

Securities holdings statistics for analysing holdings of securities in Germany and Europe: methodology and results

The bankruptcy of Lehman Brothers in autumn 2008 made it clear that detailed information on what investors hold which securities, by whom they are issued and in what volume is vital for fulfilling the tasks of the European Central Bank (ECB) and the Eurosystem national central banks. For this reason, in the fourth reporting quarter of 2013, securities holdings statistics were introduced across Europe; the national central banks submit these statistics on a security-by-security basis to the Securities Holdings Statistics Database, which is jointly operated by the Bundesbank and the ECB. These statistics comprise holdings of debt securities, shares and investment fund shares. On the one hand, sectoral data are recorded, with the securities holdings being broken down by economic sector and the investor's country of origin. This focuses on the securities of euro-area investors and paper issued by residents and held by investors outside the Eurosystem. On the other hand, the group data capture the own holdings of the largest banking groups in the euro area.

The Bundesbank's securities holdings statistics form the basis of the German contribution to the Securities Holdings Statistics Database. To compile these statistics, the Bundesbank collects group data from large German banking groups as well as sectoral data from all financial institutions domiciled in Germany. As the sectoral data have been available on a security-by-security basis since the end of 2005, it is already possible at present to conduct in-depth analyses and research projects on the scale and structure of securities holdings in Germany. This makes it possible to investigate the developments in securities holdings since the outbreak of the global financial crisis. The data furthermore provide information about the distribution of the volume of securities held in Germany among the various groups of investors. In addition, derived flow variables can be used to assess to what extent changes in holdings based on market prices are due to the securities transactions of individual groups of investors or to other developments such as price adjustments.

The introduction of harmonised securities holdings statistics and uniform processes for compiling data for the Securities Holdings Statistics Database at the European level further improves the comparability, quality and completeness of data. The information from across Europe allows a variety of flexible analyses to be conducted, in particular for risk-prone segments of the European financial system. The symmetrical access of the entire Eurosystem to all data is a significant factor as it ensures a uniform information base for decision-making processes of the European committees. Future developments in the securities holdings statistics of the European System of Central Banks (ESCB) are closely linked to the provision of microdata for other statistical fields. For example, an expansion of group data is currently under consideration to enable securities holdings micro data to be analysed in connection with the granular information from the planned European credit register.

Subject matter and purpose of the German and European securities holdings statistics

Developments in securities holdings statistics

With its securities holdings statistics (formerly known as securities deposit statistics), the Bundesbank has been collecting data on securities holdings of financial institutions in Germany since 1962. The statistics were initially collected annually and comprised a limited quantity of aggregated data. Due to the growing importance of securities data for responding to monetary policy as well as micro and macroprudential issues, the statistics on securities holdings have been gradually expanded over the years. Since 2013, the data are collected on a monthly basis and, as the German contribution, are fed into the euro area's Securities Holdings Statistics Database. This database contains all the security holdings information supplied by central banks in the ESCB.

Legal principles and purpose of the collection

To ensure uniform statistical concepts and, thus, comparable security holdings data, Regulation ECB/2012/24 was adopted in conjunction with Guideline ECB/2013/7,¹ stating that the reporting scheme for securities holdings statistics in the euro area comprises the holdings of debt securities, listed shares and investment fund shares or units.² All holdings data are generally granular, which means that they are made available on a security-by-security basis. On the one hand, securities holdings are broken down by economic sectors in line with ESA 2010, and by the investors' country of origin (sectoral data). On the other hand, the data capture the securities holdings of large banking groups in the euro area (group data).³ In the latter case, the relevant group parent transmits information on the individual entities' own holdings of securities.⁴

Purpose of securities holdings statistics

Besides the data on holdings of securities sent by the reporting agents, information on issuers, securities and prices made available through the Centralised Securities Database of the ESCB is also used to compile both the German and European securities holdings statistics.⁵ Linking

securities holdings and reference information makes it possible to conduct extensive analyses, including on risks relating to certain securities, issuers, investors, countries or selected currencies.

The securities holdings statistics represent an important source for the financial accounts in capturing the flow of funds in the European economies as well as for the net external position in showing the volume and structure of external assets and liabilities. The data are, moreover, used for the public finance statistics, which form the basis for calculating European countries' Maastricht debt level. In addition, the International Monetary Fund uses securities holdings data as part of the Coordinated Portfolio Investment Survey in order to close information gaps in cross-border securities transactions and holdings.

Demand for detailed information on securities holdings has remained at a high level since the onset of the global financial and sovereign debt crisis in the euro area. The large number and increased complexity of financial products on offer, the higher volume of investment in the securities markets as well as the impact of monetary and financial policy measures are reflected in the securities holdings statistics. For

High investment volumes and complexity in securities markets

¹ Regulation ECB/2012/24 concerning statistics on holdings of securities and Guideline ECB/2013/7 concerning statistics on holdings of securities were published in the Official Journal of the European Communities on 1 November 2012 (OJ L 305, p 6) and 7 May 2013 (OJ L 125, p 17) respectively.

² The term security and the distinctions between the various types of securities are in line with the definitions of the European System of Accounts (ESA) 2010.

