issues long term bonds according to the issue calendar. As an example serves the bond with the longest term-to-maturity, the CZGB 4.6% 18. The bond has an annually paid coupon of 4.6 % and was issued in the nominal amount of CZK 47 billion in August 2003.

Government agency:

Česká konsolidační agentura issued four bonds of which one of them was a floater. The KONBAN float 05 was issued with the nominal amount of CZK 10 billion in 2002 and the time of maturity is in 2005. The coupon is fixed to the PRIBOR rate + 9 b.p. spread.

Municipality:

The capital Prague issued its PRAGUE 6.85% 11 in May 2001. It is a bond denominated in CZK which was issued in the nominal value of 2 billion. Prague has a A- S&P rating (www.standardandpoors.com, 2005) and the bond has a 19.4 b.p. spread over the A rated comparable Czech government bond (Bloomberg, April 20th 2005).

Corporate issuer:

The car maker Škoda Auto issued its floating rate bond SKOAUT Float 10 in 2002. The bond matures in 2010 and its coupon rate equals the PRIBOR rate plus a spread of 22 b.p. The bond is traded on the PSE, but the transactions are settled through Euroclear and Clearstream.

Financial institution:

The Czech branch of the ING bank issued on the PSE its INTNED 4.5 19. The bond was issued in 1999, has a nominal value of CZK 2 billion and matures in 2019.

5.2. Maturity

A bond is an obligation of a borrower to repay the debt on a certain date, on maturity. The term-to-maturity tells us in most of the times, when the nominal value is

going to be repaid. The maturity date is present in the code name of the bond. CZGB 6.95% 16 for example tells us, that the Czech government bond will be repaid in the 2016.

Even when the bond is not called back earlier and repaid, the bonds differ in the length of the term-to-maturity. In the most developed markets, as in the US or UK, bonds with a very long term-to-maturity can be found. The extreme is the so called perpetuity which is a bond with an infinite holding period. The face value of such bond is never going to be repaid and the bond yields the coupon payments infinitely to its bearer. However, there is no such bond available in the Czech Republic. Also the maturities are shorter with the longest in 2028 of the European Investment Bank's EIB 0% 28, which was a private placement. It is not traded on the market, but rather held to maturity. The commonly traded long bonds are the Czech government bonds CZGB 4.6% 18 denominated in CZK and the Czech Eurobond CZECH 4¼% 20 denominated in euro.

5.3. Coupon

There is a wide range of securities with differing agreements on the interest payments. Also the progress in the financial sector brought about new types of securities. Most commonly a bond yields to the bearer interest in the form of coupons. On the Czech bond market the coupons are paid most often annually. Of course there are some exceptions and for example some bonds of Komerční Banka pay the coupons semi-annually.

There are also the zero-coupon bonds, which do not pay coupons at all. Such bonds are sold at a discount and at the time of maturity the bearer is compensated for the holding period by a payment of the nominal value, which is larger than the original market price.

Apart from the original zero-coupon bonds there are also the so called *strips*, which are in principal zero coupons as well. The origin is different though. Sometimes it is convenient for the bond holder to split the cash flows from a bond by dividing it to separate coupons and principal payment. Such business is called bond stripping and is done mostly by large banks which then offer the new instruments to their customers. Commonly the strips are further modified and combined with derivative securities. Such

modifications are however not sold on an organized market such as the PSE, but through OTC markets or as a private placement.

In the US there is a substantial market with the government bond strips with its own yield curve²⁸. There is also a market for the government bond strips in the Czech Republic, but they are mostly traded through OTC transactions. There are two types of strips, coupon strips and principal strips. However, they differ only in the origin but not in the properties.

There are also several modifications to the coupon payments. Quite popular in the US have recently been the so called *step-up bonds*, where the coupon payments alter throughout the time according to an agreed schedule. The coupon could hypothetically start on 3 % and it could step-up every period by 50 basis points. Such bonds often possess a call provision. These securities are also available in the Czech market through international banks, but are not commonly available to the general public on the stock exchange. Rather they are placed only in large amounts to institutional investors²⁹.

Another quite frequently seen instrument is the *floating-rate bond*. So called floaters lack a fixed coupon rate and pay a variable rate instead. The rate is most of the time fixed to some reference rate plus a spread over this value. These bonds can be further divided into the *variable-rate* and *adjustable-rate* bonds. They differ in the frequency of re-fixing to the reference value. The variable-rate bonds are adjusted more than once a year and usually have a short term rate as the reference value (e.g. PRIBOR 3M). The adjustable-rate bonds are reset less than once a year and usually use a long-term rate as for example a government benchmark bond. Even fixing to a non-financial index (e.g. commodity index) is possible, but similar specialties are to be found in the US.

²⁸ The strip yield curve differs a bit from the coupon bond curve, as the strip yield curve consists solely from zero bonds. The strip curve is usually above the normal one, because the strips have a greater duration and thus on average the bond holder requires a higher liquidity premium. For illustration see Table 3-1, where the modified duration of a plain-vanilla and zero-coupon bond is calculated. For further reference see e.g. Fabozzi (1997).

²⁹ There is the CZK-denominated EIB 2.97% 08, issued by the EIB, which has a call option in 2006 and a coupon rate which steps up to 4.55% if not called.

There are more floaters on the Czech market, for example the Škoda Auto described in the Box 5-1. On the other hand, the variable rate note is the annually adjusted CEZCO Var 14 of the electricity producing company ČEZ.

Most frequently the yield of the bond rises along with the reference rate. It is however not true for the instruments called *inverse floaters*. These bonds have also a reference value, but its rate is inversely related.

There are also the *range-rate bonds*. The coupon rate is equal to the reference rate, as long as the value fluctuates within a certain range. If the rate is outside of the range on the reset date, the coupon payment is zero. Possible are also various modifications and combinations of the above mentioned bonds. Thanks to the financial market development and to the presence of large banks, even complicated structures can be purchased on the Czech market, although they are not traded on the PSE. Basically the OTC markets are quite demand-driven and can offer almost any desired security.

A complete sector of the market deals with the so called *high-yield bonds*, which are also known as *junk bonds*. Those are debt securities of an issuer with a high credit risk. The bigger possibility of default is mirrored in a low rating (in a speculative grade) or with a nonexistent rating (mostly the case of smaller or less known companies). The higher portion of risk associated with such security has to be compensated with a higher yield, therefore high yield bonds. This sector of the bond market is not significantly represented in the Czech Republic.

To give an example of a bond that would be possibly considered a junk bond at the time of issue, we may pick the Unipetrol's UNIPCP 12.53% 13, because the oil refining company Unipetrol doesn't have a rating³⁰ (as many other local companies don't). Although the bond is listed on the PSE, the liquidity is so low that there is no reasonable price³¹.

³⁰ Bloomberg (2005)

³¹ As of 20.4.2005 there is no price information on Bloomberg and on the www.pse.cz, there is a price of 66 indicated. This price would however result in a YTM over 22 %, which is rather questionable.

5.4. Call and Refunding Provisions

It was previously noted, that the term to maturity doesn't have to always be the actual date on when the bond is repaid. The security can have a built-in provision that allows the issuer to retire the security earlier. Such provision is known as a *call option*. The call option allows the issuer to call back the bonds and repay them prior to the date of maturity. The option is usually exercised on an agreed date (which is set in the security prospectus) and the issuer has to pay a certain premium to the bond holder. There are plenty of bonds with the call option on the Czech market. In 1996 ČEZ issued the CEZCO 11 $\frac{1}{16}$ % 08, which is a plain vanilla bond with two call options. In case the options are not exercised, the bond matures in June 2008. On the other hand there is a possibility that the market conditions change and it is better for the issuer to call the bonds back and refinance the debt at a lower rate. In that case ČEZ can call the bonds in on two dates. The call price (also set in the prospectus) is higher than the nominal price, in order to compensate the investor for the inconvenience.

Apart from the call option there is the *sinking fund* provision, which functions in a similar way as the call option. In this case the issuer is obliged to retire bonds according to a predefined schedule. In the US the sinking fund is commonly used by municipalities. The convenience comes from the possibility of a gradual repayment, which is favorable for instance for financing a large project such as road or bridge building. The facility can bring periodic revenue³² that is used to amortize the debt throughout the period. There aren't however any such bonds in the Czech Republic.

On the Czech bond market one can neither find the special features as put options or warrants that are known in the US. The put option allows the bond holder to redeem the security prior to the maturity. The warrant gives the bond holder the possibility to exchange his security for a common stock of the issuer. On the border between common stock and debt securities is the *preferred stock*³³. Although it is an interesting instrument, it hasn't been issued so far in the Czech Republic.

