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Who holds banks' debt securities? Statistical methods for allocation by holders[1]

Meng He, China State Administration of Foreign Exchange,
and Zuzana Filkova, Bank for International Settlements

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Who holds banks' debt securities? Statistical methods for allocation by holders[1]

Meng He,[2] Zuzana Filková[3]

It is difficult for issuers to precisely identify the holders of their securities, especially if the securities are held via custodians and are actively transacted in financial markets. In our case study of the BIS locational banking statistics (LBS), holders are currently unallocated by residence for almost 40% of banks' debt securities liabilities, as opposed to practically zero for their deposit liabilities. At the same time, banks in some countries allocate holders fully, but not necessarily accurately. To improve the data quality, we review practices in the LBS-reporting countries and propose conceptual options for improving counterparty allocation of liabilities.

Keywords: debt securities, banking statistics, compilation practices.

JEL classification: C8, C82, G15.

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[2] State Administration of Foreign Exchange, China, he-meng@mail.safe.gov.cn.

[3] Bank for International Settlements, zuzana.filkova@bis.org.

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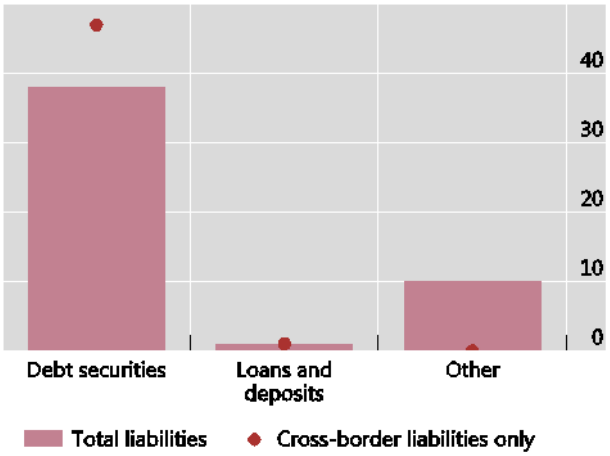
1. Introduction

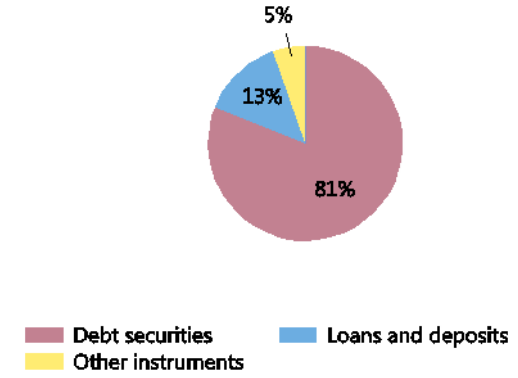
It is more difficult for issuers to identify the holders of their securities than to identify the counterparties of other types of liabilities. For example, in the locational banking statistics (LBS) of the Bank for International Settlements (BIS), around 38% of all reported debt securities liabilities are unallocated by residence of holders, as opposed to practically zero for deposit liabilities (Graph 1). To improve data quality, we review practices in the LBS-reporting countries and propose conceptual options for improving counterparty allocation of liabilities. To collect the most accurate data on the market size of debt securities issues and their holders, we recommend the combined approach of a custodian and an issuer survey complemented with estimation and cross-checking using mirror data.

Unallocated liabilities across instruments, end-2017 Graph 1

Unallocated residence in total per instrument[1]



Distribution of unallocated residence across instruments



[1] The measure using total liabilities is more reliable in estimating the unallocated proportion, despite the amount being underreported due to missing local or cross-border liabilities for some countries. See full list of proportions of local and cross-border liabilities within total liabilities in Appendix Table A1.

Source: BIS LBS by residence

The identification challenge comes from two features of debt securities: negotiability and participation of intermediaries. Because of their negotiability, debt securities can easily change hands in secondary markets without issuers being notified. It is common to hire custodians to safeguard and administer the holdings of debt securities on behalf of investors, and banks as issuers rarely have direct contact with investors. The non-resident participation increases the difficulty of collecting data on counterparties, especially when the debt securities are issued in foreign markets and foreign investors and custodians are beyond the legal scope of domestic compilers. Moreover, in the LBS, outstanding positions rather than transactions are reported, making the exact identification of individual counterparties more difficult.