³ The banking groups subject to reporting requirements are selected on the basis of the consolidated balance sheet totals pursuant to ECB guidelines on the transmission of consolidated banking data in banking supervision (see S Borgioli, A C Gouveia und C Labanca (2013), Financial Stability Analysis, Insights Gained from Consolidated Banking Data for the EU, ECB Occasional Paper Series No 140).

⁴ A banking group within the meaning of these statistics comprises the parent institution, ie a credit institution or a financial holding company, as well as all associated financial subsidiaries and branches which do not constitute insurance corporations. The basis of consolidation was determined in line with prudential supervisory regulations (see Directive 2006/48/EC).

⁵ See ECB, The Centralised Securities Database in Brief, February 2010.

| Securities holdings statistics for Germany and Europe | | | | |
|---|--|--|---|--|
| Type of securities holdings statistics (on a security-by-security basis) | Sectoral data (by economic sector and the investors' country of origin) | | Group data (Own holdings of large banking groups by individual entities) | |
| | Securities holdings statistics (Germany) | Securities Holdings Statistics Database (Europe) | Securities holdings statistics (Germany) | Securities Holdings Statistics Database (Europe) |
| Data recorded from reporting date | December 2005 | December 2013 | December 2013 | December 2013 |
| Frequency | Quarterly up to December 2012 reporting date; monthly since January 2013 | Quarterly | Monthly | Quarterly |
| Coverage (2014 Q2) | Complete survey | Complete survey | 7 groups | 25 groups |

Sources: Deutsche Bundesbank securities holdings statistics and the Securities Holdings Statistics Database.
 Deutsche Bundesbank

example, the sectoral data in the Securities Holdings Statistics Database for euro-area investors contained around 0.6 million different securities as of the second quarter of 2014. Besides traditional financial products, such as shares and bonds, investors have been increasingly focusing on hybrid forms of investment and structured products such as asset-backed securities and contingent convertible bonds. At the European level, the sectoral data for the second quarter of 2014 show the holdings of residents of the respective euro-area countries reaching a total amount of €23,352 billion at market prices.⁶

Closing information gaps through the collection of statistics on a security-by-security basis

Depending on the question to be studied, either aggregated or granular data can basically be suitable. Aggregates are often used to reduce complexity and to gain an overview by summarising detailed information. For example, it may be helpful to analyse the German stock index (DAX) in order to estimate market trends rather than looking at the individual company figures it contains. Yet, the higher each level of aggregation is, the more informa-

tion is lost, which is not always desirable. However, to perform their functions, it is vital for the central banks in Europe and the ECB to be able to draw on data of a high statistical standard which are as free as possible of information gaps.

The rapid technological progress of recent years in the area of information technology has opened up the possibility of large volumes of data being saved, prepared and flexibly analysed within a short space of time. This created an environment in which the European central banks and the ECB were able to replace aggregate information gathered with granular data based on individual securities and to meet the existing information requirements.

Detailed micro data are increasingly gaining importance within the ESCB, not least due to the fact that they can be used as a basis for condensing into aggregate data at any time. Aggregates on securities holdings gathered elsewhere can be modelled using the data collected on a security-by-security basis. As a result, the additional collection of aggregate data for the purposes of monetary, currency and financial stability policy as well as for banking

Changeover to granular data

Micro data to meet varying requirements

Limitations of aggregated information

⁶ See ECB, Who Holds What? New Information on Securities Holdings, ECB Economic Bulletin Issue 02/2015.

supervision generally no longer appears to be absolutely essential.⁷ Moreover, granular securities holdings information makes it possible to respond flexibly to new requirements and, if necessary, to provide individually tailored statistics without having to change the underlying method of data collection. As the reporting procedure does not have to be adapted so often, this ultimately leads to cost savings for the reporting agents.

Detailed data make possible standardised procedures and enhanced quality assurance

The introduction of Europe-wide information on a security-by-security basis brings with it a cross-border standardisation of procedures. For example, data are now condensed centrally according to uniform rules, which has the effect of harmonising statistical aggregates. Furthermore, micro data are useful for data producers as they allow quality checks in greater depth. Also, it is possible to compare total holdings with the corresponding issuance volume on a security-by-security basis, for example to identify and rule out multiple reporting of a single securities holding.⁸ A granular database also makes it possible to monitor individual positions over time, which is particularly informative if the relevant aggregates are determined on the basis of micro values.

Calculating transactions from changes in securities holdings

Securities holdings can be analysed over time using both total holdings and securities purchases and sales. Since recording all securities transactions that have actually been carried out would require considerable time and effort, a concept for deriving transactions from changes in securities holdings was developed for the securities holdings statistics. The availability of data on a security-by-security basis means that it is possible to separately calculate the determinants of flows in securities holdings, such as financial transactions and price and exchange rate adjustments. This makes it possible to capture the cumulative securities transactions of a given period with sufficient accuracy (see the box on pages 99 to 101).

Challenges of granular data

The introduction of statistics at the individual security level and the associated increase in the

volume of data require investment in adequate information technologies as well as experts with the ability to obtain relevant information from the abundance of data. In addition, the amount of confidential micro data generally increases along with growing granularity. To guarantee data protection and security, the relevant technological and organisational precautions need to be made prior to such data collection.