³² e.g. the toll in the case of bridge or road

³³ The owner of a preferred stock is entitled to dividend in the way as a holder of a common stock, but the dividends have a fixed income form (they are set in a certain proportion to the face value). On the other

5.5. Mortgage-Backed and Asset-Backed Securities

The *mortgage-backed* and *asset-backed* securities are a special type of debt instruments. They can be more secure than the normal sovereign debt (or even subordinated debt) securities, which are backed by the full faith of the issuer³⁴. These types of security have a collateral backing in case of default.

Fabozzi (1997, p. 14) describes a mortgage backed-security as “...an instrument, whose cash-flow depends on the cash flow of an underlying pool of mortgages.” The bond originates on the mortgage retail market. A mortgage bank provides their customers with loans. To provide these loans, it has a need for funding. The individual mortgages are collected together in order to form a broader pool. The pool of mortgages has more favorable properties in terms of risk and size than the single ones. The risk of default is effectively diversified and the size of the debt is large enough to enter the bond market. At this point the bank issues the mortgage-backed securities against this pool. The cash-flows from the mortgages pay for the interests and at the same time serve as a collateral.

The mortgages experienced recently a consumer boom in the Czech Republic and the banks took advantage of such possibility of funding. On the PSE there are over 20 so called “Hypoteční zástavní listy”³⁵ listed and traded. They are issued by the large banks, such as Komerční Banka, Česká Spořitelna, ČSOB, Reiffeisen, etc. Komerční Banka has for example its HZL_KB 4.5% 08. The bond issued in the nominal amount of CZK 4.8 billion, yields annually 4.5% coupon payments and matures in August 2008.

hand the holder doesn't have voting rights as the common share holders do (in some arrangements the voting rights may be granted in case the company fails to pay the dividend).

³⁴ On the other hand a government default is a rather unusual occurrence and thus the debt credit risk depends largely on the issuer as well as the subordination.

³⁵ Czech translation of mortgage-backed security, therefore the ticker HZL.

6. Current Financial State of the Market³⁶

6.1. Market Size

There are various aspects how to judge the market size. One of them is the significance in the national economy. The bond market can be seen as an integral part of the national capital market. Interestingly enough, in the perception of the public the bond market seems to always be of a smaller importance than the stock market. The stock market is the one that is always talked about and where “the big money” is. It is though not entirely justified, because the bond market forms a backbone of a functioning market economy. It is an important source of corporate funding, source of government financing and of course a relatively secure investment for a wide range of market players (such as pension funds as well).

In the Czech Republic the bond market was seriously neglected throughout the 1990s. The whole decade was devoted to the transformation of the centrally-planned economy into the market-driven system. It was decided to privatize a major stake of state-owned industry by the voucher privatization. This was a great start for the stock market. The bond market lagged in the activity partly also for the reason of a low level of the government debt. This situation changed throughout the years and now the bond market is a dominant part of the Czech capital market. In 2003 the volume of trades with bonds was almost five times bigger than with equity. The volumes of trade were more balanced in 2004, partly perhaps due to the very fast growing stock market³⁷. Graph 6-6 in section 6.4 compares the volumes of trade with bonds and equity. The bond market also caught up in terms of the amount of listed securities, as was seen in Graph 2-1 in the History insight.

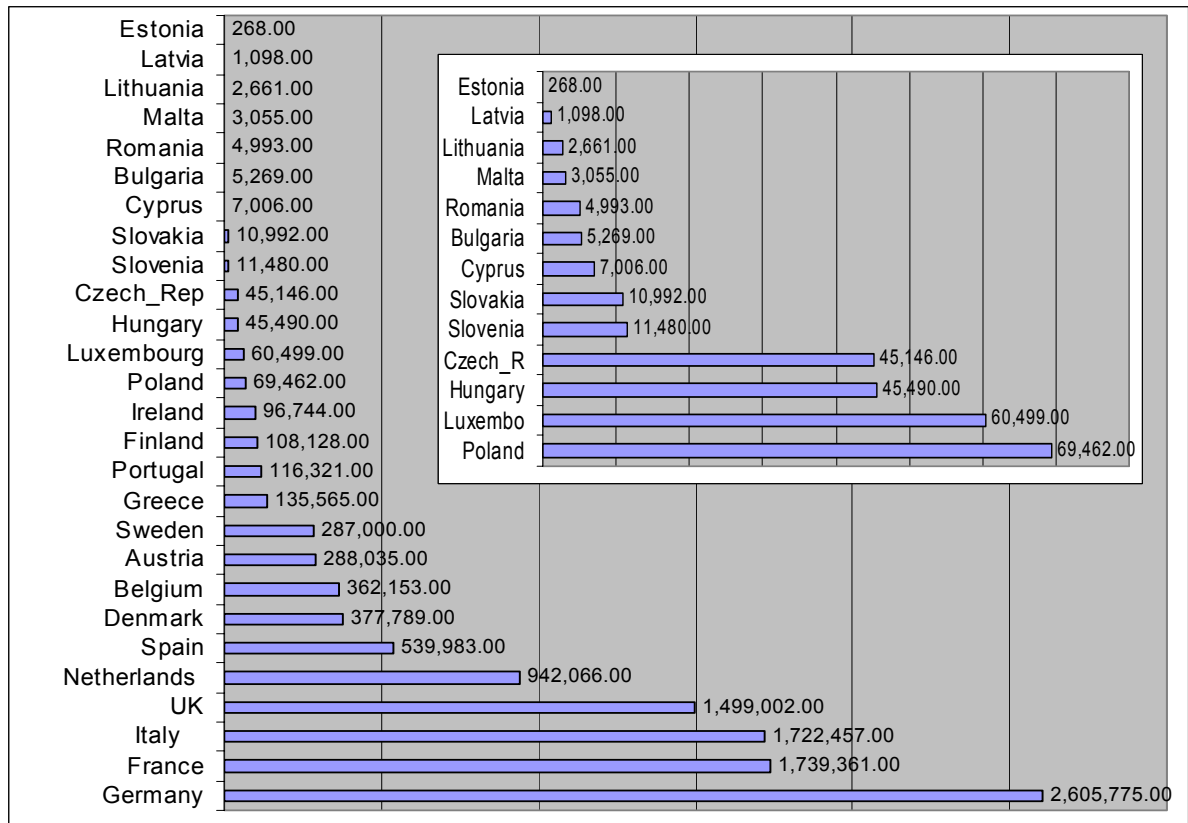
Other way how to judge the market size is the international comparison. The Czech Republic entered the EU and is also aspiring to adopt the euro by the end of the

³⁶ The data cited in Chapter 6 are based upon ECB (2004) and BIS (2005)

³⁷ The main index of the PSE, the PX50 grew in 2004 from 659.1 to 1032 (PSE, 2005), which is a rather significant 56.58% growth.

decade. Therefore the implicit benchmark for comparison of the market size is the European Union and its member states.

Graph 6-1: Debt securities in EU Member States and accession countries (amounts outstanding at the end of December 2003; € millions, nominal value)



Source: ECB long-term interest rate statistics.

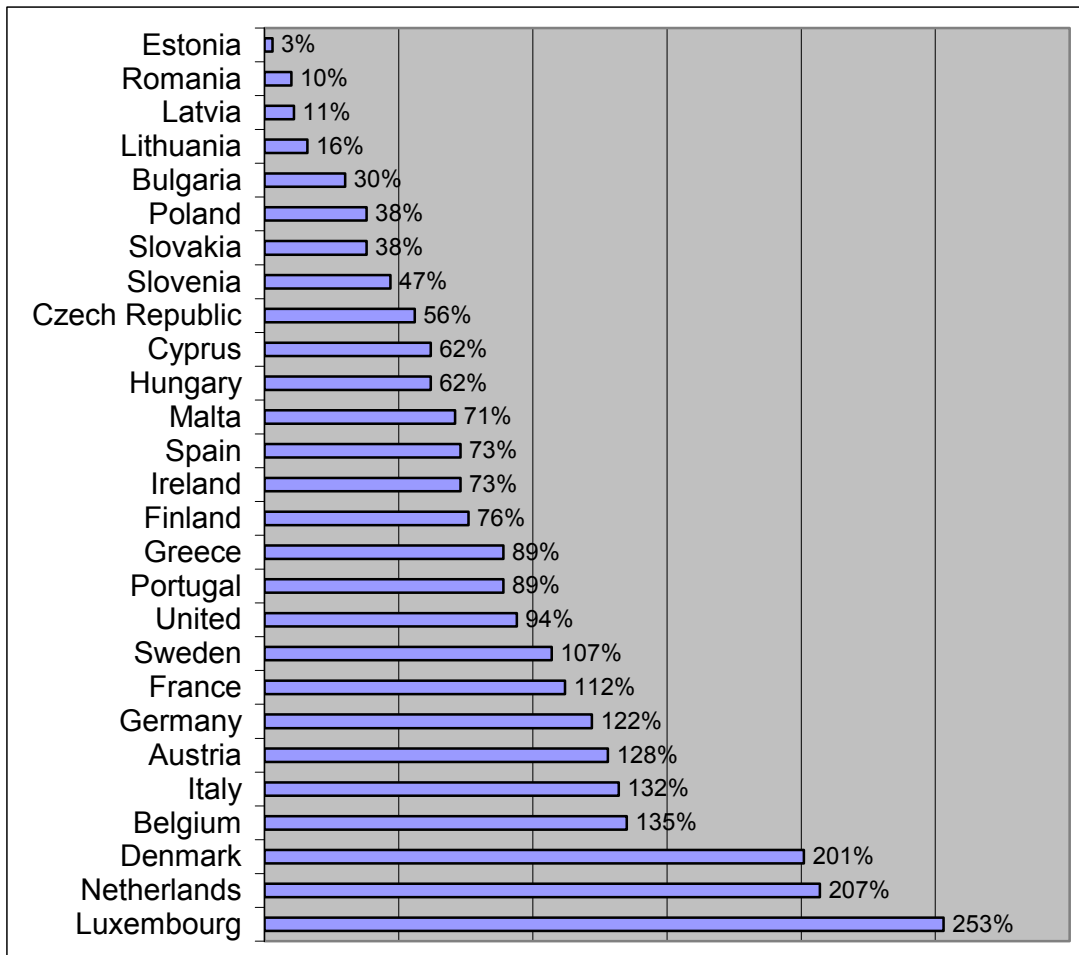
The graph above shows the nominal amount of debt securities outstanding in the EU member countries and in the acceding countries. In the EU perspective, the Czech bond market is relatively insignificant what the size concerns.

