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Geographical allocation of euro area portfolio investment liabilities: estimates of outstanding amounts and associated income flows

1. Introduction

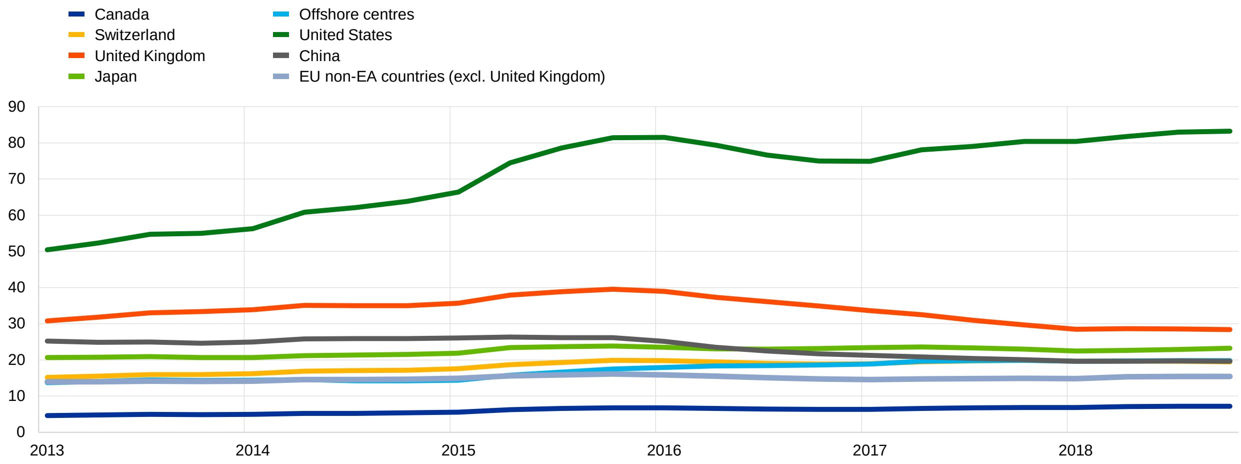
This note explains the methodology underlying the estimation of euro area portfolio investment liabilities, outstanding amounts and corresponding income debits[1] by main geographical counterpart.[2] The identified geographical counterparts are: non-euro area EU Member States (as an aggregate)[3], Brazil, Canada, Switzerland, China, India, Japan, Russia, the United States, the "offshore centres"[4] aggregate and international organisations excluding EU institutions. In addition, these estimates also separate out the data for Denmark, Sweden, the United Kingdom and Hong Kong. The release of these new breakdowns enhances the scope of the quarterly balance of payments (b.o.p.) dataset, enabling the portfolio investment liabilities and the euro area current account as a whole to be fully compiled by geographical counterpart. This is shown in Table 7.2.4 of the ECB Statistics Bulletin and Chart 1 below.[5]

Identifying investors in euro area portfolio investment liabilities (i.e. equity and debt securities issued by euro area residents) is a complex task, as securities are regularly traded in secondary markets and held via custodians and other financial intermediaries.[6] As a consequence, a first known counterparty bias and/or a custodial bias may arise if statisticians do not look through these intermediaries to identify the actual holders of euro area securities.[7] Such bias would result in a flawed geographical allocation of investors in euro area securities. Owing to these difficulties, the geographical allocation of euro area

[1] Portfolio investment income debits refer to the payments of debt securities interests and equity dividends generated by those euro area securities classified under the portfolio functional category and held by non-euro area residents.
[2] The data on corresponding income debits were first released on 2 October 2018.
[3] This includes Bulgaria, the Czech Republic, Denmark, Croatia, Hungary, Poland, Romania, Sweden and the United Kingdom.
[4] Including Hong Kong.
[5] Data are available for all reference periods from the first quarter of 2013 and, for most geographical counterparts, include further details by instrument (i.e. a distinction between debt securities, equity amounts outstanding and related income for the main geographical counterparts) in the ECB's Statistical Data Warehouse. Chart 1 shows the four-quarter cumulated sum of the original quarterly series.
[6] The main financial intermediaries for euro area securities are located within the euro area (most prominently in Belgium and Luxembourg).
[7] Further details on the first known counterparty bias can be found in Section 2.5 of the B.o.p. and i.i.p. book. The custodial bias refers to the fact that custodians do not know whether their customers are the final holders of the securities or other custodians on behalf of an unknown customer. This missing information potentially leads to the large amounts of securities being allocated to countries where custodians are located instead of to the countries of the actual final holders. Further information on custodial bias and custodian chains can be found in Chan, D., Fontan, F., Rosati, S. and Russo, D. (2007), "The securities custody industry", *Occasional Paper Series*, No 68, ECB.

portfolio investment liabilities data cannot be directly collected from reporting agents; it can only be estimated.