Results of the securities holdings statistics (sectoral data)

For the statistics on securities holdings, just under 2,000 financial institutions domiciled in Germany report securities holdings for resident and non-resident customers as part of their custody business.⁹ In addition, domestic banks provide information about their own holdings, irrespective of the country in which the securities are held. Besides the data to be collected for the Europe-wide Securities Holdings Statistics Database, the German sectoral data on banks' own securities holdings comprise additional information on book values, investment motives and repos. For their customer safe custody accounts, financial institutions also report the total number of securities deposits they manage broken down by the investors' economic sectors.¹⁰

Special features of data collection in Germany

⁷ See A L Lorier and F Restoy, Statistics for multi-purpose use: synergies between the central banking and supervisory functions, Seventh ECB Statistics Conference, Towards the Banking Union. Opportunities and challenges for statistics, 15 October 2014, <http://www.ecb.int>.

⁸ Multiple reporting of securities holdings can, for example, occur in the context of securities repurchase transactions and lending where a security is temporarily transferred from the original holder (transferor/lender) to a third party (transferee/borrower).

⁹ Reporting requirements apply to all domestic monetary financial institutions (excluding money market funds), investment companies, such as "other" credit institutions conducting deposit transactions pursuant to section 1 (1) sentence 2 number 5 of the German Banking Act.

¹⁰ See Deutsche Bundesbank, Statistics on banks and other financial intermediaries, guidelines, Special Statistical Publication No 1, January 2014, pp 281ff. For up-to-date figures, see Deutsche Bundesbank, Securities holdings statistics, December 2014, <http://www.bundesbank.de>.

Methodology for deriving transactions from flows in securities holdings on a security-by-security basis

The method which is applied for determining transactions in the securities holdings statistics and in the Securities Holdings Statistics Database is explained below. With this method, flows in securities holdings can be used to approximate the cumulative securities transactions during a given period (eg monthly). The concept is based on ESA 2010 in which the flows are first broken down into their components.

If these principles are applied to individual securities, a flow between two points in time may be the outcome of financial transactions, adjustments in prices and exchange rates, the compound effect or other volume-driven adjustments. The compound effect is a residual resulting from the simultaneous occurrence of adjustments in market prices and exchange rates and which cannot clearly be ascribed to one of the two causes of adjustment. Other volume-driven adjustments in holdings comprise flows due, say, to reclassifications. This includes changes in the characteristics of the securities (such as a change in the type of security, the currency of issuance or the ma-

turity) as well as in the securities issuers and investors (sector or country of domicile, for example).

In line with this approach, a change in the holdings of an individual security comes about as follows:

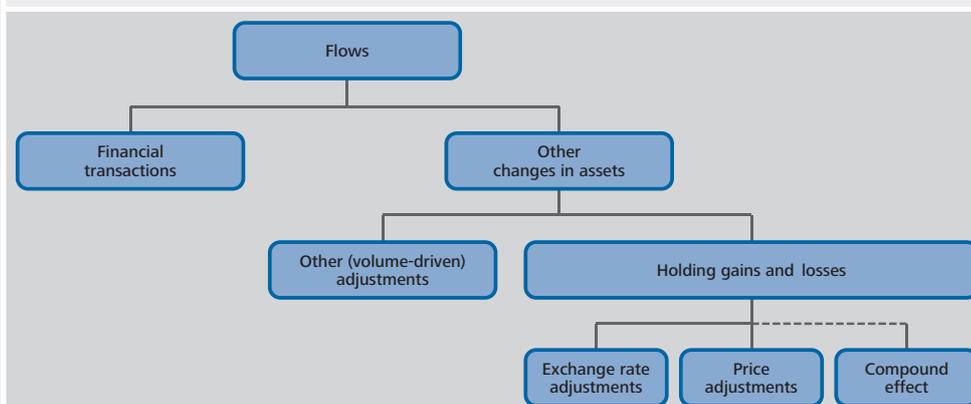
$$S_t^{MV\text{€}} - S_{t-1}^{MV\text{€}} = T_t^{MV\text{€}} + O_t^{MV\text{€}} + P_t^{MV\text{€}} + X_t^{MV\text{€}} + \text{comp}_t^{MV\text{€}} - IN_t^{\text{€}}$$

where $S_t^{MV\text{€}}$ denotes the securities holdings¹, $T_t^{MV\text{€}}$ the financial transaction, $O_t^{MV\text{€}}$ the other volume-driven adjustment, $P_t^{MV\text{€}}$ the price adjustment, $X_t^{MV\text{€}}$ the exchange rate adjustment, $\text{comp}_t^{MV\text{€}}$ the compound effect and $IN_t^{\text{€}}$ the interest income, all valued at market prices (*MV*) and denominated in euro at time *t*.

While the nominal change in holdings ($S_t^{NV} - S_{t-1}^{NV}$) reflects the nominal transaction $T_t^{NV\text{€}}$ plus the other nominal volume-

¹ In the case of bonds with changes in nominal value over time, such as redemption bonds, a pool factor has also to be taken into account. To improve readability, we forgo the corresponding formal representation at this point.

Decomposition of flows with reference to ESA 2010



Source: Bundesbank chart based on ESA 2010.
 Deutsche Bundesbank

driven adjustment, additional components for the price and exchange rate adjustments as well as the compound effect are needed for the analysis of a market-price-related flow in holdings. The securities holdings can be valued at market prices using either the clean price (p_t^c) or the dirty price (p_t^d). The difference between the two variables is explained by the differing treatment of the accrued interest ai_t during the period, where $p_t^d = p_t^c + ai_t$ applies.