By far the largest in absolute terms is the neighboring Germany. Its bond market amounts for € 2605 trillion. In the Czech Republic the amount outstanding of debt securities is worth about € 45 billion. It is also logical to compare the market with the other new EU members, especially with Poland, Hungary and Slovakia. From those, the leader is Poland with 69 billions outstanding, though also larger in size. Hungary has about the same market size as the Czech Republic.

From the developed countries, it makes sense to compare the Czech bond market with the Austrian bond market. Austria, to which the Czech Republic has a common history, is comparable to the Czech Republic in size, location as well as in number of inhabitants. Although a bit smaller, the Austrian amount of debt securities outstanding is more than 6 times larger than in the Czech Republic.

The absolute values are however not everything and therefore it is also interesting to give them a broader sense. It is possible to view the bond market size in the proportion of the annual GDP. The graph below provides us with such a comparison.

Graph 6-2: Debt securities in EU Member States and accession countries (amounts outstanding at the end of December 2003; as a percentage of GDP; end-of-period stocks; nominal value)



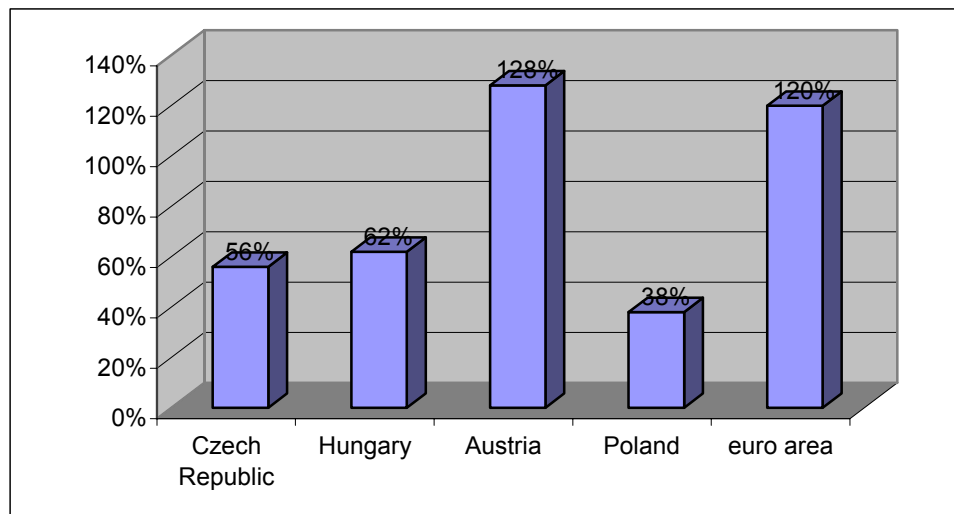
Sources: ECB long-term interest rate statistics, Eurostat (for GDP figures).

Germany, previously mentioned as the largest bond market, now demonstrates only a reasonable figure of 122 % debt securities to GDP. In passing note that due to a large public debt Italy has also one of the relatively large bond markets. Therefore, the size of the bond market doesn't necessarily tell us everything about the overall state of the economy.

After all, all the acceding countries and the new-comers to EU are at the end of the graph. Their bond markets are relatively small. The Czech one is not an exception. As noted more times in the text, it is caused by the relative “youngness” of the market and the financial system as well, while the also banking activity and financial intermediation is comparatively lower in these countries, as it observed by Szilagyi, Fetherson and Batten (2004).

To be able to make a direct confrontation, the comparable markets are depicted on the Graph 6-3 bellow:

Graph 6-3: Debt securities – amounts outstanding as a percentage of GDP



Source: ECB long-term interest rate statistics

The Czech Republic is relatively similar to Hungary, with the amount outstanding to GDP lower by 6 percentage points. The value is less than half of the EU average. The neighboring Austria is on the other hand above the average, though not by much. The Czech Republic is more advanced when compared to Poland. Polish bonds amount only 38 % of the GDP (same as Slovakia).

6.2. Market Participants

The market structure is not only giving us overall information about the development of the market, but to some extent also about geography. There are certain specifics for different regions and countries.

The country with the most developed capital market is, with no doubt, regarded the United States. There, the capital markets are commonly used as a source of new capital for the corporations. The companies finance themselves with issuance of new equity, with IPO's³⁸ being a quite common thing. For external financing the corporate debt securities serve as a very convenient mean. There is also a substantial market for the junk bonds. Thus not only blue chip companies get access to financing. Even more risky companies, with worse credit rating can borrow money. Of course they can borrow only in exchange for a substantial risk premium given to the investor.

In the continental Europe, the bond markets are dominated by Germany, where situation is quite different. The system is more bank-based, which can be readily seen from the bond market figures. When companies need financing, the most common thing is to take out a bank loan. Banks then finance themselves on the bond market and issue various types of collateral backed bonds, which are regarded as quite secure and achieve lower risk premiums. Well known are the so called *Pfandbriefe*³⁹, a German variation of mortgage-backed securities.

At last we should mention states with a high public debt as Italy. In Italy the bond market is quite large in European standards both in absolute terms and in relation to GDP. In fact, Italy was the largest borrower from the EMU members with the share of 28.1 % in 2003, with Germany being the number two with 22.3 %. The structure of the bond market is then dominated by government bonds.

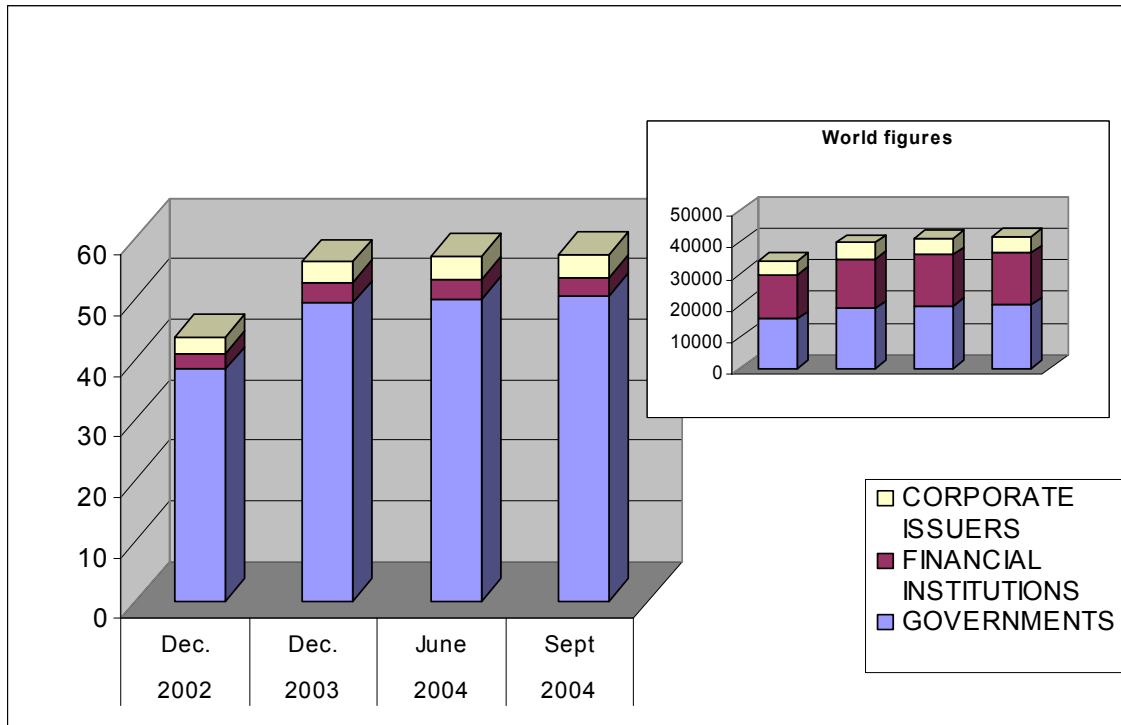
The Czech bond market is in regard of the structure a combination of the above mentioned European markets. It is certainly dominated by the government bonds, both in amounts of issuance and amount of traded volumes. The corporate and financial sector is

³⁸ Initial Public Offering – a process of entering the capital market by issuing equity.

