EUROPEAN CENTRAL BANK

EUROSYSTEM

THE "CENTRALISED SECURITIES DATABASE" IN BRIEF

INTRODUCTION

The aim of the Centralised Securities Database (CSDB) is to hold complete, accurate, consistent and up-to-date information on all individual securities relevant for the statistical purposes of the European System of Central Banks (ESCB). This means securities issued by EU residents; securities likely to be held and transacted in by EU residents; and securities denominated in euro, whoever the issuer is and wherever they are held. The CSDB contains information on over five million debt securities, equities and mutual fund shares/units issued by residents of EU Member States or by others.

This booklet explains the relevance of consistent and accurate information on securities, and describes the main features of the CSDB and how it works. The final section describes how things stand at present and sets out the planned developments.

THE RELEVANCE OF SECURITIES AND USES OF SECURITIES DATA

At end-2008 the nominal value of debt securities issued by euro area residents amounted to €13.2 trillion, with over 90% of them denominated in euro. Monthly gross issuance of euro-denominated securities was around €1.5 trillion. At end-2008, the market value of quoted shares issued by euro area residents amounted to some €3.5 trillion (much reduced from amounts in 2007 because of falls in equity prices). In addition, outstanding debt securities denominated in euro and issued by non-residents of the euro area amounted to €2.2 trillion at end-2008. The value of outstanding debt and equity securities issued by euro area residents is almost double that of the stock of broad money in the euro area. Securities account for by far the largest part of government debt in the euro area, and for over half of the outstanding borrowing (including equity) of non-financial corporations. Cross-border transactions and positions in securities and related income flows are important for euro area balance of payments and international investment position purposes. At the end of 2008 the portfolio investments of non-residents of the euro area in euro area debt securities and shares amounted to €6.0 trillion, while euro area investors held €3.7 trillion in securities issued by entities outside the euro area.[1]

Statistics on financial stocks and flows broken down by institutional sector and broad class of financial instrument are essential for the conduct of monetary policy. Moreover, the microeconomic analysis of financial markets, focusing on specific instruments and markets, is growing in importance. Interest in the risks associated with different types of instruments and in the exposure of debtors and creditors, which is likely to grow as a consequence of the recent financial crisis, has also added to information requirements. Financial stability work uses both macro-financial statistics and information relating to individual securities, issuers and narrow instrument categories. Although macro-prudential or financial soundness indicators present an overall view, they are based largely on detailed information about individual issuers and instruments. Since the number of instrument types used in and the scope of the Eurosystem operations have grown substantially in recent years, there is a considerable need for detailed information.

1 The data mentioned in this paragraph may be found in tables in sections 2, 3, 4 and 7 of the "Euro area statistics" section of the ECB Monthly Bulletin.

CHALLENGES FOR COMPILERS OF STATISTICS

Securities present a number of statistical difficulties. Information on holdings in the euro area financial accounts published by the ECB is still less reliable than could be wished. Securities also raise problems of valuation and classification. The data compiled so far from reported aggregate holdings undoubtedly contain errors. Although new issues and redemptions data are quite reliable (if not comprehensive), statistics on outstanding amounts may be less so.

The problem has not been a lack of data sources. Many private data providers collect information on individual securities. Several ESCB central banks and the Bank for International Settlements (BIS) maintain securities databases. But bringing these sources together would not be sufficient to provide a comprehensive picture, since there are many gaps and, where the sources overlap, there are often inconsistencies. As a consequence, achieving a significant improvement in the statistics on securities requires a more active approach.

The solution was to establish a single, authoritative data source to meet all these needs for the ECB itself, for all national central banks in the European Union and for a few other institutions.

NEED FOR A REFERENCE DATABASE

A single database promotes consistent results and efficient data reporting and compilation. The comprehensive database developed by the ECB uses commercial and other existing sources, selecting the most reliable value for each attribute, making use of expertise within the ESCB to enhance data quality, and filling gaps (in particular for prices and income) with reliable estimates.

