ARE RISK FREE GOVERNMENT BONDS RISK FREE INDEED

Yakim Kitanov

VUZF University, 1, Gusla St., Sofia

Abstract

It has been considered that government bonds in their varieties are risk-free. This has led to the accumulation of debt in the form of this type of securities by many investor, both institutional and individual.

Contrary to the common understanding that government bonds are risk-free, they are not. They are exposed to at least three types of risks: 1) risk of default (credit risk), 2) inflation risk, and 3) currency risk. It is correct to consider that they are guaranteed in terms of nominal value but since risk of default exists, this means that they are actually not guaranteed even in terms of nominal value.

The aim of the current paper is to present a conceptual framework related to the main types of risks associated with government bonds and to outline some important considerations for investors in this respect.

Key words: *government bonds, currency risk, credit risk, financial risk*

1. INTRODUCTION

It has been considered that government bonds in their varieties are risk-free. This has led to accumulation of debt in the form of this type of securities by many investors - institutional, private and individual. The events accompanying the latest financial crisis have shown that government bonds bear certain risks, in some cases significant.

Contrary to the common understanding that government bonds are risk-free, they are not. They are exposed to at least three types of risks: 1) risk of default (credit risk), 2) inflation risk, and 3) currency risk. It is correct to consider that they are guaranteed in terms of nominal value but since risk of default exists, this means that they are actually not guaranteed even in terms of nominal value.

The aim of the current paper is to present a conceptual framework related to the main types of risks associated with government bonds and to outline some important considerations for investors in this respect.

2. GOVERNMENT BONDS SPECIFICITIES

Government bonds are securities which have all the characteristics of any bond, but the main difference is that the issuer is the government of a country. This implies that the overall risk level is much lower compared to the risk of any other bond (corporate or municipal) as it is presumed that the government will always be in a position to repay the coupons and principle of the bond since it has the ability to generate income from taxes. Having this in mind, government bonds are the preferred choice for many conservative investors, both institutional and individual ones.

There are a number of specificities government bonds have in common with corporate and municipal bonds, all of which impact the level of risk associated with them. These specificities are briefly be presented below.

The maturity date is the date in the future on which the issuer will repay the principal of the bond to the investor. Maturity dates vary from one day to more than thirty years. There are some types of government bonds which are actually perpetual ones, such as the British consols. These are securities redeemable by the government at a date it decides appropriate. Depending on the maturity date government bonds could be divided in three groups:

- Bills mature in a period shorter than one year
- Notes mature for a period between one and 10 years and
- Bonds mature in a period longer than 10 years.[1]

The coupon is the amount of interest the investor in bonds would receive in return for buying the bond. The coupon represents a percentage of the par value of the bond and there is the possibility for a fixed and for adjustable or floating interest on the bond. Practice has proven that the price of the bonds with low coupons floats more in comparison to the ones with higher coupon.

The par value, or face value is the amount which the investor will receive for holding the bond to maturity. Normally bonds trade either at a premium (market price is above par value) or at a discount (market price is below par value). Ceteris paribus, the safer a bond is considered, the higher its price, and it is normally trading at a premium.

The yield is the return an investor gets for holding a bond. There are two types of yields – current and yield to maturity. Generally the current yield is in inverse relation with the price of the bond, and is calculated by dividing the coupon of the bond to its price. The yield to maturity show the total return in terms of interest payment and gain or loss.

The issuer in the case of government bonds is the government which has issued them. The quality of the issuer implies the riskiness of the bond and hence its current yield and yield to maturity. This is the reason why so much importance is being placed on the issuers and their "quality". Guidance on the quality of the issuers is provided by the credit rating agencies which produce credit ratings of the issuers. Any news that a credit rating has improved or worsened has a direct impact on the price of the bonds, and respectively on their yields. This is why news related to the credit ratings are one of the most followed stories by investors. Table 1 below the credit rating provided by the leading credit rating agencies are presented.

The ratings that issuers are assigned are extremely important for the price fluctuation of the bonds. Contrary to popular opinion, government bonds prices can fluctuate dramatically especially as a result of the worsening of the credit rating of the country which of course is normally provoked by negative performance data for the economy of the country. The latest financial crisis has shown a number of examples on that.

Table. 1. Bond ratings according to Moody's, S&P, and Fitch

Bond rating		**Grade**	**Risk**
Moody's	**S&P/ Fitch**		
Aaa	AAA	Investment	Highest Quality
Aa	AA	Investment	High Quality
A	A	Investment	Strong
Baa	BBB	Investment	Medium Grade
Ba, B	BB, B	Junk	Speculative
Caa/Ca/C	CCC/CC/C	Junk	Highly Speculative
C	D	Junk	In Default

[1] In the current paper, all kinds of government issued debt – bills, notes, and bonds will be referred to under the single term "bond".

