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FACTORS THAT AFFECT THE DOMESTIC GOVERNMENT BONDS YIELD

Abstract. Issuance of government securities in the domestic market is the most effective way of funding public needs. Historically, governments to meet their needs for financial resources committed borrowing in central banks through direct loans or through the issuance of special securities. However, many developing countries rely heavily to finance their deficit through getting foreign aid and soft loans from foreign states and international organizations. However, there is limited availability of official flows in each country.

So, it is very important how much government must pay for its obligations and what factors affect the price of attracting additional financial resources through issuance government securities.

Keywords: State budget deficit, public debt, government securities, government bonds yield, yield curve, factors affecting the yield.

Introduction. Governments must provide short- and long-term financing needs arising from gaps in the terms and amounts of revenues and expenses. In particular, these gaps occur when government spending exceeds its revenues during the period. In such situations, government securities are steady source of funding state needs. They allow making a voluntary transfer of excess savings from the public to the government, and their subsequent servicing and repayment. In terms of volume of resources involved and the consequences for social welfare, this exchange acts is very important financial transaction in the economy.

An important indicator of the efficiency of the government securities market is yield, which reflects on the one hand cash income earned from investing in financial assets, and on the other – the cost of financing government spending.

The expected income from the ownership of government bonds as debt security is calculated based on coupon payments, nominal value and time period to maturity. The yield of T-bills is, on the one hand, the price of funding for the government, on the other – determines the attractiveness of the instrument in the financial market.

Of course, the key stakeholders that determine the yield of government bonds are direct counterparties: the seller and the buyer. On the supply side the issue of determining the purchase price of T-bills auctions and the size of the coupon payment are regulated by the Cabinet of Ministers of Ukraine Resolution "About issues of T-bills» №80 from 31.01.2001.

Results and Findings. An important issue is also features of establishment a yield level while placing government bonds. According to current legislation there are distinguished auction sale of bonds and selling bonds at a fixed rate of return.

The auction sale of bonds is based on competitive and noncompetitive requests that met the following general rules[1]:

Competitive requests (requests with the definition of the amount of bonds and the yield level of their purchase) are met only according to their yield level if it does not exceed the maximum level of bonds yield;

– If there are competitive requests, with a yield level which does not exceed the limit of bond yield, noncompetitive requests (requests with the definition of the amount of bonds in which the rate of return of their purchase is not indicated) are met at the average level of bonds yield;

– If there are no competitive requests, then noncompetitive requests are satisfied by the level of the marginal bonds yield.

– If during the auction sale of bonds participants have submitted only non-competitive bids, the marginal rate of return can't vary by more than 10% compared to the bond yield level, which is established during the last bonds placement , which in terms issuance and volume of owners' rights are similar to placed bonds.

Sale of bonds at a fixed rate of return is produced exclusively with the participation of non-competitive

[1] *Постанова про випуски облігацій внутрішніх державних позик* (Кабінет міністрів України). *Офіційний сайт Верховної Ради України.* http://zakon4.rada. gov.ua/laws/show/80-2001-п (2015, вересень 21).

requests, which are satisfied by the level of the marginal bonds yield. If the total number of purchased bonds contained in the non-competitive requests exceeds the limit on the amount of placing of bonds, then noncompetitive requests are satisfied in proportion to the number of bonds indicated in these requests.

The final indicator of instruments value of state loans is the weighted average yield of government bonds, which shows bonds yield, calculated as a weighted average based on the yield bonds levels and the number of their purchase on competitive requests that are accepted.

It should be noted that the average yield of government bonds is calculated as the total of the market, and depending on the maturity of the loan instruments (table 1).

Table 1 shows that the average yield on government bonds is quite changed during the study period. There was no clear trend of increase or decrease in bonds yield. Thus, in 2007 and the results in 2011 there was a fall of return for all types of bonds, while in 2009 and 2012-2014 was observed fairly significant increase in yield of government bonds.

Table 1

The weighted average yield on government bonds in the 2007-2014[2]

average yield, %	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
from the primary placement	6,71	11,86	12,21	10,39	9,17	12,94	13,13	13,44
on attracted funds to the budget, including	6,71	14,85	20,07	12,69	8,92	13,56	12,96	15,24
up to 1 year	-	14,32	19,76	11,39	7,93	13,55	7,02	13,11
up to 2 year	7,00	15,16	24,59	12,48	9,17	14,96	-	17,11
up to 3 year	6,56	14,93	21,43	17,44	9,77	9,56	9,32	15,93
up to 4 year	6,40	-	-	12,52	-	-	12,10	-
up to 5 year	6,31	15,60	15,60	14,60	8,75	14,29	14,26	15,50
over 5 year	-	-	15,60	-	9,30	14,22	14,19	15,50

Source: prepared by the author based on statistical information of National Bank of Ukraine

Domestic government bonds also have some maximum level of return, i.e. a bonds yield, which is determined by the Ministry of Finance of Ukraine, above which competitive requests submitted by participants of bonds placing are not satisfied.