From a statistical angle, the CSDB has two main functions: to provide data used to compile euro area aggregates (at present in the areas of portfolio investment in the balance of payments and international investment position, and investment fund statistics, and prospectively also in monetary financial institution and financial vehicle corporation statistics, and then more widely), and to provide a reference source on individual securities and issuers, in particular to support the collection of statistical information from reporting agents on a security-by-security basis (see Box). However, the CSDB is also a valuable tool where respondents still report their securities transactions and positions in aggregate.

Box

SECURITY-BY-SECURITY REPORTING

At much the same time as the need for better data became apparent, shortcomings were seen in the way the data were collected in most EU Member States. A changing financial environment and developing needs require flexible statistical reporting. It is not easy to respond flexibly without imposing heavy burdens on data suppliers where the approach is to request that aggregated data be classified by the reporting source. A more fruitful approach is to request comprehensive but unsorted data which the statistical data compiler can then arrange and adapt as required. Modern database software and powerful computers make this possible.

Aggregate data collection requires reporters to group their transactions and holdings into prescribed statistical categories and report them accordingly to the compiler. Compilers rely on reporters doing this correctly: to do so, the latter must understand the reporting instructions and adhere to them. The only way for the compiler to check the quality of the data is to contact

reporters and ask them. If data requirements change for any reason, compilers must present respondents with amended reporting instructions and possibly request backdata to be submitted according to the new requirements in order to rebuild historical series. All this can be burdensome and time consuming and may not be productive.

Security-by-security reporting means that the compiler receives raw information on issues, redemptions, transactions and holdings for individual securities, and produces all relevant statistical breakdowns from this raw material. The compiler can check the accuracy of the data at the level of individual securities. For example, individual security data may permit better monitoring of the chain of custodians and sub-custodians (thus avoiding double-counting of securities holdings). The compiler classifies the securities by instrument, sector of the issuer, etc., and does not rely on a reporting agent who may not understand the requirement. Statistical operations like accruing interest and calculating valuation adjustments are more likely to be done correctly, promoting consistency across the range of statistics. Reconciliation between transactions and (starting and end-period) positions is possible. Detailed comparisons of outstanding amounts of securities issued and held may indicate gaps or double-counting. New requirements can be met and new ways of arranging or presenting the data can be implemented without troubling reporting agents. Data on individual securities and narrowly defined categories are available for micro-financial analysis and operational use.

It might be thought that reporting transactions in or holdings of individual securities would be burdensome for reporting agents. But this is not so when, as is increasingly the case, reporting agents are highly automated. Sorting and rearranging data for statistical purposes may be more difficult for them than transmitting a large amount of data held internally. Compilers have more to do under security-by-security reporting, but the extra work is considered worthwhile for the reasons given. Several EU Member States have been collecting portfolio investment information on a security-by-security basis for balance of payments and international investment position purposes for some years. All euro area countries agreed to do so from 2008. Moreover, investment funds report security by security under the new ECB regulation implemented at the start of 2009, and monetary financial institutions and financial vehicle corporations may or are even encouraged to do so in further ECB regulations under which they will report from 2010.