Interest in data on holders is increasing among policymakers, analysts and researchers alike. First, debt securities account for a growing proportion of corporate liabilities. For example, in the LBS, the share of debt securities in cross-

border liabilities increased from 19% at end-2000 to 35% at end-2017. Second, the Great Financial Crisis of 2007–09 revealed the inadequacy of information on securities holdings, in particular its lack of granularity and imprecision. For example, when Lehman Brothers collapsed, supervisors and policymakers had very limited information on holders' exposure to securities and most of the then available official statistics were just aggregate information (ECB (2015)) with no residence or sectoral split. In 2009, the G20 initiated the Data Gaps Initiative[4] to address these data gaps with a view to supporting enhanced policy analysis. In its second phase, "from-whom-to-whom" matrices[5] of the System of National Accounts are recommended to allow for analysis of sectoral and locational financial interconnectedness (IMF (2016)). The new data provide answers to innovative types of questions, eg development of new indicators of financial integration (Fache Rousová and Rodríguez Caloca (2014)) or system-wide funding risk (Fender and McGuire (2010), Cerutti et al (2012)).

In this paper, we use the BIS LBS data by residence as a case study of how holders can be identified for statistical purposes. The LBS are designed to capture outstanding assets and liabilities of internationally active banks, split by instrument and sector and across more than 200 counterparty countries. They capture around 95% of all cross-border banking activities The same problem exists in the BIS consolidated banking statistics,[6] where banks report their local liabilities (vis-à-vis the residents of the country in which they are located) denominated in the "local" currency of the respective country. For that, banks need to know who the holders of their liabilities are (BIS (2017)). Yet the issue of identifying debt securities holders is also essential for Balance of Payments, International Investment Position and other statistics.

2. Conceptual options

There are at least four different options available to statisticians to collect information on securities holders: (i) survey the issuers of the securities; (ii) survey the custodians; (iii) survey other data owners; and (iv) use mirror data. We explain the advantages and disadvantages of each of these options below.

Data collection methods can differ depending on where debt securities are issued. Before choosing the right method, it is essential to understand the mechanics of debt securities holdings in different markets.

When banks issue debt securities in the domestic market, resident and non-resident investors can either buy and hold the debt securities directly there or, more commonly, hire a domestic custodian to administer the investment. In addition,

[4] Moreover, recommendation II.12 of the Coordinated Portfolio Investment Survey in this initiative targets an improved reporting of securities, especially the sectoral and counterparty split which is related to our work.

[5] Introduced as long ago as 1993 (Table 13.3a, SNA 1993). The integrated framework on a from-whom-to-whom basis makes it possible to determine who is financing whom, in what amounts and with what type of financial instrument (Shrestha et al (2012)).

[6] Measures international banking activity from a nationality perspective, focusing on the country where the banking group's parent is headquartered.

non-resident investors can hire a foreign custodian who in turn can hire a domestic custodian to safeguard their securities.

When banks issue debt securities in a foreign market, foreign custodians are more involved than domestic custodians. Foreign and domestic investors can either hold directly from the foreign market, or hire a foreign custodian. Alternatively, resident investors can first hire a domestic custodian who then hires a foreign custodian.

a. Issuer survey

If compilers would like to collect information on debt securities, the most straightforward option would be to survey their issuers (also advocated by TFFS (2013)). Such a survey requests the issuing banks, or their underwriters, in the compilers' jurisdiction to report all debt securities issued, including total amount issued, positions, residence and sectoral information on holders.

The issuer survey has several advantages. As most LBS compilers are central banks, they should have the authority to collect data directly from domestic banks. Where the debt security is issued in a direct investment relationship and is held to maturity, the issuer is supposed to have all the relevant information. Moreover, when debt securities are issued in a foreign market, foreign custodians cannot be required to report and domestic custodians are less involved in the transactions, issuers become the preferred data source. Finally, issuers have a natural edge in reporting the whole size of debt securities they issued, so that underreporting of the total amount is less likely to occur.