Investors that form the demand for government bonds, also have an impact on the loan instruments yield. Therefore, it should be noted that the rate of return on government securities depends on the tactics chosen by the investor. If you select passive tactic bought bonds are stored to maturity, and then can be reinvested. Active tactic involves the purchase of loan instruments in the primary market and then selling on the secondary market.

However, both sides of the process of pricing in the government bonds market in their activities take into account general economic factors which affect the final yield. The risk depends on the maturity of government bonds – or rather – on the term to maturity.

An important factor in determining the return of government bonds is to build a yield curve of domestic government bonds. It reflects the relationship between the level of borrowings return and the maturity. This dependence is this: the smaller the term to maturity, the lower the rate of return on government bonds, and conversely, the longer the term to maturity, the higher the rate of return[3].

[2] *Бюлетні Національного Банку України (електронне видання) за 2007-2014 рр.* Щомісячне аналітично-статистичне видання НБУ. *Офіційний сайт Національний банк України.* http://www.bank.gov.ua/control/uk/publish/category?cat_id=57897 (2015, жовтень, 3).

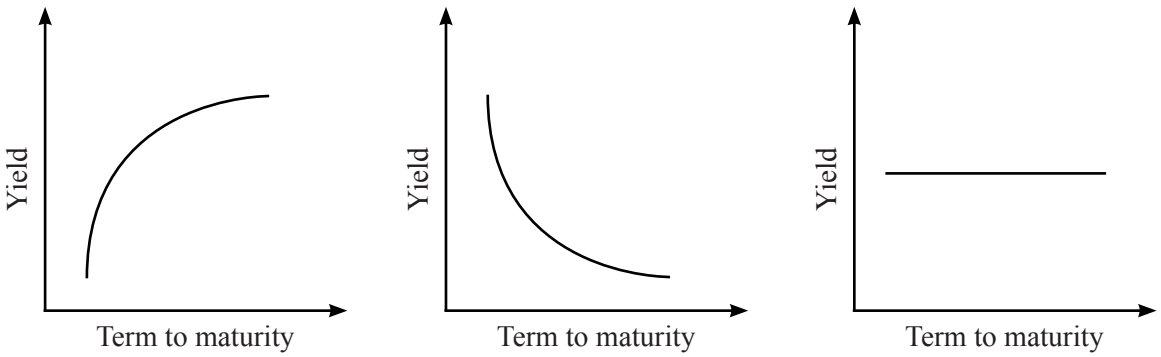
[3] Леонов, С.В. (2012) *Крива дохідності як індикатор ризику дефолту емітентів облігацій,* Бізнес Інформ, 8, 167-169.

In an unstable economic situation temporal structure of interest rates allows to relate expectations of investors about securities with different maturities. The importance of this challenge is that what information is available about particular type of government bonds. Based on these aspects, there are three main graphs or three standard forms of the yield curve[4] (Figure 1):

– positive slope or increasing curve (Figure A). This situation is characterized by the fact that investors expect rising interest rates (expectations hypothesis). With weak growth of the curve it is expected lower interest rates. With strong slope probably market expects rising of interest rates in the future. This curve is observed in normal economic situation. The possible losses of investors in an uncertain future with increasing of interest rates require appropriate risk premium;

– negative slope or decreasing curve (Figure B). The market expects further significant drop in rates. In conditions of high inflation the bonds yield is falling (money demand far exceeds supply, the price of bonds increases);

– constant (horizontal) yield curve (Figure C) is observed only when the yield does not change depending on the term to maturity.



a) The increasing curve *b*) The decreasing curve *c*) Constant curve

Figure 1. Standard views of different debt securities yield curves

According to these provisions one of Ukrainian stock exchange published yield curve of 18 January 2011 for bonds with a term to maturity of 9, 86, 191, 226, 254, 401, 450, 604 days (Figure 2).