The securities holdings are generally valued at the clean price. However, the financial transaction is calculated including interest accrued during the relevant period. Consequently, the sum of the individual flow components would be greater than the difference in the holdings based on market prices. In order to obtain correct results, the interest income relevant to fixed-income securities $IN_t^{\text{€}}$ (ie the accrued interest contained in the financial transaction) has to be subtracted as a further component.

As it is not known at what point in time a transaction has taken place or whether intra-period transactions were carried out, the net transaction is valued at average prices \bar{p}_t and exchange rates \bar{x}_t .

The financial transaction valued at market prices $T_t^{MV\text{€}}$ can be calculated as follows:

$$T_t^{MV\text{€}} = T_t^{NV\text{€}} \cdot \bar{p}_t + IN_t^{\text{€}} \\ = (S_t^{NV} - S_{t-1}^{NV} - O_t^{NV}) \cdot \bar{x}_t \cdot \bar{p}_t + IN_t^{\text{€}},$$

with $\bar{p}_t = \frac{p_{t-1}^c + p_t^c}{2}$ and $\bar{x}_t = \frac{x_{t-1} + x_t}{2}$ as the average price and exchange rate at time t .

The other volume-driven adjustment $O_t^{MV\text{€}}$ may be valued as follows:

$$O_t^{MV\text{€}} = O_t^{NV} \cdot x_t \cdot p_t^c \text{ with } x_t \text{ as the exchange rate at time } t.$$

$P_t^{MV\text{€}}$ takes account of the impact which adjustments in the price of the security have on the final holdings based on market prices, with the exchange rate being kept constant:

$$P_t^{MV\text{€}} = S_{t-1}^{NV} \cdot p_{t-1}^c \cdot x_{t-1} \cdot \left(\frac{p_t^c}{p_{t-1}^c} - 1 \right) + \\ T_t^{MV\text{€}} \cdot \left(\frac{p_t^c}{\bar{p}_t} - 1 \right).$$

The first summand measures the valuation adjustment that is to be ascribed to the original holdings S_{t-1}^{NV} . The second summand explains the share of the price change that is caused by the transaction. In other words, this represents the new valuation/deflation of the security between the purchase/sale price and the end of the period. To do this, the current market price is set in relation to the average market price at which the transaction is valued.

The impact of fluctuating exchange rates is captured by the adjustment in the exchange rate $X_t^{MV\text{€}}$, with the price being kept constant:

$$X_t^{MV\text{€}} = S_{t-1}^{NV} \cdot p_{t-1}^c \cdot x_{t-1} \cdot \left(\frac{x_t}{x_{t-1}} - 1 \right) + \\ T_t^{MV\text{€}} \cdot \left(\frac{x_t}{\bar{x}_t} - 1 \right).$$

The first summand measures the valuation adjustment that is to be ascribed to the original holdings S_{t-1}^{NV} . The second summand explains the share of the exchange rate adjustment that is due to the transaction, ie the difference between the average exchange rate at which the transaction is valued and the exchange rate at the end of the period.

If the transaction component $T_t^{MV\text{€}}$ is subtracted from the difference in the holdings based on market prices, there remains a variable which comprises all non-

transaction-related flows and which is designated at this point as the adjustment component:

$$ADJ_t^{MV\text{€}} = (S_t^{MV\text{€}} - S_{t-1}^{MV\text{€}}) - T_t^{MV\text{€}}.$$

It should be noted that, owing to the compound effect, the price adjustment, the exchange rate adjustment and the other volume-driven adjustment do not add up to the adjustment component. The following relationship holds:

$$ADJ_t^{MV\text{€}} = P_t^{MV\text{€}} + X_t^{MV\text{€}} + O_t^{MV\text{€}} + comp_t^{MV\text{€}}.$$

The following thus results for the compound effect:

$$comp_t^{MV\text{€}} = S_{t-1}^{NV} \cdot (x_t - x_{t-1}) \cdot (p_t^c - p_{t-1}^c) + T_t^{MV\text{€}} \cdot \frac{(x_t - \bar{x}_t) \cdot (p_t^c - \bar{p}_t)}{\bar{x}_t \cdot \bar{p}_t}.$$

The compound effect is equal to zero only when either no exchange rate adjustment or no price adjustment takes place.

Together, the components calculated in this way give the flow in holdings between two points in time.

Developments in securities holdings at market value by security types

The sectoral data serve as a basis for a range of analyses on the scope and structure of securities holdings in Germany. In this way, annual developments in securities holdings at market values can, for example, be examined for the various types of securities over the past eight years, ie including since the outbreak of the global financial and sovereign debt crisis in the euro area.

High correlation between investment volumes of listed shares and market price movements

When the global crisis broke out, the market value of the total volume of listed share holdings initially plummeted (-41%) and then recovered only slowly up to the end of 2010 – without, however, returning to the original value – before hitting a further low in December 2011. Nevertheless, at the end of November 2014, holdings reached market values that were higher than shortly before the financial crisis.¹¹ The movements of all listed share holdings essentially reflect developments in the DAX during the same period.¹²

Viewed over time, however, investment fund shares held in Germany moved in parallel to but with a slight lag behind listed shares. The relevant volumes have been above those of listed shares since December 2008, thus representing the second largest item among the categories of securities analysed. While holdings of listed shares returned to their level of December 2007 in terms of their market value, the volumes of investment fund shares based on market values increased on a scale (48%) unmatched by any other category of securities.