3. RISKS INHERENT TO GOVERNMENT BONDS

Government bonds, like other securities, are facing mainly three types of risk: currency risk, inflation risk and credit risk. Each of these types of risks interplay with the rest and at the same time holds its own significance.

3.1. Currency risk

Currency risk relates to the possibility that the currency in which the bond is denominated, and in which coupons are being paid, could decline versus the currency of the investor. The currency of the investor could be the currency of the country in which he resides, or a reference currency which is of interest to him for a reason. The manifestation of currency risk for bond holders is very similar to its manifestation for holders of deposits in a foreign currency. This risk is minimized when the bond is denominated in the currency of the investor and is maximized when denominated in a currency which is fluctuating a lot, which is the case of currencies of developing countries. For such currencies there is almost no history of keeping their value therefore buying bonds denominated in them carries inherently high currency risk. Example is the situation on the development currencies markets in 2013 when the rupiah and lira slumped 10-20 percent for the year, worsening international investors' losses on the underlying assets.[2] It is important to say that currency risk could be hedged by investors in order for them to protect the value of their bond portfolios. This, however, is very costly for highly volatile currencies. As calculated by ING Investment Management, hedging in such situations would lead to the loss of 80% of the income, as is the case of the rupee exposures opened in the end of 2013 at the outlook for 2014 which forecast 10% depreciation of this currency against the US dollar.[3]

3.2. Inflation risk

Inflation risk is quite related to currency risk. It is the risk that the currency in which a bond is denominated could decrease in value above the expectations of the investor and this could cause losses to him decreasing his current income in terms of coupons and possibly the value of the principle at repayment. This type of risk is partially overcome by the so called inflation-indexed bonds. These are bonds for which coupon payment and principle are linked to a consumer prices index (CPI). Still, as officially announced inflation is often lower than real inflation, investors could suffer losses.

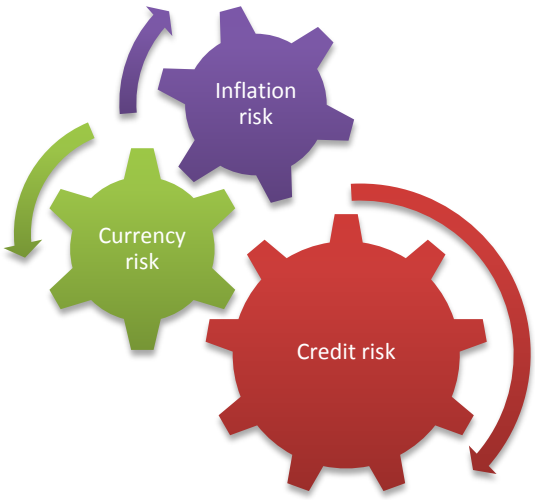
3.3. Credit risk

Apart from inflation and currency risks, government bonds are facing credit risk, or the risk that the issuer – the respective government could default on its payments. Many investors believe that, because this type of risk is minimal compared to the credit risk associated with corporate bonds (as it is more common for a company to go bankrupt than for a state), the financial risk of government bonds as a whole is minimal. This is not correct, firstly, because history knows not one or two cases when governments failed to meet their obligations, and secondly, because, fearing that this might happen, markets respond fiercely by depressing bond prices (which triggers yields upward movements) and the value of the currencies of the respective countries, which on its turn, increases currency and inflation risks. As revealed in a study made by Gennaioli et al., only within the period 1998-2012 there were 18 sovereign default episodes involving 15 countries.[4] These episodes led to catastrophic consequences for the investors who had large exposures in government bonds of the respective countries.

Fig. 1 below illustrates the interrelation between the three main types of risks associated with government bonds. As presented, the first two types – currency and inflation risks exacerbate credit risk which manifestation could lead to complete losses on the part of bond holders. Investors in government bonds need to be aware of this interplay and pay close attention to its potential outcomes.