Chart 1: Euro area total portfolio investment income debits by main geographical counterpart *(EUR billions)*



The procedure for estimating the geographical breakdown of euro area portfolio investment liabilities works at financial instrument level, i.e. at the level of debt securities, equity and investment fund shares. The portfolio investment income is derived using a two-step approach, starting with the estimation of the underlying positions. To estimate these positions' geographical breakdown, the standard international investment position (i.i.p.) data need to be complemented by alternative data sources and estimation methods.

The following two sections describe the methods and data sources used. Section 2 focuses on estimating the underlying portfolio investment liabilities' positions by geographical counterpart, while Section 3 examines how the respective income flows are derived.

2. Geographical allocation of euro area portfolio investment liabilities' positions

The estimation process is based on the assumption that euro area liabilities vis-à-vis foreign investors are equal to foreign investors' assets vis-à-vis the euro area. Given that it is difficult to identify the geographical breakdown of the liabilities, the asset data collected by other countries vis-à-vis the euro area are used as a mirror of the euro area liabilities vis-à-vis those countries.

From the perspective of foreign investors, securities issued by euro area residents that are not involved in a direct investment relationship[8] and which are already separately identified may be held either as portfolio investments or as reserve assets, depending on the investor and the nature of the assets. The method for estimating the main geographical counterparts of euro area portfolio investment liabilities'

[8] Direct investment is related to control of or a significant degree of influence in the company investee, and tends to be associated with a lasting relationship. Beyond capital, direct investors might also provide know-how, technology, management and marketing services. Reserve assets are those assets that are readily available and controlled by monetary authorities for meeting balance of payments financing needs and influencing the currency exchange rate.

positions relies on different data sources for each of these two investment purposes. It is particularly difficult to estimate euro area securities held as reserve assets due to the confidentiality of these data.

Euro area liabilities held by residents of non-euro area EU Member States are derived from the portfolio investment assets and reserve assets data that these countries provide to the ECB. While euro area securities held as portfolio investments are directly reported, those held as reserve assets have to be estimated as the necessary geographical detail is not available. In this context, securities denominated in euro and reported to be held as reserve assets are assumed to be issued in the euro area. In some cases, these data have to be complemented with data from the IMF's Currency Composition of Foreign Exchange Reserves (COFER) survey.

The COFER survey data are also used as a reference for securities held as reserve assets by the major non-EU counterparts. The share of euro-denominated reserve assets obtained from COFER data is used as a proxy for the share of securities issued in the euro area.

The IMF's Coordinated Portfolio Investment Survey (CPIS) forms the basis for the estimates of portfolio investment holdings by non-EU countries. These holdings, broken down by instrument and counterpart area, are used as mirror data of the euro area portfolio investment liabilities. The coverage of the CPIS dataset varies from country to country in terms of the first reported period and frequency (i.e. annual versus half-yearly). Therefore, some degree of estimation was needed to have a homogeneous dataset going back to 2008 at a quarterly frequency. The quarterly series are estimated using the Chow-Lin temporal disaggregation method, using portfolio investment assets (mirror data) by instrument, as published by the IMF, as the explanatory variable.[9]

The estimation of the US portfolio investment of euro area securities relies extensively on the Treasury International Capital survey data. These data are collected primarily from United States-based custodians, brokers, dealers and other market participants providing comprehensive and timely information on the monthly stocks of euro area securities held by US investors. The collection of these data on long-term debt securities and equity only started in the third quarter of 2011, so this data source is complemented with estimates using CPIS data.

The Chinese State Administration of Foreign Exchange publishes official statistics on quarterly portfolio investment assets, broken down by instrument, and total monthly reserve assets. The Sovereign Wealth Fund Institute provides (mainly qualitative) information on the investment strategy for the Chinese reserve assets. The Chinese reserve and portfolio investments in euro area assets are derived in combination with IMF COFER data. These first estimates are subsequently integrated with CPIS and ESCB securities holdings statistics, as explained below.

ESCB securities holdings statistics by sector (SHSS) comprise data on euro area securities held by euro area custodians on behalf of customers residing outside the euro area ("third-party holdings").[10] SHSS third-party holdings are meaningfully integrated with CPIS data while minimising the risk of double-

[9] Further details on the methodology followed can be found in Sax, C. and Steiner, P. (2013), "Temporal Disaggregation of Time Series", *The R Journal*, Vol. 5, No 2, pp. 80-87.

[10] For further details on the SHS dataset, see European Central Bank (2015), "Who holds what? New information on securities holdings", *Economic Bulletin*, Issue 2.

counting, including, in particular, for international organisations outside the EU, offshore financial centres and China.