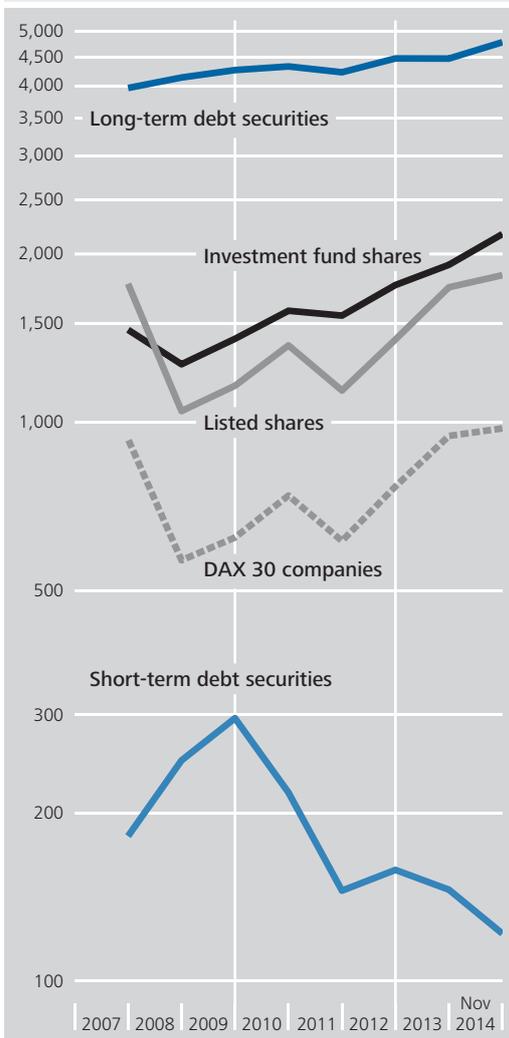
Sharp rise in the volume of investment fund shares

¹¹ For further details, see Deutsche Bundesbank, Ownership structure in the German equity market: general trends and changes in the financial crisis, Monthly Report September 2014, pp 19-32.

¹² Developments in the market value of total holdings of listed shares reported in Germany (currently around 27,000 national and international securities, including participation certificates) indicate a high correlation with developments in the corresponding DAX 30 securities volume, with an average of 54% of listed share holdings being attributable to DAX 30 values between December 2007 and November 2014.

Holdings in Germany by categories of securities

Holdings at year-end at market value in € billion, log scale



Deutsche Bundesbank

Diverging developments in holdings of short and long-term bonds

Developments in the volumes of short and long-term debt securities produce a mixed picture. Based on market values, holdings of the largest type of security under consideration – long-term debt securities with a maturity of more than one year – are characterised by largely stable growth. With the exception of a marked decline in December 2011, the volume of holdings based on market values rose by around 21% between December 2007 and the end of November 2014, with annual average growth of just under 3%. By contrast, following an initial steady rise, holdings of short-term debt securities with a maturity of up to one year peaked at the end of 2009. Thereafter

they declined significantly, with the maximum volume of holdings recorded in December 2009 having already halved in December 2011.

Holdings of securities in Germany can also be analysed according to various groups of investors. For this purpose, domestic investors are broken down below into non-financial corporations, monetary financial institutions (banks), institutional investors,¹³ general government (comprising central, state and local government and social security funds) and households (including non-profit institutions serving households), while foreign investors are combined to form a single investor group.¹⁴

Breakdown of securities holdings by investor group

The volume of securities holdings in Germany calculated on the basis of market prices as at November 2014 totalled €8,914 billion, almost two-thirds of which are held by domestic investors, with the remaining 37% (€3,277 billion) of total holdings being owned by foreign investors. Institutional investors, especially investment funds, are the main domestic holders of securities, with a share of 28% (€2,509 billion). Monetary financial institutions form the second-largest domestic investor group, with their own holdings accounting for just under one-fifth (€1,544 billion) of the total volume. The banking sector's share thus roughly corresponds to the combined share of the next two largest sectors: households (€944 billion) and non-financial corporations (€479 billion). The general government sector is the smallest investor group; their securities holdings amount to around 2% (€161 billion) of the total volume.

Foreign investors form largest investor group

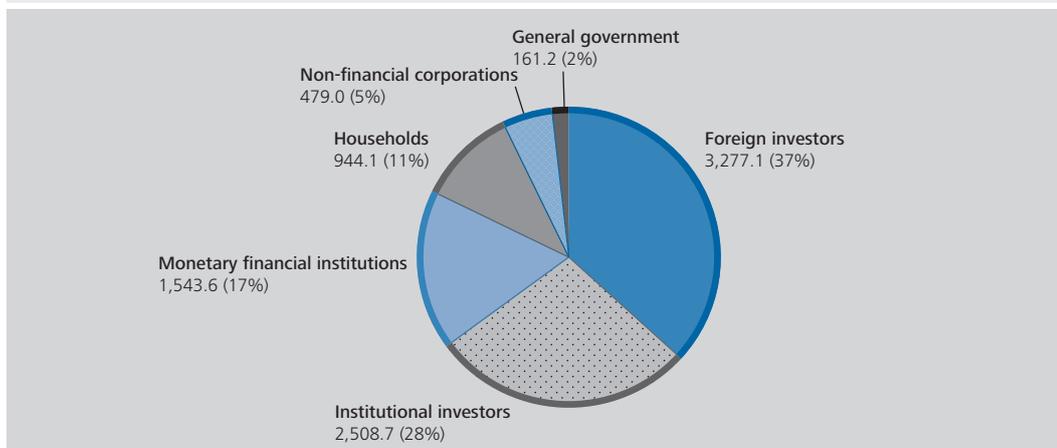
While listed shares play an important role in foreign investors', non-financial corporations', institutional investors' and households' holdings of securities in Germany, they are of less