THE CONTENTS AND MAIN FEATURES OF THE CSDB

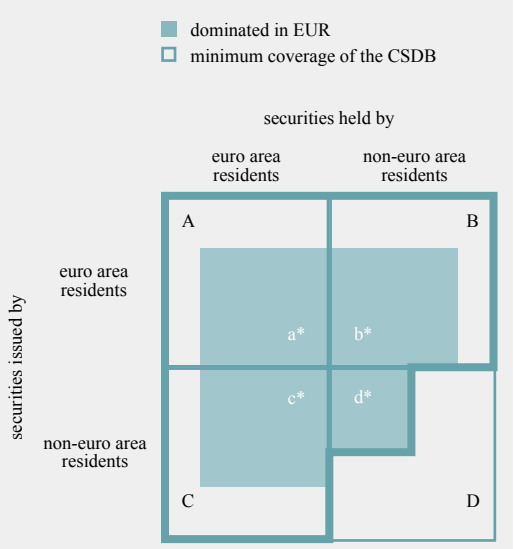
The objective of the CSDB is to cover all securities relevant for the ESCB's statistical purposes. In addition to debt securities[2] denominated in euro or other currencies, and equities – including mutual fund shares/units – issued by residents of EU Member States, the priority is given to securities denominated in euro issued by entities resident outside the European Union.[3] Other internationally traded securities likely to be held by residents are also covered by the CSDB.

Chart 1 illustrates this coverage. The total set falls within the heavy black line, and the sub-sets A to C and a* to d* are easily identifiable (except that the CSDB does not yet contain data on holdings). Coverage in D will be further extended as necessary, when transactions in or holdings of securities in this category are reported.

2 The CSDB covers also "hybrid" debt securities, i.e. debt securities with embedded derivatives.

3 While the CSDB aims to support the entire ESCB, the focus lies on the euro area.

Chart 1 Scope of securities covered in the CSDB



Source:

DEBT AND EQUITY SECURITIES

While most *debt and equity securities* have a unique identifier, most commonly an International Securities Identification Number (ISIN), other identifiers are in use too. The CSDB is based on ISIN as a unique security identifier.

Alongside the residency of the issuer, the two most important classifications are the institutional sector of the issuer and the instrument class. Institutional sectors in the CSDB conform to the *European System of Accounts 1995* (*ESA 95*) standard: *non-financial corporations* (*S.11* in the *ESA 95*), *financial corporations* (*S.12*), and *general government* (*S.13*). Financial corporations and general government are further broken down into sub-sectors. There already exists a standard classification of securities, namely the Classification of Financial Instruments (CFI), and this is used in the CSDB. Although the CFI (like the ISIN and other codes) is a commercial application which was not developed for statistical purposes, it fits the classification of securities in the ESA 95 (*securities other than shares*, *AF.3*, further divided according to original maturity; *shares and other equity*, *AF.5*, including quoted and unquoted shares and mutual fund units).[4] The CSDB also contains information on each security.

PRICES

The ESA 95 requires transactions, including issues and redemptions, to be recorded at the *price* at which they were carried out, and outstanding amounts to be valued at current market prices. The CSDB conforms to these valuation principles and reflects market prices, as observed for individual instruments, or estimated according to International Capital Market Association (ISMA) standards, or defaulted when prices cannot be estimated. In the ESA, the change in the value of the stock of securities over a defined period can be reconciled with cumulative transactions in them arising from new issues, redemptions and purchases/sales, changes in classification and structure, and price and foreign exchange rate changes. The CSDB contains information to permit this reconciliation to be carried out.