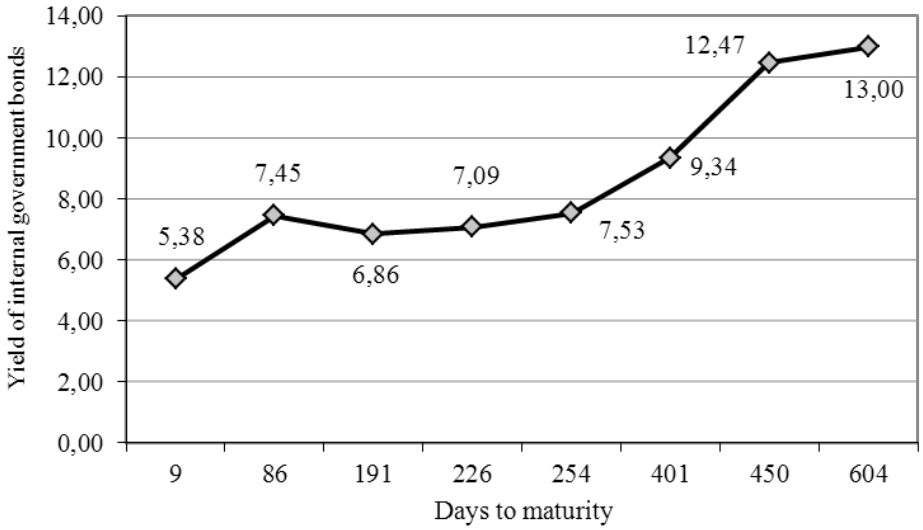


Figure 2. Yield curve of T-bills of January 18, 2011

Source: **Compiled by the author based on Official site of PFTS Stock Exchange[5]**

[4] Шарп, У, Александер, Г., Бэйли, Дж. (2001) *Инвестиции*. – М.: Инфра-М, – 1028.

[5] *Офіційний сайт Фондової біржі «ПФТС»*. http://www.pfts.com (2015, жовтень, 5).

Considering the yield curve it can be traced a direct relationship: the bonds with a term to maturity of 9 days have 5.38% rate of return and the bonds to maturity which remaining 450 days – 12.47%. Also, evaluating yield curve in terms of theoretical yield curves for government bonds it to a greater extent reflects the positive slope.

There are several factors that in any way affect the formation of government securities yield (Table 2). In particular they include economic growth, the participation of foreign capital, liquidity effect (have the opposite effect on the government debt instruments yield); the fiscal position, the growth of public debt, inflation expectations, exchange rate risk (have a direct impact on the value of government bonds) and so on.

Table 2

Factors affecting the yield of government securities

Factor	Indicator	The nature of the impact	A possible impact on the T-bills yield
Economic growth	GDP growth rate	The impact of the general economic situation in separate country markets	Opposite effect
Fiscal position	The state budget deficit	High deficit entails greater need for additional financial resources	Direct effect
The growth of public debt	Percentage increase in public debt	Market participants estimate the possibility of increasing the risk of inability of the state to repay its obligations	Direct effect
The participation of foreign capital	The share of government bonds purchased by non-residents	The presence of foreign investors in government securities market has a positive effect on its liquidity	Opposite effect
Inflation expectations	Rate of inflation	Investors want to receive compensation for the depreciation of their assets	Direct effect
Currency risk	Changing the exchange rate of national currency	The growth of currency risk is a signal for investors to minimize their losses	Direct effect
The yield of alternative investments	The rate on deposits	Is an indicator of alternative investments in another market	Direct effect
The effect of liquidity	The growth of money supply	The increase in the money supply leads to an increase in demand for financial assets and vice versa	Short term period– opposite effect
The effect of monetary policy	Refinancing rate	Rising the refinancing rate entails proportional increase of government bond yield	Direct effect
Political and information risks	Political events and information	The impact on the yield due to the strengthening or weakening of these risks	Strengthening – direct effect, Weakening – opposite effect

Source: Compiled by the author based on[6]

For example, the growth needs of the state in raising additional funds, which usually is associated with an increase in the budget deficit and lead to increase the amount of government bonds in circulation (correspondingly increase public debt) is one of the main indicators of the impact of increasing the interest rates in the country. On the other hand, changing the size of the public debt is crucial to assess the ability of the state to pay for commitments. The increase in the debt burden leads to higher credit risk for investors in government securities and affects the level of interest rates on government bonds.

[6] Радионова, А.В., Аршавський, А.Ю. (2012) Эмпирический анализ формирования доходности на российском рынке государственных ценных бумаг. *Экономический журнал ВШЭ, 3, 285-317.*

Conclusions. In theory, the main channel by which large budget deficit and considerable public debt affecting the long-term interest rates is the national savings channel. In the standard neoclassical model the budget deficit (in other specified conditions) causes a decrease in domestic savings and rising aggregate demand. In this situation arises excess supply of government securities, which leads to the increase in interest rates[7].

Examining factors of influence on government bonds yields it should be considered the growing role of foreign savings in the form of investments in government securities in an open economy. Thus, for developing countries, participation of foreign capital in buying domestic government debt instruments can be an important source of financing the budget deficit. This factor has the reverse effect on the yield of government bonds – with increasing part of bonds purchased by non-residents the yield decreases. Therefore, it is necessary to examine the growth of foreign capital participation as one of the promising ways to reduce the cost of attracting additional financial resources to the state budget.

The attractiveness of alternative investments, both domestic and foreign, also affects the demand for government bonds and, consequently, their yield. Demand for government securities reduced if other options for investment are more favorable or attractive to investment. Accordingly, in this situation, the government securities yield will increase.

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