Distribution of securities volume by type of security and investor group

¹³ In this context, institutional investors comprise insurance corporations and pension funds, investment and money market funds and other financial intermediaries.
¹⁴ Foreign investors are predominantly banks and central securities depositories which hold securities for foreign institutional investors at German financial institutions.

Securities holdings in Germany according to investor group

Holdings at market value, € billion, as at November 2014



Deutsche Bundesbank

significance in the portfolios of monetary financial institutions and general government. For the latter sectors, long-term debt securities, in particular, predominate.¹⁵ Investment fund shares are primarily held by institutional investors, followed by households as the second-largest group of investors. Viewed in absolute terms, given the current low-interest-rate environment, short-term debt securities and money market fund shares play a fairly minor role in the safe custody accounts of the investor groups as a whole. The comparatively high percentage of holdings of listed shares in the portfolios of non-financial corporations (61%) can mainly be explained by strategic investment, as they are often participating interests in affiliated enterprises within a group. Long-term debt securities account for just under 85% of the holdings of monetary financial institutions. These largely comprise domestic and foreign bank debt securities as well as government bonds, most of which were issued abroad.¹⁶

ents of the flows based on market values between October and November 2014 across all securities categories, highlights the fact that, alongside financial transactions, the price effect is of major significance. While households, monetary financial institutions and general government top up their securities portfolios on the whole, sales of securities predominate in the case of non-financial corporations, institutional investors and foreign investors. Owing to the price effect, which reflects the positive market developments in late autumn, the securities holdings of all investor groups show an increase, however.

In recent years, the availability of data on a security-by-security basis has resulted in a range of research projects drawing on sectoral data from the Bundesbank's securities holdings statistics. In a recent paper, Buch, Koetter and Ohls, for example, examine the relationship between German banks' investment in government bonds and these institutions' risk profile. They furthermore examine to what extent

Selected research projects on investment behaviour

Decline in transactions currently being offset by price increases

The breakdown of securities holdings by investor group makes possible a variety of analyses. If financial transactions and other changes in the volume of assets are derived statistically from the flows in securities holdings (see the box on pages 99 to 101), it is possible to study the trading activities of individual investor groups, for example. Looking at the compon-

¹⁵ Further studies also show that foreign investors constitute the largest group of creditors of long-term debt securities.

¹⁶ In principle, in terms of their chronology all securities holdings can additionally be broken down by economic sector or country of origin of the respective issuer. A detailed presentation of this would go beyond the scope of this article.

Securities holdings according to category of investor and security

Holdings at market value, € billion, November 2014

| Investor group | Short-term debt securities | Long-term debt securities | Listed shares | Money market fund shares | Investment fund shares | Total |
|---------------------------------|----------------------------|---------------------------|----------------|--------------------------|------------------------|----------------|
| Households | 3.1 | 197.4 | 247.4 | 4.1 | 492.0 | 944.1 |
| Non-financial corporations | 6.7 | 45.5 | 290.2 | 1.3 | 135.4 | 479.0 |
| Monetary financial institutions | 21.6 | 1,303.3 | 61.1 | 0.2 | 157.5 | 1,543.6 |
| Foreign investors | 81.7 | 2,027.1 | 881.1 | 4.9 | 282.2 | 3,277.1 |
| Institutional investors | 8.4 | 1,088.8 | 333.5 | 2.2 | 1,075.7 | 2,508.7 |
| General government | 0.2 | 125.0 | 19.9 | 0.1 | 16.0 | 161.2 |
| Total | 121.7 | 4,787.1 | 1,833.2 | 12.8 | 2,158.8 | 8,913.7 |

Source: Deutsche Bundesbank, Securities holdings statistics.

Deutsche Bundesbank

these banks have adjusted their share of government bonds in the wake of the global financial crisis. The analysis shows that, between 2005 and 2010, numerous banks did not hold any government bonds, that institutions investing in them showed a fluctuating degree of diversification, and that, since the bankruptcy of Lehman Brothers, banks have been increasingly taking macroeconomic factors into account when making investment decisions.¹⁷

Fecht, Hackethal and Karabulut examine the business policy of universal banks in retail banking. They find that the institutions systematically sell shares from their own trading portfolio to their customers, and that the returns on these securities that they have passed on are lower than those on the other shares in their own portfolio and also lower than the returns on other shares in their private customers' holdings.¹⁸

In another study, Kick, Onali, Ruprecht and Schaeck investigate to what extent households and non-financial corporations reshuffle their securities portfolios as a result of macroeconomic wealth shocks and microeconomic supply shocks. Their results show that, given losses in securities investments, it is households in particular which – having invested a large percentage of their funds in government bonds of

crisis-hit European countries – change the composition of their portfolios. If there is a reduction in the supply of credit, both households and non-financial corporations decrease their portfolio concentration.¹⁹