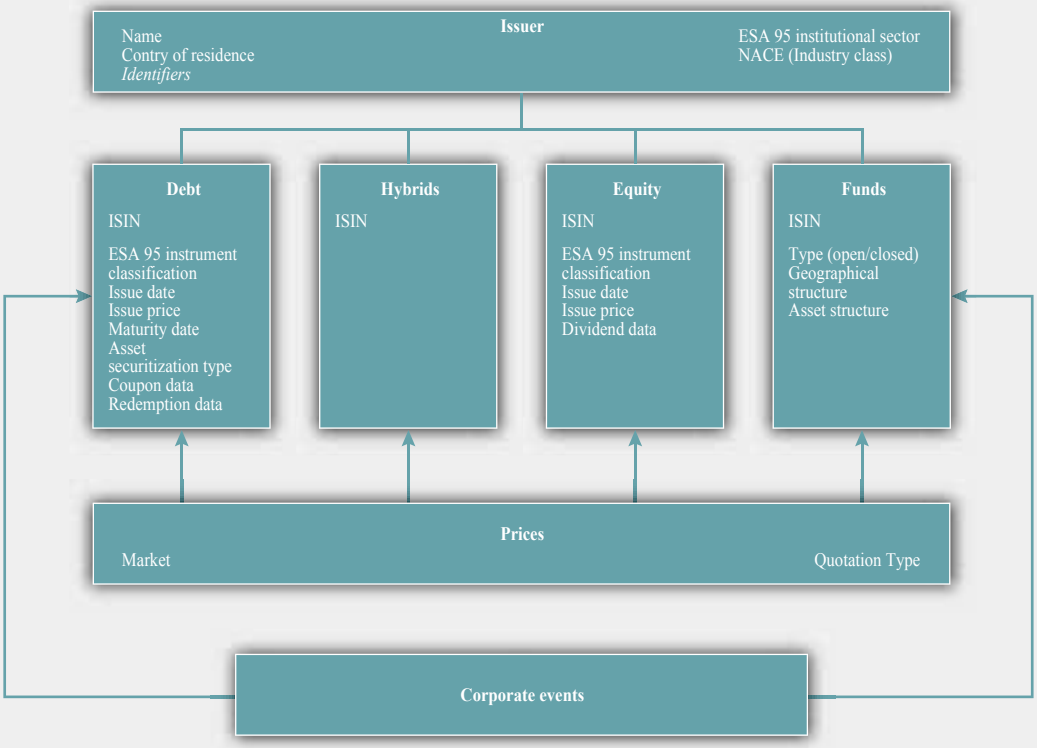
CORPORATE EVENTS

Corporate events include stock splits and reverse stock splits, takeovers, mergers and other organisational changes affecting issuers and/or outstanding securities.

The main attributes of the CSDB data model are summarised in Chart 2.

4 The CSDB does not yet contain information on financial derivatives, which form part of AF.3 in the ESA 95.

Chart 2 Main components of the CSDB data model



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RECEIPT AND PROCESSING OF INFORMATION IN THE CSDB

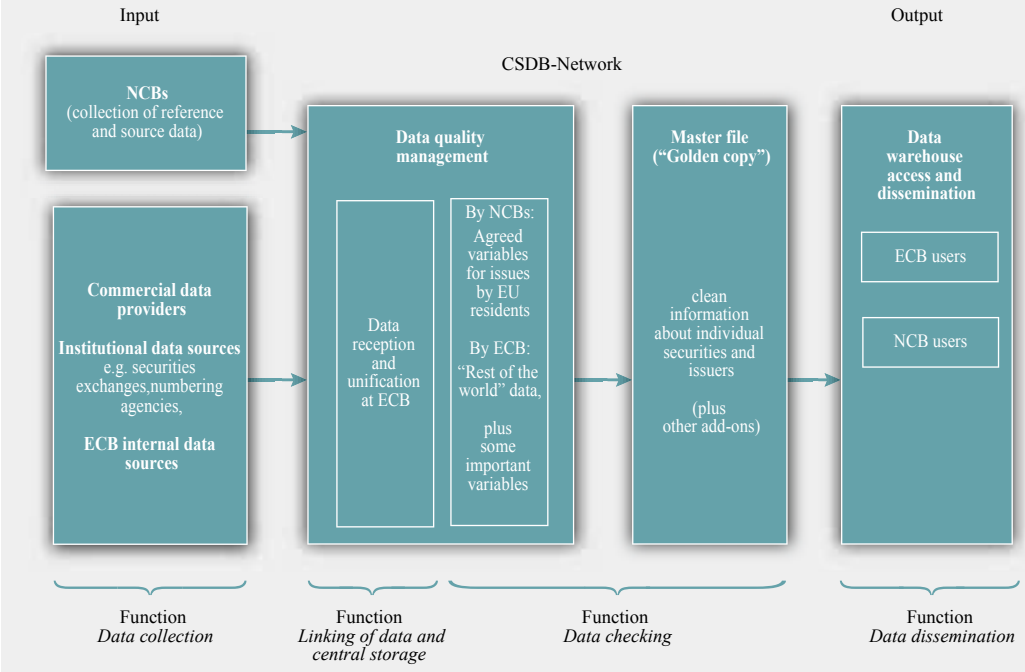
This section contains a brief and non-technical account of the processes carried out in the CSDB.