³⁹ For reference see e.g. Batten (2004).

less involved in the bond market. The development of the bond market structure is depicted in Graph 6-4.

Graph 6-4: Debt securities according to the issuer – Czech Republic and world figures (in USD billions)



Source: BIS Quarterly Review, March 2005

The graph shows that as for domestic debt securities, the Czech government is the clear leader in the amount issued in all studied years. In 2004 the Czech government issued 88 % of the overall amount of debt securities. This is a large stake even when compared to the above mentioned Italy, where the government amounts for 64.5 %. In recent years there wasn't an increasing tendency in the government's issuance any more. It is due to the state of the public debt. The debt was increasing at a high pace, but now there is a political will to consolidate the fiscal policy. The current political representation expressed its aim to join the euro-zone by the end of the decade. One of the so called Maastricht criteria that have to be fulfilled by the acceding countries is the sustainability of the fiscal policy. The rule states, that the public deficit may not exceed 3 % of GDP. The Czech deficit is still above this reference value, and therefore we might

see the governmental activity on the bond market to decrease by a bit in the coming years.

The corporate sector amounts for approximately 6.5 % of all issued securities in 2004. It is only slightly less than the similar Austria, where the corporate sector issued 7.6 % of all bonds. However, the share of corporate bonds on average for all countries included in BIS statistics is 12.6 % which is twice as much as the Czech Republic. A high share of corporate issuers is for example in the United Kingdom, where the corporate sector issued about one third of all bonds in 2004.

As seen from the graph, the issuer with smallest share in the Czech Republic is the financial sector⁴⁰, which accounts only for 5.2 % of the total amount issued in 2004. It is only a fraction in comparison with the traditionally bank-based economies like Germany or Austria, where the financial institutions account for 42.8 % and 41.5 % respectively. There are several possible explanations for the low representation of the financial sector on the bond market. The banks issue debt securities, when they need to finance themselves, mostly to provide their clients with loans. There seems to be the explanation. In recent years there has been a strong aversion of the banks to lend money⁴¹. Also the Czech Republic receives a very high amount of Foreign Direct Investment and so some of the projects are financed from abroad. The other possible reason, troubling many macro-economists, is the displacement of private investment⁴². Some of the economists claim that a high fiscal policy, with a public debt, tends to displace the private investment opportunities. Thus instead of the corporate or financial

⁴⁰ This statement may seem to be in contradiction with the data disclosed in the ECB 2004 report, where the financial sector is quite well represented. At this point it is important to distinguish between long term and short term debt securities (in fact the bond market and the money market). If we include the money market, the big player becomes the Czech National Bank with its notes, which are used in the monetary policy and for liquidity management of the banks. The amount outstanding of such instruments doesn't change much our results. The volumes traded on the other hand do, as the money market is very liquid.

⁴¹ It was due to several reasons. Among others was the accumulation of the classified credits from the first half of the 90's and the consequent risk aversion of the banks. The other reason was the lack of prospective credible clients with a good investment plan.

⁴² See e.g. Mankiw (2003)

sector's bonds the government debt securities are issued. A thorough analysis of this phenomenon is however beyond the scope of this paper.

According to Batten (2004, p. 33), the future of the Czech corporate and financial institution's bonds is most likely promising. He notes that the integration of the European bond markets after the introduction of euro lead to a higher investor's interest in these products. He observes that:

“It is this homogeneity of the government bond market that has prompted the portfolio managers to increasingly diversify into new, higher yielding asset classes. The investment criterion of “country creditworthiness” has now been abandoned under Monetary Union, and so investors now focus on the characteristics of individual borrowers rather than their nationality. The combined effect of these factors has boosted the already buoyant attitude of institutional investors, generating great demand for nongovernmental debt instrument...”

Although the Czech Republic is not yet a member of the EMU it is expected to join sooner or later. The yield curve of the Czech government debt securities shows a high level of convergence with similar securities of euro-zone countries⁴³. Even though there is still an exchange rate risk for foreign investors, the prospective of joining the EMU should encourage them to seek investment opportunities in the domestic corporate and financial debt securities as well.

6.3. Domestic vs. International Debt Securities

The global economy is becoming quite interconnected and so are the financial markets. More increasingly the term *local bond market* becomes somewhat blurry. It is not any longer a reality that a local entity issues a debt security denominated in local currency which is traded on a local stock exchange. Apart of the traditional way stand the Eurobonds. There are three distinct types of bonds according to the location and denomination:

- local bonds issued by Czech institution denominated in CZK;

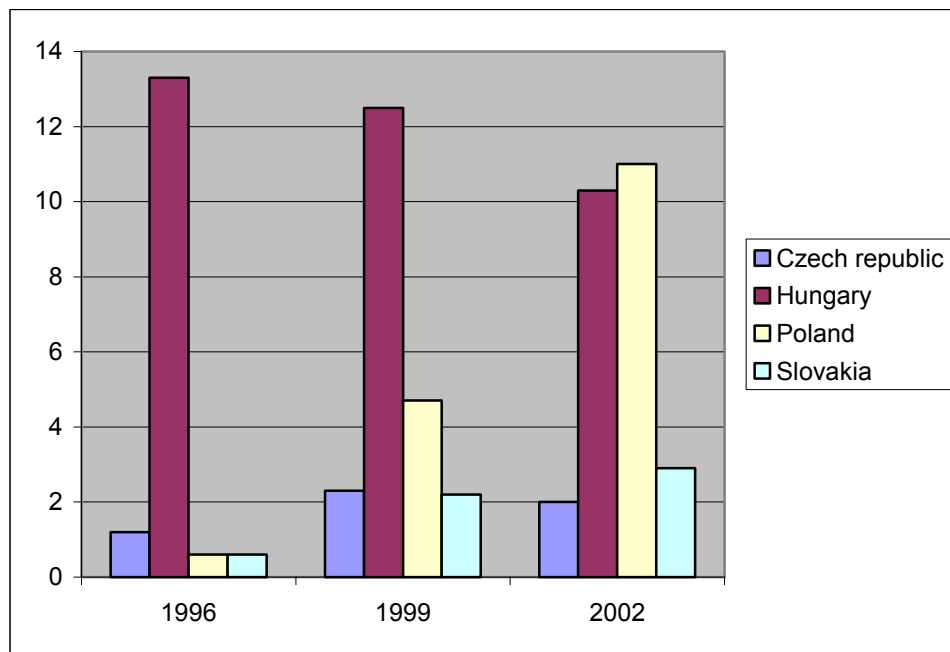
⁴³ The yield convergence is further discussed in the section 6.5.

- bonds of a foreign company or institution denominated in CZK, which are issued in order to finance local investment opportunity;
- bonds of a Czech institution denominated in a foreign currency (typically euro or USD).

With the common European currency the investment possibilities into bonds widened and the borders of local bond markets are slowly but surely disappearing. The new ways of issuing a debt security are more and more used and so it is expected in to the future. For this reason these kinds of operation are described in more detail.

The Czech Republic has a low level of foreign debt. In the Bank for International Settlement’s Quarterly Review from March 2005 isn’t even included in the sections regarding the international debt securities. The data presented by Batten (2004) are summarized in Graph 6-5.

Graph 6-5: International debt securities by nationality of issuer (amounts outstanding in billions USD at end of year)



Source: Batten (2004)

The data show the low level of involvement of the Czech Republic in the international bond market. Even in the time perspective the level of foreign liabilities is not much increasing, as for example does in Poland.

On one hand a low foreign debt is a good thing for the economy. Foreign debt may present lower financing costs⁴⁴. But it carries a substantial exchange rate risk for the borrower, which is especially dangerous in case of a government. Probably everybody still has in memory the case of Argentina, where the government defaulted on its debt, as the currency depreciated.