The main shortcoming of the issuer survey is that banks may keep only information on the primary purchasers when the securities were issued. The counterparty country and sectoral breakdown might consequently be outdated. In summary, the data collected from the issuers can be a very precise estimate of the size of debt securities issues, but contain inherently less accurate counterparty information if the debt securities have changed hands.

b. Custodian survey

If debt securities are issued in the domestic market and domestic custodians are commonly hired to safeguard the holdings, it is more appropriate to approach domestic custodians to obtain more precise counterparty data. This approach is neatly described in the Handbook on Securities Statistics (BIS-ECB-IMF (2016)).

A custodian survey requires domestic custodians to report on their customers when they are hired to safeguard the debt security investment. Based on "know your customer" legislative requirements in most economies (IMF (2014)), custodians are supposed to record information on whom they are acting for. Therefore, by surveying domestic custodians, the residence and sectoral information of holders can be captured without approaching the holders directly.

The main advantage of the custodian survey is that the information on holders is more precise, reliable and up-to-date. Another is its cost-effectiveness. By surveying the largest custodians, most holders' information can be captured since there are fewer custodians than investors.

The main shortcoming is that the central banks may have no power to collect information from non-bank entities like non-bank custodians. In addition, a domestic custodian can be hired by a foreign custodian and is therefore less capable of identifying the end-beneficiary. This could introduce a bias considering that the beneficiary is not necessarily a resident of the same country as the foreign custodian (TFFS (2013)), and highly likely belongs to another sector.

Additionally, solely surveying custodians may result in both *underreporting* and *overreporting*. The result can be *underreported* because custodians do not necessarily know the whole amount of the debt securities issued. Since custodians can report only the amount of the debt securities that they are entrusted with administering, they omit other parts invested directly by investors or entrusted to foreign custodians. The result can also be *overreporting* of resident positions if more than one domestic custodian is involved in the investment chain. If an investor hires a domestic custodian to administer the account, and this custodian then hires another domestic custodian, these two custodians would report the same investment amount twice. The latter custodian would always report a local position, being unable to distinguish whether it is administering the former custodian's own account, or the account of the former custodian's customer.

In the compilation guides of *Balance of Payments and International Investment Positions Manual sixth edition (BPM6,* IMF (2014)), *Handbook on Securities Statistics* (BIS-ECB-IMF (2016)) and *Coordinated Portfolio Investment Survey (CPIS,* IMF (2018), similar surveys of custodians and end-investors are introduced. They focus more on the asset side, but the logic of the data collection is similar on the liability side.

To conclude: while custodians collect precise data in an efficient manner, surveying solely custodians can introduce a bias to the data.

c. Combined approach

Combining an issuer survey with a custodian survey can ensure that all debt securities are reported and improve the accuracy of data at the same time. When the debt securities are issued in domestic markets and domestic custodians are commonly hired, information on most holders can be collected using the custodian survey. When the debt securities are issued in foreign markets and domestic custodians are less involved, issuers become the main data source. This survey method should produce the most precise data on the size of debt securities liabilities from the issuer part of the survey and their exact residence and sector allocation from the custodian part (summarised in Table 1).