Baltzer, Stolper and Walter study the geographical composition of households' holdings of shares. They find that the securities of local public limited companies account for a higher share in the portfolio of households than would be recommendable on the basis of an optimal diversification strategy. This phenomenon of local bias is observed by the authors across national borders.²⁰

In a recently published study, Baltzer, Jank and Smajlbegovic analyse the trading behaviour of various investor groups on the German stock market. They focus on the momentum effect,

¹⁷ See C M Buch, M Koetter and J Ohls, Banks and Sovereign Risk: A Granular View, Deutsche Bundesbank Discussion Paper, No 29/2013.

¹⁸ See F Fecht, A Hackethal and Y Karabulut, Is Proprietary Trading Detrimental to Retail Investors?, Deutsche Bundesbank Discussion Paper, No 42/2013.

¹⁹ See T Kick, E Onali, B Ruprecht and K Schaeck, Wealth Shocks, Credit-Supply Shocks, and Asset Allocation: Evidence from Household and Firm Portfolios, Deutsche Bundesbank Discussion Paper, No 07/2014.

²⁰ See M Baltzer, O Stolper and A Walter, Is Local Bias a Cross-Border Phenomenon? Evidence from Individual Investors' International Asset Allocation, Deutsche Bundesbank Discussion Paper, No 18/2013.

which states that shares that performed well in the past will continue to deliver above-average returns, whereas shares that have performed poorly hitherto will also underperform the market in the future. They show that it is mainly foreign institutional investors and domestic financial investors that pursue a momentum strategy, whereas domestic households act as a contrarian.²¹

Finally, Craig, Gorenflo, Kremer and Paterlini study the interconnectedness of the German banking sector using mutual equity participations. They show that the network structure between banks in Germany diverges from theory-based optimal networks. Future analyses will focus on the development of an early warning indicator for financial market stability as well as determining a robust network structure.²²

Data collected across Europe for the Securities Holdings Statistics Database

Introduction of harmonised securities holdings data in the ESCB

The ESCB's Centralised Securities Database has been providing price and reference data since 2005, in particular for securities which are issued or held by residents of the European Union and for securities denominated in euro. Corresponding information on securities holdings was not collected initially. This led to an advisory group being set up in 2008 to examine the need for European microdata on securities holdings and the practicability of the requirements. The results of this initiative formed the basis for the design of the standardised reporting scheme used for the Securities Holdings Statistics Database.²³ In the field of sectoral data, this mainly comprises holdings of securities by euro-area investors and securities issued by residents and held by non-euro area investors.²⁴ The group data currently contain information on the global own holdings of the 25 largest banking groups in the euro area.

Changes in securities holdings according to investor group

Calculations at market values, € billion, November 2014 compared with previous month

| Investor group | Changes in holdings | Transactions | Price effects | Other effects ¹ |
|---------------------------------|---------------------|--------------|---------------|----------------------------|
| Households | 24.4 | 4.6 | 20.2 | -0.4 |
| Non-financial corporations | 9.7 | -6.2 | 16.1 | -0.2 |
| Monetary financial institutions | 18.9 | 11.0 | 9.2 | -1.3 |
| Foreign investors | 54.2 | -16.9 | 73.8 | -2.7 |
| Institutional investors | 56.3 | -40.3 | 98.6 | -2.0 |
| General government | 4.1 | 2.4 | 1.9 | -0.2 |

Source: Deutsche Bundesbank, Securities holdings statistics. ¹ Other effects comprise changes in holdings due to exchange rate and compound effects, other changes in volume and accrued interest.

Deutsche Bundesbank

Since the fourth reporting quarter of 2013, 25 European central banks have been submitting harmonised information on securities holdings to the Securities Holdings Statistics Database. This is a data production and analysis system for securities holdings operated jointly by the Bundesbank and the ECB on a quarterly basis. The Bundesbank receives information from across Europe, links the transmitted data to the harmonised price and reference data of the Centralised Securities Database, carries out a data quality control and performs calculations on a security-by-security basis, such as the calculation of flows, for example. The ECB then takes over the granular data in order to prepare standardised or individually processed European statistical results for the various tasks of the ESCB. Under certain conditions, data requirements which go beyond those of the

Quarterly data compilation and preparation of statistical results

²¹ See M Baltzer, S Jank and E Smajlbegovic, Who Trades on Momentum?, Deutsche Bundesbank Discussion Paper, No 42/2014.

²² See B Craig, M Gorenflo, P Kremer and S Paterlini, Understanding Banking Networks from Optimal Portfolio Choices, Extended Research Proposal Presented at Computational and Financial Econometrics/European Research Consortium for Informatics and Mathematics in Pisa, 8 December 2014.

²³ See P Bull (2013), ECB, Statistics for Economic and Monetary Union, Enhancements and New Directions, pp 76-79.

²⁴ In addition, most non-euro area EU countries provide national contributions to the sectoral data on a voluntary basis. See ECB, Who Holds What? New Information on Securities Holdings, ECB Economic Bulletin Issue 02/2015.