On the other hand the level of the external debt of the Czech Republic is far from being at a dangerous level, and there is one benefit from having some. As the country is further integrating into the European structures and aims to join the EMU, there is a possibility for some entities to finance themselves in euro. Furthermore, if the country joins the EMU, all debt will be converted to euro. Thus it makes sense to issue debt in euro for two reasons. Some companies can be already realizing projects abroad, in the Eurozone and thus have a need to raise funds in euro. Also for a debt with a longer maturity, issuance in euro may to some extent hedge the exchange rate risk, as the face value will be most likely repaid in euro anyway.

Such companies or financial institutions that decide to issue bonds denominated in euro need a bench mark as a help for pricing their securities. Therefore the country should have a euro yield curve (consisting of liquid bench mark securities) to provide a reference values for the private sector. Also the liquid bench mark securities are necessary for the country to develop a competitive position as an issuer prior to joining the EMU.

Although the data imply the low level of foreign debt, there have been some issuers with the need for foreign financing. Up to April 2005 the Bloomberg terminal has found 24 securities which satisfied the conditions of a domestic issuer and a currency of issue other than CZK. The majority of the foreign debt was issued in euro with the nominal amount of little over € 4 billion. However € 2,5 billion comprise the two recent issues of the Czech government. Quite involved in the Eurobond issuance are the municipalities. In fact one of the first euro denominated issues was the € 200 million issued by the capital city Prague dated from 15. 6. 1999 with a maturity of 10 years. This

⁴⁴ If the government (or, hypothetically, any other large issuer) issues too much debt, the local bond market need not absorb everything at the current price and may require higher yield for purchase of the bonds. This motive is further discussed in the Box 6-1 about the Czech Eurobond issue.

issue was followed by another 10-year bond from city of Brno, which placed € 60 million with the maturity in 2011. The financial institutions are represented by HVB bank. Indeed the corporate sector is involved as well with the total amount outstanding close to € 1 billion. The ever first issuer of Eurobonds in the Czech Republic was the Congress Centre Prague in 1999 which needed funding for a large reconstruction in order to host the IMF and World Bank Prague meeting in 2000. Also the biggest Czech lottery Sazka issued 175 millions of a 10-year bond to finance the development activities. It's development project didn't have ambitions to host the world's most prominent finance and political leaders, rather it was the Sazka Arena where the 2004 World Hockey Championship took place.

The second part of foreign currency bonds are securities denominated in US Dollar. With an amount outstanding of around a 1 billion of USD have a smaller significance than the Eurobonds. Among the issuers the governmental agencies (Czech Export Bank), corporate issuers (aircraft producer Aero Vodochody) as well as the financial sector (HVB bank) can be found.

6.3.1. The Czech Eurobond Issue

Box 6-1: Czech Eurobonds

CZECH 4.625% 14 & CZECH 4.125% 20

The year 2004 was certainly a remarkable point for the Czech treasury. The ministry of finance issued the historically first Eurobonds, i.e. debt securities denominated in foreign currency – euro.

In June 2004 issued the treasury bonds worth of € 1.5 billion with the maturity in 2014 (CZECH 4.625% 14). The auction was successful and the bond was subscribed 12 b.p. over the mid swap-rate and 22.5 b.p. over a comparable German bond (BRD 4 ¼ 14).

After the success from 2004, the ministry was confident even in the following year. In March 2005, it decided to issue a 15-year bond. The second Czech Eurobond (CZECH 4.125% 20) has a maturity in 2020 and was issued in the amount of € 1 billion. Also the second auction was a success. The 15-year bond was issued with practically zero spread over a similar Italian bond and 10 b.p. below the Polish 15-year bond. The auction was well managed because the net issue revenue was not far from the nominal value (€ 987.95 mil. versus € 1000 mil.) and thus the coupon rate of 4,125 % is close to the YTM of 4,225 %. The amount of bids reached the amount offered only 2 hours after the beginning of the auction and at the end bids exceeded three times the amount issued. The transaction was managed by ABN Amro, Deutsche Bank and JP Morgan.

Both bonds are registered and traded in the Luxemburg and therefore the ISIN codes don't start with the usual CZ. The securities' "code names" are XS0194957527 and XS0215153296 for the 10-year bond and 15-year bond respectively.

Source: Bloomberg, Czech Ministry of Finance (www.mfcr.cz)

There are several reasons for the government to issue its debt securities abroad. Apart from other motivation the government thinks in money terms, it is interested in the lowest cost of debt financing. Both auctions were subscribed at a price with a very low spread even over the best rated European securities.

The strategic reasons of the government therefore are:

- The country is expected to join the EMU and therefore is willing to create a strong competitive position as a credible issuer on the European bond market.
- Creation of a new euro-denominated bench mark and forming the Czech euro yield curve will help the corporate issuers and financial institutions in pricing their bonds.
- Issuing smaller amount on the domestic market (lowering the supply) should in turn result through supply-demand shift in lower interest rates. In last 5 years the government debt grew by 160 % and the government still wants to enjoy the most economical debt financing achievable.
- This step will also lead to further diversification of the pool of investors, which with the other steps also aims at higher demand for the Czech debt securities and lower costs of financing. The range of investors was really wide, with new investors from Finland or Asia. Big share of the issue was “swallowed” by investors from Germany (34,6 %), Benelux (25 %) and Austria (9,1%).

As usually there is also the other side of the coin. The ministry of finance wanted to issue the Eurobonds already in 2001, but the Czech National Bank refused the proposal. The reason was the exchange rate stability and the inflation. In the regime of inflation targeting, which is the ČNB using, the bank doesn't want to let the issue amount to be changed on the Foreign Exchange market. The large volume would put downward pressure on the exchange rate (EURCZK). The appreciation of the currency would indirectly lead to the higher inflation. The bank could on the other hand buy the excess euro amount into the reserves. It is however expected, that Koruna (the Czech currency) will be further appreciating due to the convergence of the economy to the more developed EU countries. The bank wouldn't have at the end a chance to exchange the euro reserves back in CZK and the CZK value of the reserves would decrease, which would damage the ČNB. The ČNB offered the Ministry of Finance and exchange rate which took into account these costs. The treasury didn't find such offer competitive and, as mentions Plojhar (2005), agreed with the national bank on hedging the transaction impact on the market on its own by exchange rate swaps. These costs have to be added to the whole Eurobond transaction as well.

The standing agreement of the two parties is, that the treasury can issue up to 40 % of the whole yearly amount in euro. The ministry is not considering issuing the leftover € 0.5 billion in 2005, but we will most probably see other issues in the coming years.

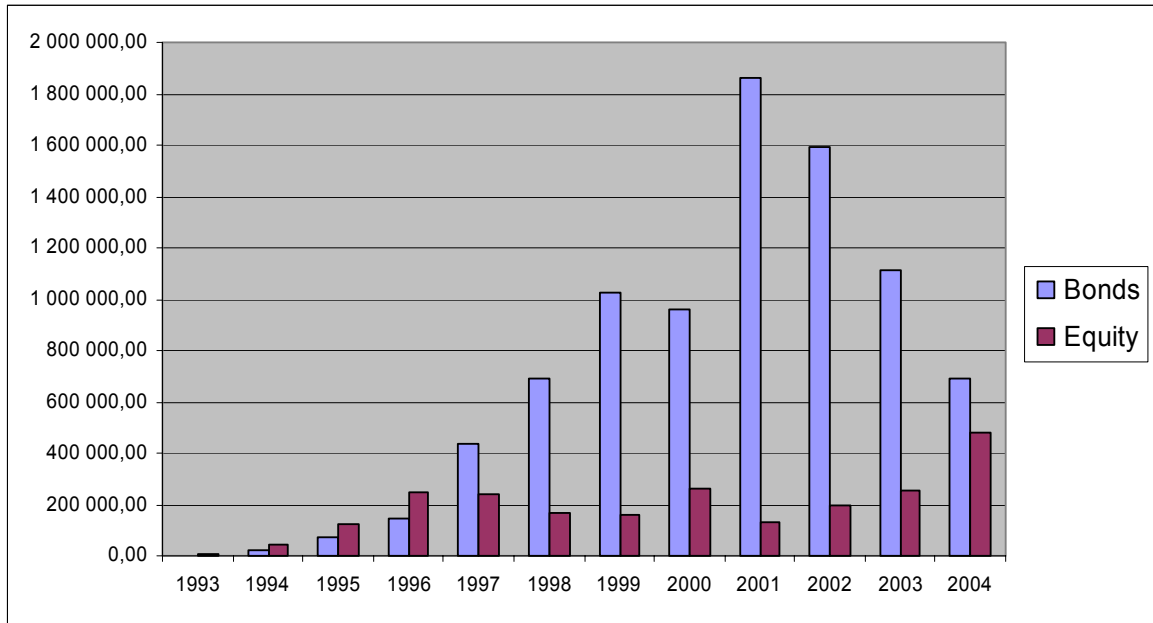
6.4. Liquidity

Apart from the yield and the credit risk the liquidity is also a deciding factor for an investor evaluating to step into a financial market. The liquidity ensures the ease of entering and exiting the market in the terms of transaction costs. It is not as important for example for insurance companies which, mostly by law, hold all their securities to maturity. However, a portfolio investor, such as a mutual fund would need to purchase and sell securities as well.