The database is fed by several commercial data providers and institutional sources, including ESCB national central banks and the ECB itself (internal data). Although the database can accept data in various formats, the sources generally use a common data structure. The sources are chosen for their quality and coverage. Nevertheless, the information from the sources is often incomplete and may be contradictory.

Chart 3 gives an overview of the flow of information in the CSDB. Data collection means putting together data obtained from the sources to provide as complete and uniform a record as possible. Invalid data are filtered out at the start of the process. The pooled data will usually contain some inconsistent information and so the data need to be cleaned. This is done on the basis of rules built into the system to choose the best (most reliable) value for each attribute where the sources are contradictory. The result of this process is a "cleaned" database with no more than one entry for each attribute for each security. During the data cleaning process, the contents of the CSDB are subject to testing as part of data quality management. The way in which this is organised in the ESCB is described in the section on organisation.

Prices and other information may be missing for some securities, especially private placements, unquoted equities and rarely traded securities. The CSDB contains automatic routines for

Chart 3 Flow of information within the CSDB network



Source:

estimating missing prices. The procedure naturally varies depending on the nature of the missing information, what other relevant information is available, and the nature of the security concerned. For debt securities, for example, it is possible to estimate a price using the reference information available for the security, such as the cash flow coupon information, currency of denomination, residual maturity, and credit standing of the issuer. Pricing equity without direct information is more difficult. A pricing model relates past rates of return on the instrument to rates of return on a market index and uses the current values of that index to update the prices. Appropriate indices are mapped for each single instrument using country, currency, industry and sector information. In addition, if there are no observed market prices and the estimation cannot be done, prices are automatically defaulted by the CSDB system.

Using information from the same or similar securities, and also statistical estimation methods where necessary, the CSDB fills the gaps in the best, most consistent way possible. The result is a "golden copy" of the data, which combines the best features of the sources drawn on. The golden copy is stored in a reference database. Aggregations, yield curves, residual maturities, interest accruals and many other calculations performed on the data to produce results used in further statistical and analytical work are based on the golden copy, and the results are also stored in the reference database. The data are then released to end-users.

Daily updating of the CSDB is now possible. With the completion of Phase 2 of the project, online access is available to ESCB central banks.

ORGANISATION

With the implementation of Phase 2, the CSDB operates as a network (see the grey shaded area in Chart 3) coordinated by the ECB.

The contributing institutions use the best sources available to them and check the data loaded in the CSDB, testing the data against other related statistics and national information sources. This checking process is supported by a set of metrics to monitor data developments over time and to identify outliers and inaccuracies.

The ECB ensures that no gap or overlap remains in the data. The ECB, assisted by the national central banks, also sets standards for data compilation in order to ensure the accuracy and consistency of the information collected. This arrangement makes the best use of national and European expertise and shares the responsibility of monitoring the coverage and quality of information according to the location of that expertise. The approach aims to achieve a good degree of standardisation.

The ECB also collaborates with leading central banks outside the European Union.

FUTURE DEVELOPMENTS

The inclusion of information on holders of securities, providing aggregates by country of residence and, where possible, by economic sector, is envisaged. Where there is no register of holders and where securities are traded in secondary markets, the issuer may not be able to identify the holder of the debt. The ECB intends to collect information about holders, using reported information about holdings of individual stocks, as well as information from custodians, securities settlement systems and any other sources. It may not be possible to identify all holdings and to link them to the respective issues as stored in the CSDB, but more information on them than is currently available will contribute to better statistics.

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