Technical Notes

Introduction

This note shows in the first section a summary description of the data sources used, followed by an explanation of the statistical series presented in the report.

Data sources

The CSDB comprises all debt securities issued by the general government[1] that have an International Securities Identification Number (ISIN) code. The security-by-security information allows the compilation of the outstanding amounts, issuances, redemptions, average residual maturity, annual growth rates, schedules of maturing debt and other indicators on a timely basis. For more details regarding security-by-security information see the publication "The Centralised Securities Database in brief" (ECB, 2010) (link).

In addition, the time series related to loans borrowed by the general government are provided by on national data.

Data content

The tables and charts presented in the **Government debt securities** section show both euro area and national data for the EU countries (except Estonia[2]).

Government debt securities presented in this section are not consolidated within the general government sector, therefore including government debt securities held by other government units. The information presented in the **Government debt securities** section below may therefore differ from the government finance statistics, reported on a consolidated basis, in Chapter 6 of the Statistical Annex of the Economic Bulletin (link) and in Chapter 6 of the Statistics Bulletin (link). Other differences may also exist due to the use of other data sources than the CSDB in the compilation of government finance statistics[3] in the Economic Bulletin and in the Statistics Bulletin.

In addition, the use of security-by-security information to calculate the government debt securities may result in different values as calculated from the aggregate data collection reported in Chapter 2 (Financial Developments) of the Statistical Annex of the Economic Bulletin. The differences may relate to various issues, such as valuation, scope (such as cash-less issuances are not included in the aggregate data collection, debt securities without ISIN are not included in the CSDB but

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[1] Central, state and local government plus social security funds.
[2] Estonia is not reported due to a low coverage of debt securities in the CSDB. About 70% of all Estonian debt securities are issued without ISIN and thus not covered in the CSDB.
[3] Debt securities without ISIN are not included in the CSDB but are included in the government finance statistics.

included in the aggregate data collection), sector classification and time of recording differences[4].

Section 1. Outstanding amounts, transactions and nominal yields (euro area and national data)

Table 1.1 reports on the outstanding amounts, issuances and redemptions of general government debt securities. The data are presented in EUR billions, as a percentage of GDP and in annual growth rates. The (monthly) ratios are expressed in percentages of annual GDP published by Eurostat. For the years where the GDP statistics are not yet available the ratios use the current projections prepared by the Commission (published in AMECO database).

The definitions of selected indicators are as follows.

The **outstanding amounts** (P_t) of debt securities issued by a country/euro area at the end of period t (month) equals the sum of the face value of all (N) individual securities issued by a country/euro area that did not mature yet:

$$P_t = \sum_{n=1}^{N} face.value_n \tag{1}$$

The outstanding amounts are broken down by **residual maturity**[5], **original maturity**[6], **rates (i.e. as coupon type)**[7] and **currency**[8].

The outstanding amounts (P_t) at the end of period t can also be calculated by adding to the outstanding amounts (P_{t-1}) at the end of previous period ($t-1$) the securities issued (I_t) in period t (**issuances**) and deducting the securities that matured (R_t) in the period t (**redemptions**).

$$P_t = P_{t-1} + I_t - R_t \tag{2}$$

The annual growth rate is calculated by taking into account the stock time series (e.g. outstanding amounts):

$$\hat{r}_t = \left(\frac{P_t}{P_{t-12}} - 1\right) \times 100 \tag{3}$$

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[4] Issuance is considered to have occurred when the issuer receives payment in the aggregate data collection, instead of commitment date in the security-by-security information.

[5] The remaining period until the final contractually scheduled payment.

[6] The time period from the issue date until the final contractually scheduled payment – one year or less are classified as short-term and long-term otherwise.

[7] Debt securities may have one of the following coupon payments during their lifetime: fixed rate, floating rate (also known as floater) or zero coupon payments.

[8] The currency in which the value of positions and flows for debt securities issues are fixed, as specified in the contract between the institutional units.

The observed redemptions of debt securities in debt markets can occur in one of the following situations[9]:

The maturity date has been reached and the debt security is repaid[10];

Redemption took place at an early date, i.e. before the maturity date, and can be:

partial – reduction of the outstanding amount;

total – the debt security is repaid in full.

The observed issuances capture two distinct cases in the increase on the outstanding amounts:

a new debt security is issued for the first time,

additional issuance of the same debt security (named bond taps or issuance in tranches).

Table 1.2 reports on nominal yields related to general government debt securities for outstanding amounts and for transactions[11]. The data are presented as percentages per annum. The data are broken down by type of coupon rate and/or by residual maturity (up to 1 year and over 5 years).

The nominal yield[12] is the interest rate that the debtor promises to pay debt holders per unit of time[13]. The nominal yield comprises the coupon rate (i.e. the interest rate stated on a bond when issued) and any difference between the stated redemption price at maturity and the issue price (i.e. discount or premium). The discount or premium is linearly spread (accrued) as interest over the full lifetime of the debt security (original maturity in days).

$$nominal.yield = coupon.rate + 365 \times \frac{(redemption.price - issue.price)}{original.maturity} \qquad (4)$$

For every individual debt security that is still outstanding, the nominal yield is calculated using equation (4). The average nominal yield for N securities (e.g. for a country) is calculated using the face value as the weighting factor (see equation (5)). Average nominal yields may be calculated for different types of breakdowns, such as by residual maturity, issuances, and redemptions.

$$average.nominal.yield = \sum_{i=1}^{N} \frac{nominal.yield_i \times face.value_i}{\sum_{r=1}^{N} face.value_r} \qquad (5)$$

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9   The issuance of government debt securities also covers the new debt securities issued and the increase in the outstanding amount for any existing debt security.

10   If an issuer defaults, there will be a change of the debtor (if debt is guaranteed) and/or the type of debt instrument (from debt security to loan). Consequently, the debt securities statistics will show a full redemption at the maturity date.

11   New rates for the issuances and past rates for the redemptions are calculated as past 12-month period averages.

12   % per annum.

13   As a statistical convention, the number of days in a year is invariably set to 365.

Section 2. Debt service

Table 2.1 reports data on the expected disbursements related to the servicing of the debt securities outstanding at some point in time. Debt service is broken down into the principal amounts (face value) to be disbursed and the interest expenditure to accrue in the coming 2 years. The coming 2 years are detailed in three main parts: up to 3 months, over 3 months and up to 1 year and over 1 year and up to 2 years.

The scheduled (future) redemptions are calculated based on the maturity date for each debt security. The scheduled redemptions only take into consideration the maturity date of the current existing and outstanding debt securities. It does not include any possible early redemption of debt securities and/or redemptions of debt securities that will be issued in the future (i.e. debt securities that did not exist at the point in time to which the debt service refers).

Finally, the interest to accrue in a given future period is calculated by applying the observed coupon rate to the current outstanding amounts. This measure does not take into account any re-fixing of the coupon rate for floating rate debt securities and index linked securities or any future change(s) in the coupon rate of fixed rate debt securities (e.g. step-up coupons). The issuance of debt securities at discount/premium is reflected in the face value of debt securities and not as interest as recommended by the international statistical standards.

The debt service for debt securities denominated in foreign currency assumes no change in the exchange rate vis-à-vis the euro.

Finally, the average residual maturity presents, in years, the weighted[14] average of the residual maturity of all debt securities.

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[14] Weighted by outstanding amounts.

Technical notes – Debt securities issuance and service by EU governments