The cost of the exchange is the bid-ask spread. This spread is traditionally lowest on the foreign exchange market, as the amount of currency pairs traded is enormous. The bond market lies on the other side of the spectrum with the spreads being substantially higher.

The factor determining the bid-ask spread, or more generally the transaction costs of exchange, is the market efficiency. The market efficiency is largely determined by the number of participants and by the volume of trade, the liquidity. The condition of the market depth ensures a substantial and continuous amount of buy- and sell- offers. The large number with a high degree of competition leads to a convergence of the two sides of the trade, with the matching buy- and sell- orders having a small spread between.

Graph 6-6: Volume of trade on the PSE, breakdown into shares and bonds (in millions of CZK)



Source: PSE 2005

Graph 6-6 breaks down the volume of trade on the PSE between bonds and equity shares. In the beginning the volume traded of shares was ahead of the corresponding volume of bonds. Also the number of issues was significantly higher (as shown on the Graph 2-1 in chapter 2).

Later, in 1997, came the financial crisis, economic slowdown and delusion with the capital markets. The trade with equity was in the doldrums, which was also followed by process of delisting of the illiquid issues.

Spontaneously the volume of trade with bonds was still growing, partly with the increasing offer of government bonds, partly as an alternative to the more risky equity. However, since 2002 the volume of trade with bonds is gradually declining from CZK 1858 billions in 2001 to CZK 692 millions in 2004. On the other hand the volume of shares trading seems to have an opposite trend and is growing since 2001. There seems to be a relation in these two types of securities. The stagnating stock market picked up the pace and grew by 43 % in 2003 and 57 % in 2004, as measured by the PX50 index

of the PSE⁴⁵. Such recovery and high growth indeed attracted investors and caused some of them to at least partially leave the bond market. The PSE posted a record monthly turnover of CZK 122.7 billions, in March 2005, up by 63.7 % from the previous record in February 2005.

The major part of liquidity on the Czech bond market is secured by the government bonds, which account for around 90 % of all transactions. The government actions to promote liquidity therefore have a substantial impact on the overall market. The ECB (2004) mentions that the Czech Ministry of Finance decided in 2000 to reopen the existing issues to increase the amount outstanding of government bonds. It also obliges the primary dealers to quote liquid government issues on the secondary market to allow trade at all times.

The ministry always picks so called *benchmark securities* (see table) which create the government bond yield curve. The ECB 2004 report on bond market states that the liquidity of all bench mark securities is quite high with narrow spread and high turnover. Treasury bonds with the original maturities between 10 and 15 years perform best, with the highest liquidity ratio.

Batten (2004) proposes issuing a smaller number of issues of a higher volume to promote liquidity as well. On the European scale, he found beneficial a common auction calendar, with a large amount issued in one auction.

Table 6-1 Bench mark securities as of January 1st 2005:

Issue number	ISIN	Coupon	Date of maturity	Time to maturity (years)	Amount outstanding (millions of CZK)
Issue no. 43	CZ0001000863	3,95	02.08.2007	2,8	18,0
Issue no. 39	CZ0001000798	2,90	17.03.2008	3,4	41,0
Issue no. 42	CZ0001000855	3,80	22.03.2009	4,4	27,6
Issue no. 36	CZ0001000764	6,55	05.10.2011	6,9	50,3
Issue no. 40	CZ0001000814	3,70	16.06.2013	8,6	60,1
Issue no. 34	CZ0001000749	6,95	26.01.2016	11,2	35,0
Issue no. 41	CZ0001000822	4,60	18.08.2018	13,8	44,1

Source: Czech Ministry of Finance (2005)

⁴⁵ Figures based upon www.pse.cz (2005).

6.5. Spreads and the yield curve development

Not every bond yields the same interest. Many debt securities differ not only in the structure of the coupon payments, in the coupon rate but also in the yield to maturity, which is altered by the market price. The market price is the ultimate force that changes the yield of a security. The interest paid on a security reflects various concerns, among which are:

- credit risk
- interest rate risk
- liquidity premium

On a local bond market, the first two have a major significance. Firstly, the credit risk incorporates into the price the possibility that the issuer defaults on its liability. The interest is perceived as compensation to the investor for the risk that his money is not going to be repaid. *Ceteris paribus* the investor will require a higher return on a more risky investment.

On the other hand, the liquidity premium compensates the lender for the time period he cannot dispose with his funds. This is the reason of an upward sloping yield curve. In normal circumstances a short term bond yields less than a long term bond. However, this situation doesn't always happen. In the emerging markets a high inflation accompanied with high interest rates (to reduce the inflation) is a common occurrence. If the market expects the inflation to be reduced in a certain period of time, the long term interest rates can be lower than the short term ones. This is the result of the expectation that in the future, the prevailing interest rate level is going to be lower. We can see for example such downward sloping yield curve in Hungary (Graph 6-8).

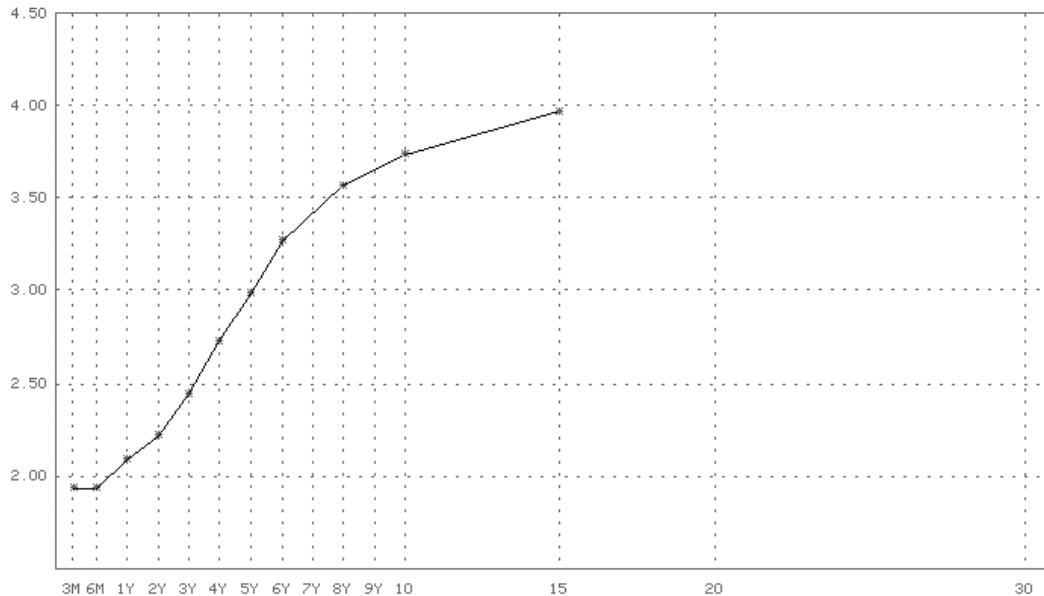
Last but not least, the investor will require a compensation for the risk that arises from the foreign exchange changes. If the security is denominated in other currency, its depreciation reduces the value in domestic currency.

6.5.1. Yield Curve

Yield curve, also called the term structure, is a neat demonstration of the liquidity premium requirement and the market expectation of future interest rates. The yield curve combines into one graph bond of the same class with different maturities. It is usually

constructed from government bonds, because of their high liquidity, which is necessary to obtain a true evaluation in term of market prices.

Graph 6-7: Yield Curve – Czech Republic as of 22. 4. 2005



Source: Bloomberg, 22.4.05

The Czech bond market yield curve has a standard form with a positive slope. The horizontal axis measures the time; the curve ends at $t = 15$ years, because there are no bonds with a longer term to maturity on the market. The vertical axis displays the yield to maturity. On the short end the yield curve starts around 2 %. In fact in the time of 3 – 6 months, the curve is bellow. This could reflect an expectation that the CNB would lower its key repo-rate (short term interest rate)⁴⁶. The curve rises to 4% YTM for bonds of 15 years to maturity. This is a low level even when compared to other European markets.

The term structure reveals not only the liquidity premium required by the bond holders, but also the expectation of the market. The market participants adjust their bid prices according to the expectation of the future interest rates.