[2] See Rao, Sujata. Analysis: Counting the cost of currency risk in emerging bond markets. Reuters. 22 November 2013, available at: http://www.reuters.com/article/2013/11/22/us-emerging-currencies-analysis-idUSBRE9AL0O120131122, retrieved 3 June 2015.
[3] Ibidem
[4] Gennaioli, N., Martin, A., and Rossi, S. Banks, Government Bonds, and Default: What do the Data Say?, European Corporate Governance, 2013, p. 3, available at: http://repositori.upf.edu/bitstream/handle/10230/20967/1378.pdf?sequence=1, retrieved 3 June 2015

Fig. 1. Government bonds risks interplay

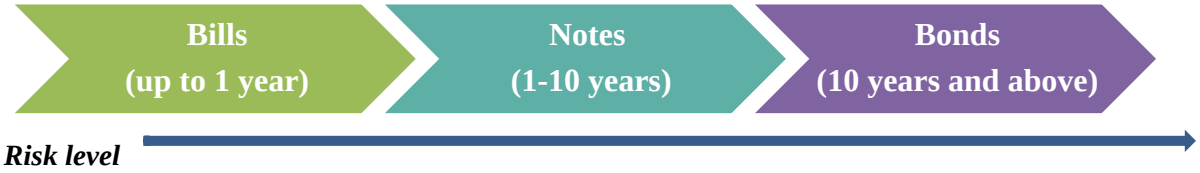


3.4. Other risks stemming from the specificities of the government bonds

Apart from the importance of these three fundamental types of risks inherent for government bonds, a number of risks stem from the specificities of the particular type of the bonds. These risks are actually related to the magnitude to which the three basic risks could be materialized for the bond holder depending on the characteristics of the specific asset.

As pointed out above, normally government bonds are divided in three types depending on their maturity – bills – maturing within one year of issuance, notes – maturing within a period between one and ten years of issuance, and "bonds" – securities maturing within a period longer than 10 years from issuance. The longer the period to maturity, the bigger the risks of the bond holders. This is certain as within a longer time period probability that inflation or currency, or both risks might increase and potentially lead to increased credit risk, is relatively higher than the probability this to take place within a shorter period of time. Hence notes hold the lowest risk levels, bills follow, and "bonds" are associated with the highest level of all kinds of risks, since for them uncertainty is the highest.

Fig. 2. Illustration of the level of risks associated with maturity of government securities



Another important factor for the extent to which risks are materialized is the very type of the coupons that the bond issuer is offering for the particular bond. Bonds with fixed coupon as a percentage of par value hold the highest risks for their holders. This is so because in the case of increase in inflation, currency or credit risk, holders would keep on receiving an unchanged amount of money. If the currency of the bond devalues, this would cause losses to the investor, and, as pointed out above, this takes place especially with development countries' currencies. Variable coupons of all kinds present bond holders with higher flexibility. Inflation-indexed coupons as well as coupons pegged to other types of indices could act as a kind of hedges against loss of value in case of increased inherent risks.

4. THE IMPORTANCE OF THE REGULATORY FRAMEWORK FOR THE PERCEPTION OF GOVERNMENT BONDS AS RISK-FREE

Important contributor to the general perception of government bonds as free of risk is the treatment they have in Basel I, II and III Accords issued by the Basel Committee on Banking Supervision. In Basel I government bonds issued by OECD member-states were assigned zero risk weights, the same for government bonds denominated in the local currency and for all government bonds issued by EU member states.

Basel II introduced an improvement according to which assets needed to be evaluated based on the probability of default of their issuers. However, banks were allowed to choose between two approaches of evaluation – the so called Standardized Approach (SA) and the Internal Ratings-Based Approach (IRBA). For the purpose of the SA credit ratings provided by the leading credit rating agencies are used. As for the IRBA, calculations of the risk of the debtors are the result of complex calculations. Normally the application of IRBA produced above zero results for the risk weights even for high quality securities, while SA is simpler and assigns zero risk weight to claims within AAA and AA- range.[5] A paper by the European Banking Authority (EBA) of 2013 concludes that most (23 out of 35) large banks in the Eurozone keep on using the SA for their domestic sovereign exposure.[6] This leads to the underestimation of the total risk exposure of the banks. As a result of this Basel III provides for stricter rules for the assignment of risk-weights.

The fact that the regulatory framework in the face of Basel I and II has allowed for the assignment of zero risk weights on a number of types of government bonds exposures practically meant that banks used to be encouraged to invest in this type of securities. This was in line with the policy of the governments especially in Europe where there is strong influence of the government on the banking sector and vice versa. This was demonstrated during the latest financial crisis when the links between banks and their domestic governments were significantly strengthened and this is evident from the raise of the ratio of domestic government debt relative to bank assets – it doubled or tripled in crisis and noncrisis countries alike.[7]