German contribution to European security holdings data broken down by investor group

Holdings at market value in € billion, 2014 Q2, securities holdings of investors domiciled in the euro area

| Investor group | Total | German contribution for domestic investors |
|--|---------------|--|
| Financial sectors in the euro area | 18,316 | 3,849 |
| Monetary financial institutions | 6,152 | 1,451 |
| Institutional investors ¹ | 12,164 | 2,398 |
| Non-financial sectors in the euro area | 5,036 | 1,574 |
| Non-financial corporations | 1,434 | 473 |
| General government | 746 | 157 |
| Households | 2,856 | 944 |
| Total | 23,352 | 5,423 |

Sources: Securities Holdings Statistics Database (see ECB, Who Holds What? New information on Securities Holdings, ECB Economic Bulletin Issue 2/2015). ¹ In this instance, institutional investors comprise insurance corporations and pension funds, investment funds excluding money market funds and other financial institutions.

Deutsche Bundesbank

ESCB can be met, for example for the European Systemic Risk Board, European supervisory authorities, the European Commission and international organisations (such as the International Monetary Fund and the Bank for International Settlements).

Uniform rules for submission of national contributions

In order to guarantee complete and non-overlapping statistics on European securities holdings, the national central banks provide information in accordance with harmonised requirements. For example, information available in the individual countries cannot be readily merged, which poses a challenge for the sectoral data. Securities owned by French banks and held in safe custody at German institutions may be recorded both indirectly (in the securities holdings statistics) and directly at the investor (in the statistics of the Banque de France). To rule out double-counting and, at the same time, to provide a largely complete overview of the European securities holdings structures, data reported directly are first collected in the Securities Holdings Statistics Database and the remaining data gaps are then closed using information that has been collected indirectly. In the case of Germany, for example, banks and investment funds have so far submitted direct reports of their securities holdings; in all other sectors, such as insurance corporations and pension funds, non-financial cor-

porations, general government and households, data are collected indirectly through custodian banks.

A study of European sectoral data for the second quarter of 2014²⁵ shows a market value of €23,352 billion for the total security holdings of investors resident in the euro area. The German contribution for domestic investors amounts to €5,423 billion.²⁶ A breakdown of securities holdings by investor group into financial and non-financial sectors reveals that the share of the financial sector clearly predominates at more than 78% at the European level and 71% in Germany.

Share of securities holdings statistics in sectoral data across Europe

The standardisation of the reporting and submission schemes and the uniform compilation procedures of the Securities Holdings Statistics Database ensure a high degree of comparability in European statistics. In addition, data quality is improved by merging information at the European level, as enhanced checks can be carried out, which are not possible with purely na-

Additional benefit of European securities holdings statistics

²⁵ As this report went to press, the European sector data were available only up to the second quarter of 2014; this is therefore the observation period that has been examined here.

²⁶ In comparison, the sectoral data of the securities holdings statistics record a total stock of securities held by both residents and non-residents of €8,681.1 billion for the second quarter of 2014.

tional datasets. The higher degree of coverage provided by European securities holdings statistics, in particular for indirectly collected sectoral data, is also of great significance. In this way, the collection of data by other central banks, for example in Belgium, Luxembourg or the Netherlands, can close data gaps for securities held by German non-financial corporations and households in other European countries.

The Securities Holdings Statistics Database allows a wide range of flexible analyses across Europe in strategically important and especially risky segments of the money and capital markets. For example, linking securities issued and held in the “who-to-whom” analyses provides detailed insights into the structure of securities holdings in the euro area and thus into relationships and dependencies in the European financial system. Symmetrical access by the entire Eurosystem to all European securities holdings data ultimately ensures a uniform information base for decision-making processes on the European committees.

Outlook for the development of granular securities holdings statistics

Planned enhancement of securities holdings statistics

The planned enhancement of securities holdings statistics in the ESCB is closely connected with the availability of other microdata. In future, corporate data will be provided through the Register of Institutions and Affiliates Database, for example, which allows additional analyses on issuers and investors; the Analytical Credit Dataset will create a European database

system that provides a detailed picture of lending and borrowing.²⁷ Connecting the information on individual loans gained in this way with the granular securities data that become available will allow banking supervisors to identify debtors’ overall risks, for example. In order to ensure that loan and individual securities holdings data can be analysed together in future, consideration is currently being given at the European level to expanding the reporting scheme for the group data of the securities holdings statistics and thus for securities holdings statistics for Germany.

With the ongoing broadening of the micro database, the collection and application of statistical data in the ESCB will continue to change. Granular information can be collected once, stored centrally and used for various purposes,²⁸ irrespective of the statistical results to be compiled, following standardised procedures across Europe. As a rule, it is possible to use information that is already available, which means that new requirements can be implemented flexibly and within a narrow time frame. For a large number of users, the introduction of harmonised microdata throughout Europe opens up the prospect of new analytical options and research perspectives.

Potential of ESCB microdata

²⁷ See P Bull (2013), ECB, Statistics for Economic and Monetary Union, Enhancements and New Directions, pp 183-190; and the ECB Decision on the organisation of preparatory measures for the collection of granular credit data by the European System of Central Banks (ECB/2014/6), <http://eur-lex.europa.eu>.

²⁸ An ESCB statistics group is currently working together with the European Reporting Framework to develop conceptual preconditions for a more strongly integrated granular reporting procedure for the collection of statistical and prudential supervisory data.