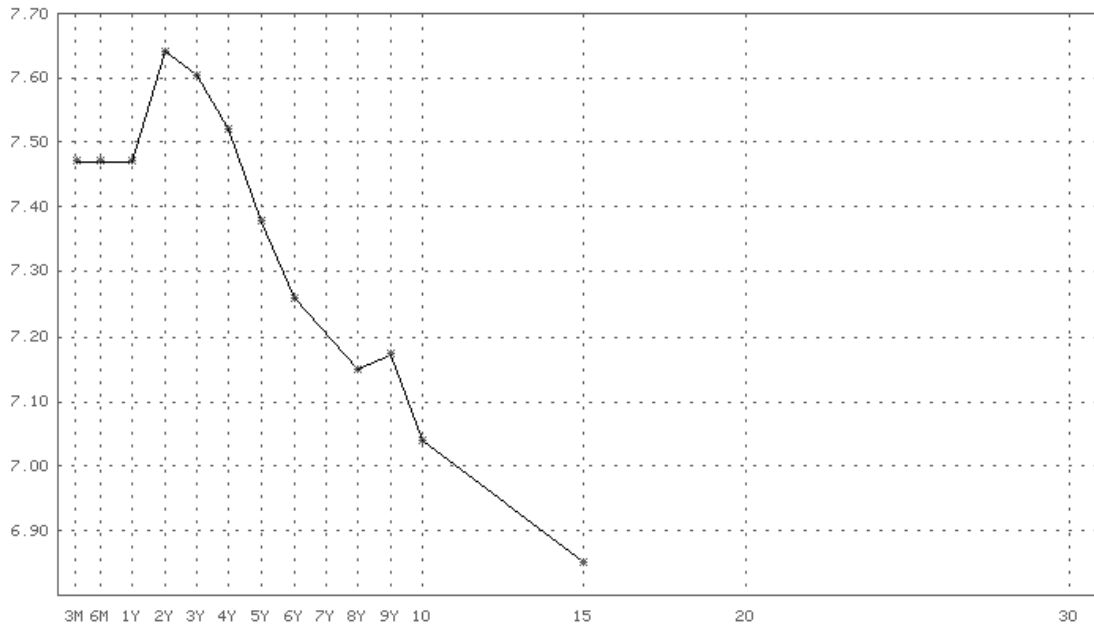
⁴⁶ The 14-day repo rate is currently set at 2% (as of 22. 4. 2005). There is however a possibility that due to a low inflationary expectation the CNB would further lower the interest rate to 1,75 %.

On the next graph the yield curve of Hungary is depicted. The curve has a completely different shape than its Czech counterpart⁴⁷. The striking fact about it is its negative slope. It was already explained, that although the short term rates are high (in order to fight inflation as well as to sustain the exchange rate); the market expects them to fall in the future. The curve begins on the short end at the level around 7.5 % and goes down to about 6.9 % for bonds with 15 years to maturity. The important fact to note about such yield curve is also the prospective of joining the EMU. The Maastricht criteria also require the long term interest rate not to exceed a certain value⁴⁸. Hungary is willing to joint the euro-zone by the end of the decade. The term structure thus mirrors the convergence to EMU countries levels; the long term interest rates declined substantially recently and are getting close to the target levels.

⁴⁷ The curve is also not as smooth as the Czech one. Due to the lower liquidity of the bond market, there are substantial bid-ask spreads and the prices can abruptly change after a large trade, Therefore the yield curve can show some unevenness. It is also important to mention, that the securities used for the construction can be synthetic benchmarks, because there doesn't have to always be a security with the required term-to-maturity on the market.

⁴⁸ During the two mandatory years in the ERM II regime, the long term interest rates must remain within a range of 2 % from the average of the three countries with the lowest inflation.

Graph 6-8: Yield curve – Hungary as of 22. 4. 2005



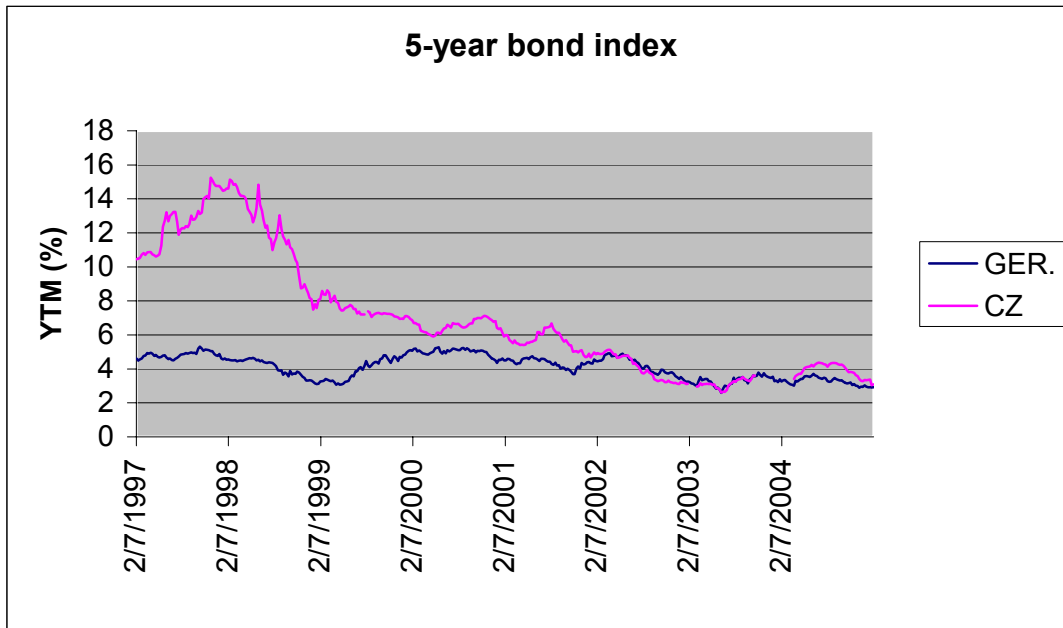
Source: Bloomberg, 22. 4. 2005

6.5.2. Spreads

The difference between yields of two securities is called *the interest rate spread*. The spread determines the extra yield on bonds of a longer term-to-maturity as well as the extra yield from emerging markets (or high-yield markets). The investment in emerging market carries an extra portion of risk (due to a higher uncertainty and lower stability), therefore the investors require compensation in form of a yield spread over the developed markets.

The remarkable fact about the Czech market is the absence of a spread over the EMU countries bonds. The Czech bonds are no longer perceived by the market as more risky than other EU member states' bonds. It is due to the convergence and integration into the EU economy. The convergence process is well depicted in the graph of a Bloomberg 5-year bond index yield below.

Graph 6-9: Yield convergence: 5-year bond-yield index; Czech Republic and Germany



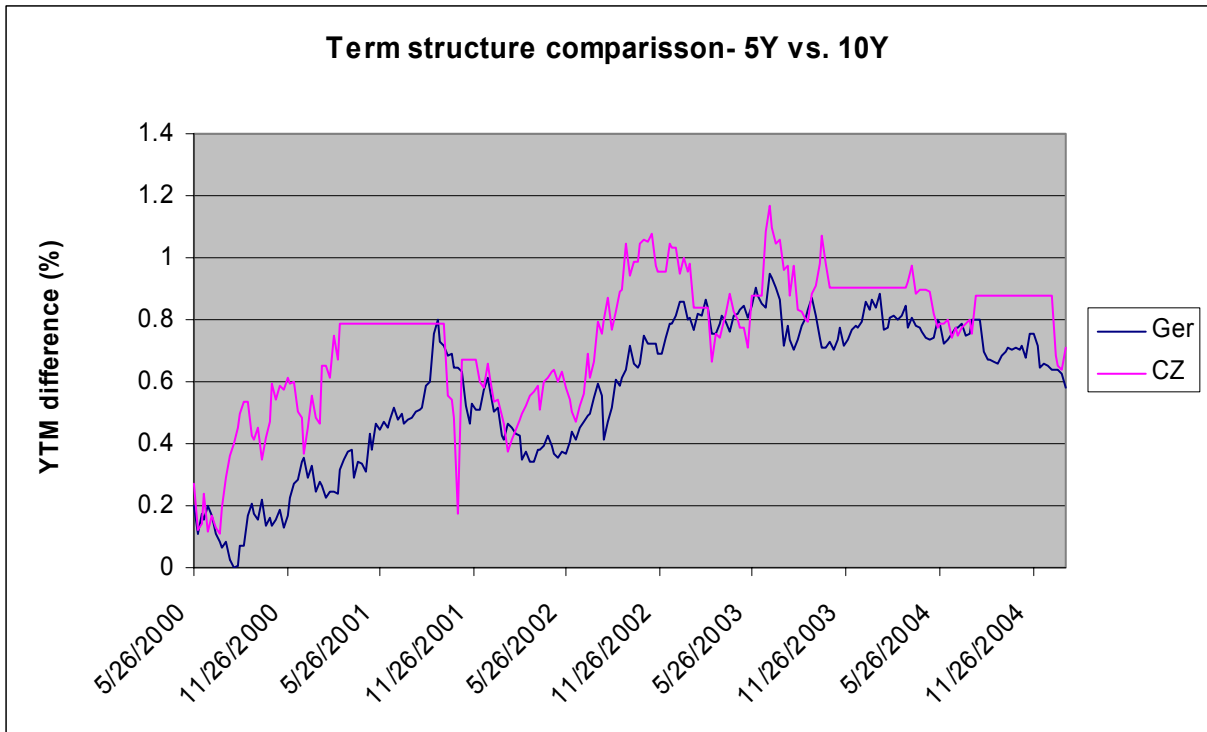
Source: Bloomberg 2005, weekly data

The YTM of the German bond is more or less stable. It reflects the inflationary expectation and the monetary policy, but still remains in a corridor of roughly 3 – 5 %. The Czech 5-year bond yield demonstrates much higher volatility. In 1998 it reached the 15% level. Since 1998, however, the interest rates converge gradually to the EMU levels⁴⁹. Since 2002 the yields behaved almost identically, there were even periods, when the Czech bonds yielded less than the German ones.