5. BANKS AS HOLDERS OF GOVERNMENT BONDS AND THE INFLUENCE OF THIS FACTOR FOR THE BROADER ECONOMY

The importance of the level of risk government bonds hold became especially evident in the situation in which banks holders of such bonds fell in the event of financial crisis. According to a recent research by Gennaioli et al. covering the period 1998-2012 on 18 000 banks from 185 countries (on the basis of Bankscope database) bond holdings by banks are large. They also point out that up to 14,4 % of the assets of the banks in countries that have experienced at least one sovereign default are represented by government bonds. Interestingly, they have discovered that demand for government bonds is "…larger in less financially developed countries and for banks that fund fewer loans, take less risk, and are more levered."[8]

It is very interesting to note that various research papers prove there are specific patterns of accumulation of such securities on the part of banks. Demand for government bonds on the part of

[5] Lang, Michael; Schröder, Michael (2015): What drives the demand of monetary financial institutions for domestic government bonds? Empirical evidence on the impact of Basel II and Basel III, Working Paper Series, Frankfurt School of Finance & Management, No. 215, p. 6. Available on: http://www.frankfurt-school.de/clicnetclm/fileDownload.do?goid=000000683018AB4, retrieved on 4 June 2015.

[6] European Banking Authority. 2013. Interim Results Update of the EBA Review of the Consistency of Risk-weighted Assets. External report. London, p. 17.

[7] Ehrmann, Michael; Fratzscher, Marcel (2015) : Euro area government bonds: Integration and fragmentation during the sovereign debt crisis, Discussion Papers, Deutsches Institut für Wirtschaftsforschung, No. 1479, p.2, available at: http://www.econstor.eu/bitstream/10419/110322/1/825846153.pdf, retrieved 3 June 2015)

[8] Gennaioli, N., Martin, A., and Rossi, S. Banks, Government Bonds, and Default: What do the Data Say?, European Corporate Governance, 2013, p. 4, available at: http://repositori.upf.edu/bitstream/handle/10230/20967/1378.pdf?sequence=1, retrieved 3 June 2015

banks increases in times of financial crises when banks increase their holdings of government bonds from 14% to 15% of their assets.[9] This could be explained by two main factors:

1) in times of crisis and loss of confidence in the governments, the yields of the bonds issued by them go up as a result of decrease in market prices. Investors who seek higher current returns in terms of coupons tend to buy such securities undertaking the increased risks;

2) in many cases it is a matter of governmental policy to encourage local investors, banks including, to buy government bonds in order to support the local economy.

The latter is demonstrated in a research paper by Ehrmann et al. Their findings show that especially in Europe during the latest financial crisis, home bias was observed regarding sovereign bonds - in 2008 above 70% of the government debt by Portugal, Greece and Ireland was owned by foreign investors, which ratio decreased during the crisis to below 30% in favor of local investors,[10] important part of which were banks.

Such activities could be explained with the nationalism of capital inherent for the European banking system – a phenomenon largely due to historical developments taking place for centuries. What is important for the current investors as a result of it is that when local banks start supporting the governments though buying intensively government bonds in times of crisis, they risk to lose in case the credit ratings of the governments fall or in case of default. The losses then could affect the stability of the local banking system as a whole leading to disastrous outcomes for the economy of the particular country.

6. THE IMPORTANCE OF CREDIT RATING AGENCIES

A recent study shows that the three biggest rating agencies – Moody's, S&P and Fitch provide approximately 95% of the credit rating business.[11] They are in the position to manage credit rating information and thus to lead to overselling or overbuying of securities issued by particular countries. A good example is the Greek debt crisis and S&P's April 2010 decision to "…downgrade Greece's debt to junk status weakened investor confidence, raised the cost of borrowing, and made a financial rescue package in May 2010 all but inevitable."[12] The latest financial crisis shows many other examples of the importance of the ratings provided by credit rating agencies. Thus in January 2012 S&P downgraded the debt of the Eurozone countries with the exclusion of Germany which retained its triple A status.[13] This lead to a wave of negative reactions from policy-makers in the EU as it impacted the price of the government bonds of the country-issuers and the rate of the single currency.

The importance of the credit rating agencies has been discussed extensively especially since the start of the financial crisis in 2008. Many authors claimed that the ratings were distorted on purpose in order for particular results to be achieved by particular investors. Examples of such cases abound, and this led to debate in USA and in the EU institutions as regards the future of the credit rating agencies.