The IMF collects half-yearly information on the geographical breakdown of securities held as reserve assets, and annual information on securities held by international organisations, through its Survey of Securities Held as Foreign Exchange Reserves (SEFER) and Survey of Securities Held by International Organizations (SSIO). Up to 29% of short-term and 12% of long-term debt securities holdings reported to the IMF as issued in the euro area are held abroad as reserve assets. A multi-step approach is used to correctly allocate the results of the SEFER/SSIO surveys. First, the reserve assets of the main euro area counterparts, except China, and the holdings of the international organisations, except EU institutions, are calculated as described above and subtracted from the total. Second, the portfolio investment holdings of the ECB, as the SSIO reporter, are also subtracted. The remaining amounts are considered as reserve assets held by other countries participating in the SEFER survey but excluded from the group of main euro area counterparts.

Combining the above-mentioned data sources and the different estimation procedures presents some challenges that should be taken into account.

- Incomplete and imprecise coverage of the CPIS data.
    - Limited amount of participating countries (82 countries contributing at the end of 2017).
    - Portfolio investment assets in custody outside the holder's domestic country (e.g. US holdings of euro area securities held in custody in offshore financial centres) are frequently not fully included in the i.i.p. These amounts usually remain unallocated, even when the country of residence of the final holder participates in the CPIS. For example, analysts estimate that most of the investment fund shares issued in Luxembourg are traded through repositories in the United Kingdom, the United States and Switzerland.[11]
- The lack of information for selected areas implies that some assumptions are needed in the estimation procedure, which particularly affects the beginning of the time series.
- The i.i.p. data reported to the ECB are frequently revised and, as a consequence, the euro area aggregated liabilities are revised each quarter based on a policy agreed at European level. CPIS data are revised half-yearly and only by a small number of the participating countries. This asymmetry in the revisions makes estimates of the residual geographical categories unstable.
- The combined use of SHSS data with CPIS and SEFER/SSIO data is constrained by coverage differences and the SHSS' "custodial bias" affecting the third-party holdings data.

Although the estimates are still affected by the underlying hypotheses and data challenges, analysis suggests that the quality of the estimates of euro area debt securities and equity holdings for the main euro area counterparts is sufficiently robust and also supports the estimate of the underlying income (see Section 3). The corresponding series covering the geographical breakdown are available in the ECB's Statistical Data Warehouse.

[11] This assessment is provided by the Association of the Luxembourg Fund Industry, the official representative body for the investment fund industry, and is also confirmed by SHSS data.

3. Geographical allocation of euro area portfolio investment income debits

Building on the estimates of euro area portfolio investment liabilities' positions, it is possible to derive the corresponding income flows (debits) by geographical counterpart. These estimates allow for the calculation of euro area investment income debits, primary income debits and current account debits by geographical counterpart. The estimation method assumes that income debits follow the same geographical allocation as the underlying positions. Therefore, the stocks estimated for the different geographical counterparts are used as weights to distribute the total euro area portfolio income debits.[12] The average positions of the last two quarters prior to the period being calculated, i.e. t-1 and t-2, are used as they are more consistent with the accrual basis principle that is used to compile debt securities interest. This approach, while more meaningful for debt securities, is also followed for equity dividends income to minimise outliers and for consistency across instruments.

This method implies the following assumptions:

- non-euro area investors (geographical counterparts) invest in a common portfolio of euro area securities;
- this common portfolio implies that all non-euro area investors obtain the same return (i.e. dividends and interest payments) by instrument type and reference period;[13]
- the underlying euro area debt and equity securities generate, on average, the same return regardless of their country (and sector) of issuance.

The assessment of the estimates for the non-euro area EU Member States, compared with the mirror data submitted by these countries to the ECB, shows that the estimated values tend to show very similar developments to those originally provided by national compilers. Therefore, these estimates are considered to provide robust results and, by extension, those estimates referring to the remaining non-EU counterparts for which no mirror data are available are also considered robust.

The results of the geographical estimates of the portfolio investment income debits are available in the ECB's Statistical Data Warehouse for the main counterparts outside the EU and for Denmark, Sweden and the United Kingdom since the Q1 2013 reference period, while for other non-euro area EU Member States only the total investment income debits series is available, to safeguard data confidentiality.

[12] The total euro area portfolio investment income debits are derived following the "residual" approach – the difference between the sum of euro area countries' national portfolio investment income debits vis-à-vis the rest of the world, and the sum of euro area countries' national portfolio investment income credits vis-à-vis other euro area countries. An analogous approach is also followed for compiling the total euro area portfolio investment liabilities (stocks).

[13] The assumption that all the countries obtain the same rate of return on their investment is debatable, but more detailed information is not available. Therefore, the average return is judged to be most appropriate.