The last graph in this section shows the spread between 5-year and 10-year bond and compare the spreads of Czech government bond and the German government bond. The graph indicates that the Czech yield curve has been steeper than the German yield curve, because the spread is higher. Perhaps due to a higher uncertainty the investors required a higher liquidity premium on its investment. In recent years also this difference has diminished and the curves become more or less similar.

⁴⁹ Within the EMU the spreads are very small, thus without the loss of generality, only German rate is assumed.

Graph 6-10: Term structure comparison: 5-year and 10-year bond-yield spread; Czech Republic and Germany



Source: Bloomberg 2005, missing data filled in with the last value

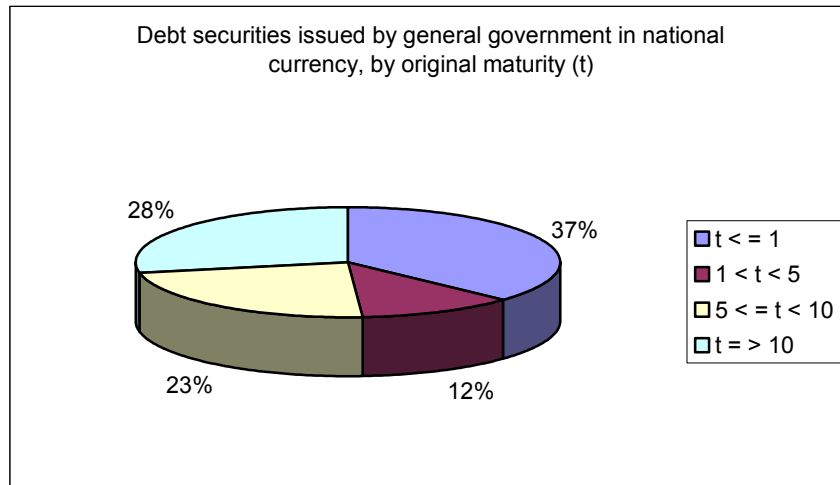
6.6. Maturity structure

The development of a bond market can also be judged according to the maturity structure. A mature bond market offers a wide range of maturities, stretching from money market instruments up to long term bonds or eventually even perpetuities.

An immature market tends to have rather more securities on the short end of the yield curve with a shorter compound duration. Such development is promoted largely by government, which has to give a reference values (in form of liquid benchmark securities and a yield curve) to other issuers.

In the Czech Republic the average maturity of the government bonds gradually increased. The maturity structure is displayed on the Graph 6-11 bellow.

Graph 6-11 Maturity structure (December 2003)



Source: ECB long-term interest rate statistics

The government tries to increase the duration in order to manage better the public debt and the structure of the liabilities. It can do so however effectively only on a well functioning and mature market, where the long term securities are not priced with an excessive premium on the issue. In the past the government tended to issue more short term securities and refinance them in the time of maturity again with a short term bond at the current interest rate.

The current state of the economy is favorable for increasing the overall duration of the securities. The stable macroeconomic situation combined with a low inflation (and also a stable inflationary outlook) results in a historically low long term interest rates⁵⁰. In such situation the government prolonged the duration and issued the Eurobond with maturity in 2020.

The longest issue on the market is the EIB 0% 28 with the maturity in 2028. It is however illiquid as it is almost entirely held in the reserve portfolio (i.e. held to maturity) by an insurance company. Many of the securities with the long maturities are placed in a form of private placement and are not publicly offered, nor traded. Although denominated in CZK, the EIB 0/28 is registered in Luxembourg and clearing and settlement is provided through the Clearstream.

⁵⁰ The market price of the government bond with the longest maturity SD 4.60% 18 in May 2005 resulted in a yield to maturity below 3.8 %.

7. Conclusion

The thesis attempted to give the reader an insight into the main areas of the Czech bond market. In the first chapter it explained how the bond market, although little bit neglected and in shade of the stock market, grew from its foundation in 1993. Despite the initial lack of interest from the transformation politicians and general public, it gradually became a useful source of government and corporate financing and in this sense it overtook the stock market.

Although it still didn't reach the proportional size of its counterparts in the developed EU countries, it accomplished a strong position in the Czech financial system, which is after all also less developed in terms of size. Such difference between the post-communist countries and countries of the former western block is understandable and the financial markets in the Czech Republic display the best signs that they will catch up in the near future.

Due to the process of integration to the EU structures and the process of convergence, also the legislative setting and the supervision institutions weren't left unaffected. Already prior to joining the EU there was a substantial harmonization of the law required. The law and the institutions dealing with the financial markets were closely observed by the EU officials and by now comply to the strict requirements. Moreover as the country attempts to join the EMU, the capital markets will have to converge not only in the legal setting but also in the terms of real values.

Although the primary and secondary market organization is in accordance with the EU standards, there is still room for further progress seen in the whole EU. The bond markets are still somewhat fragmented and measures such as a common issuance calendar for the national governments are perceived as a useful progress. Apart from that there are some specific problems in the Czech Republic, namely the clearing and settlement system. The current system is not enough transparent and efficient and could present a drawback for the future issuance of domestic debt securities. Although the clearing company UNIVYC applied also for the function of a central register, the possible solution may lie in the further integration on the European scale. Without any doubt the volumes of issue and trade with shares and bonds of Czech subjects is not

large. The Czech bond market would certainly benefit from an integration of the PSE with a larger European stock exchange, from a common trading platform with a large liquidity and from a common clearing system. It is worth noting that a large part of the debt securities denominated in CZK is already being issued abroad.

Chapter 4 examined the variety of debt instruments available on the Czech market. Although the US market provides a larger number of different bonds, the Czech market doesn't lag behind the bond markets of other EU member states by much. It is again due to the integration and the presence of large international banks, which offer more or less the same variety as elsewhere.

Apart the size of the market, which is mentioned above, the fifth chapter notes the dominance of the government bonds. The corporations and financial institutions didn't yet learn to use the bond market as a source of funding in the extent as in the more advanced markets. On the other hand it has been mentioned that the ministry of finance issued successfully two bonds denominated in euro and the country is building a competitive international position. The important message is given by the yield curve and spread analysis. It has been shown that there is no lasting difference between the yields of the Czech and other European countries' bonds. The market thus doesn't value the Czech bonds as a more risky investment. This observation has two implications. The bond market is not any more a high-yield market (commonly used as a synonym for emerging market). Secondly, the market participants do not see an extra portion of risk (whether political or economical) associated with the investment in the Czech Republic.

The key to answer the question given in the introduction – i.e. whether the Czech bond market is an “emerging” – lies in the process of the European integration. The integration has been a strong force beyond the market development and it is the passport to the transition from an emerging market to a developed market. Once the Czech bond market becomes an integral part of the European common market, we can no longer think of it as an emerging one. The path is thus given, only the timing is not yet certain. There are of course couple imperfections still remaining. One of the most important ones is the lack of a developed clearing and settlement system which would provide a central registry as well. Also the average duration of the debt securities is lower than in other EMU member countries and the market is dominated by the government bonds. This

should on the other hand improve in the future. If the PSE merges with a bigger stock exchange, the bond market would benefit from a developed trading and clearing system. The duration and the market structure are also improving gradually and shall continue to do so, as suggested in the text.

After all, despite that what was just mentioned, the author thinks that the Czech bond market has grown up and can be perceived as a developed one. The imperfections are not fatal and are rather thought as a goal to be fine-tuned.

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List of Abbreviations:

BIS – Bank For International Settlements

CNB – Czech National Bank

ECB – European Central Bank

EMU – European Monetary Union

ERMII – Exchange Rate Mechanism II

EU – Europea Union

IPO – initial public offering

OTC – over-the-counter transaction

PRIBOR – Prague Inter-Bank Offer Rate

PSC – Prague Securities Centre

PSE – Prague Stock Exchange

PX50 – Stock market index of the PSE

RMS – RM-System

S&P – Standard & Poor's

SEC – Czech Securities Commission

YTM – Yield-to-maturity

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