Despite the fierce debate, to date, the ratings provided by the three biggest agencies remain a dominant source of information for investors. Each investor is allowed to choose whether to use the ratings or not in his/her judgment, but the matter of fact is that for individual investors, and in many cases for

[9] Ibidem
[10] See Ehrmann, Michael; Fratzscher, Marcel. Euro area government bonds: Integration and fragmentation during the sovereign debt crisisDiscussion Papers, Deutsches Institut für Wirtschaftsforschung, No. 1479 Provided by ZEW in Cooperation with: German Institute for Economic Research (DIW Berlin), 2015, p. 5, available at: http://www.econstor.eu/bitstream/10419/110322/1/825846153.pdf, retrieved 3 June 2015)
[11] Alessi, Christopher. The Credit Rating Controversy. Campaign 2012. Council on Foreign Relations. Retrieved 29 May 2013, retireved 2 June 2015, available at http://www.cfr.org/financial-crises/credit-rating-controversy/p22328
[12] Ibidem
[13] Mass S&P downgrade as Greek debt impasse hit euro zone. Reuters. 13 Jan 2012, available at: http://www.reuters.com/article/2012/01/13/us-eurozone-sp-idUSTRE80C1BC20120113, retrieved on 2 June 2015

institutional ones creating own internal ratings is simply impossible. This is the reason why ratings produces by them continue to be followed and used.

The discussions on the relevance of those ratings though have not been fruitless. If not anything else, they helped investors realize that ratings produced by major rating agencies need not be considered as an absolute and correct judgment, and that on the contrary, further discretion is required so that to avoid losses upon an unexpected credit event.

7. CONCLUSION

Despite the long-maintained notion that government bonds represent risk-free assets, and in spite of the fact that many banks treat them as such thought the application of the standardized approach, government bonds have proven to be risky in certain circumstances. These circumstances are related primarily to the quality of the governmental management which is reflected in the credit ratings that credit rating agencies produce for each country. Also, under the current Basel Accord framework, banks are allowed the discretion to choose an approach for the evaluation of the risk of the assets and they tend to choose the one which is the easier and more suitable for their purposes, the standardized approach, which, however, as proven by ECB research, could lead to grave underestimation of the risks inherent to government bonds.

Considering the above, it is of ultimate importance both for institutional investors and for individuals ones to understand the basic concepts related to the riskiness of government bonds, and to take them into account when choosing to invest money in this type of assets. In this respect, the basic principles could be applied, and this could lead at least to a better sense of the risk undertaken. These principles are related to the maturity dates of the bonds, i.e. whether they are in the short, medium or long term, the quality of the issuer, i.e. if the issuer has high or low credit rating, and the currency in which these bonds are issued – whether it is the domestic one or a foreign one. Applying these simple consideration from the onset, investors will place the very fundament on which subsequently to build their detail analyses and to succeed increasing their wealth while not risking their assets.

REFERENCES

Alessi, Christopher. The Credit Rating Controversy. Campaign 2012. Council on Foreign Relations. Retrieved 29 May 2013, retireved 2 June 2015, available at http://www.cfr.org/financial-crises/credit-rating-controversy/p22328

Ehrmann, Michael; Fratzscher, Marcel (2015) : Euro area government bonds: Integration and fragmentation during the sovereign debt crisis, Discussion Papers, Deutsches Institut für Wirtschaftsforschung, No. 1479, p.2, available at: http://www.econstor.eu/bitstream/10419/110322/1/825846153.pdf, retrieved 3 June 2015)

European Banking Authority. 2013. Interim Results Update of the EBA Review of the Consistency of Risk-weighted Assets. External report. London, p. 17.

Gennaioli, N., Martin, A., and Rossi, S. Banks, Government Bonds, and Default: What do the Data Say?, European Corporate Governance, 2013, p. 3, available at: http://repositori.upf.edu/bitstream/handle/10230/20967/1378.pdf?sequence=1, retrieved 3 June 2015

Lang, Michael; Schröder, Michael (2015): What drives the demand of monetary financial institutions for domestic government bonds? Empirical evidence on the impact of Basel II and Basel III, Working Paper Series, Frankfurt School of Finance & Management, No. 215, p. 6. Available on: http://www.frankfurt-school.de/clicnetclm/fileDownload.do?goid=000000683018AB4, retrieved on 4 June 2015.

Mass S&P downgrade as Greek debt impasse hit euro zone. Reuters. 13 Jan 2012, available at: http://www.reuters.com/article/2012/01/13/us-eurozone-sp-idUSTRE80C1BC20120113, retrieved on 2 June 2015

Rao, Sujata. Analysis: Counting the cost of currency risk in emerging bond markets. Reuters. 22 November 2013, available at: http://www.reuters.com/article/2013/11/22/us-emerging-currencies-analysis-idUSBRE9AL0O120131122, retrieved 3 June 2015.