The pros and cons of different surveys Table 1

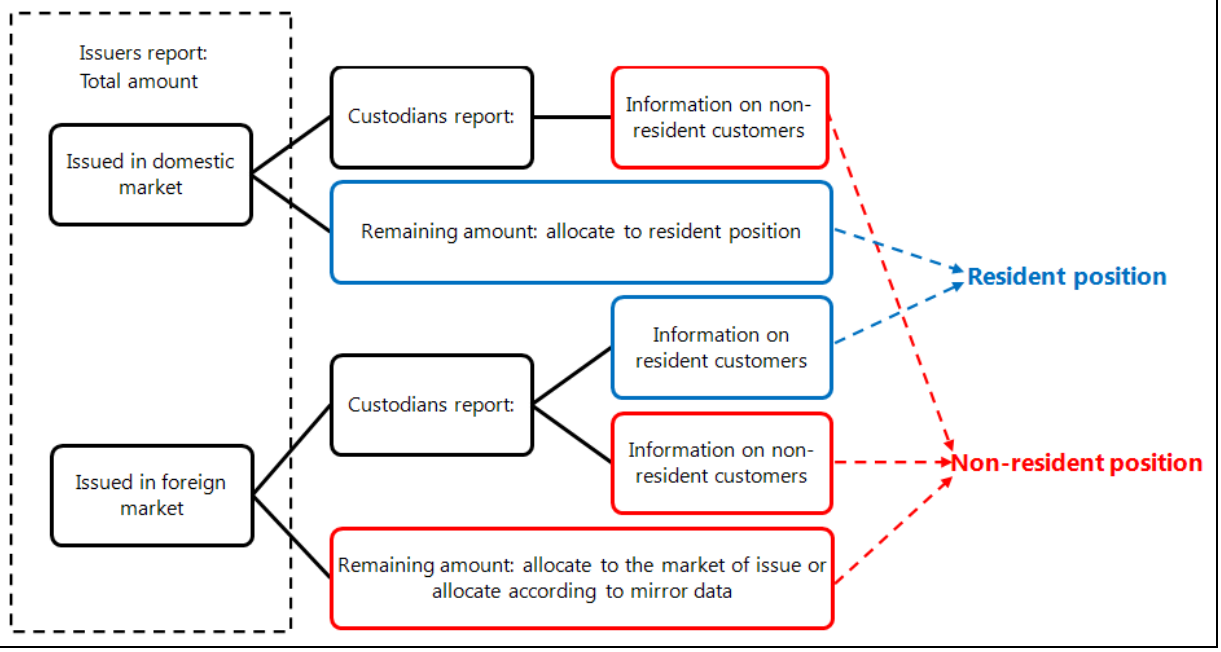
	Pros	Cons
Issuer survey	• Precise amount of total debt securities issued • Precise information in case of direct investment • Already covered in central banks' jurisdiction • If no domestic custodian hired, issuer may have superior information	• Information potentially outdated
Custodian survey	• Precise and up-to-date information • Cost-effectiveness	• Non-bank custodians potentially not covered in central banks' jurisdiction • If hired by another custodian, may still not identify the end-beneficiary • Risk of over- and underreporting
Combined approach	• Precise amount of total debt securities issued • Precise and up-to-date information from custodians • Precise information from issuers in case of direct investment • Issuers already covered in central banks' jurisdiction • If no domestic custodian hired, issuer may have superior information • Cost-effectiveness in covering custodians	• Non-bank custodians potentially not covered in central banks' jurisdiction • If hired by another custodian, may still not identify the end-beneficiary • Risk of over-reporting

However, despite the considerable advantages of the combined approach, it also inherits the shortcomings of the custodian survey (Table 1): the lack of legal authority to cover non-bank custodians, and double-counting. The double-counting may occur not only between domestic custodians, as discussed in the custodian survey, but also between custodians and issuers. To avoid it, we suggest instructing issuers to report the amount of debt securities issued and the market of issue for each security. Custodians should report information on non-resident customers for debt securities issued in the domestic market, and on all customers for debt securities issued in foreign markets (for a full list of information to be reported by each party, see Appendix Table B1).

Resident positions can be then calculated as the difference between the total size of the domestic issue from the issuers minus domestic positions held by non-residents from the custodians.[7] The remaining amount in the foreign market not allocated by custodians is then attributed to the market of issue, or attributed according to mirror data (Graph 2).

[7] This potentially understates the domestic positions, as nothing prevents domestic investors from holding securities administered by a foreign custodian hiring the domestic custodian.

Combined-approach solution to double-counting Graph 2



To conclude: the combined approach maximises the advantages of both issuer survey and custodian survey, although particular care should be taken to avoid double-counting and estimation of the unallocated part.

d. Other surveys

There is no one-size-fits-all solution. The best methodologies for countries with different market situations, compilers' jurisdiction and data availability may be quite different, and basic surveys could be complemented with data from other institutions.

For countries with a central securities depository (CSD), the CSD becomes a preferred source of the requested data. Securities issued locally are usually required to be registered with the CSD in countries where one exists. All transactions in the domestic securities market must be communicated to or settled with it, including private sales transacted outside the market. A CSD enables values registered under custodian accounts, and thereby the ownership of debt securities, to be recognised. It thus serves as a high-quality data source in the domestic market, with the added advantage of cost reduction through the possibility of dealing with a single entity.

Countries with capital controls usually have institutions to monitor capital fund flows to and from the country, and have approved agencies to invest in domestic or foreign markets on behalf of resident and non-resident customers. Such institutions have reliable data on debt securities counterparties.

CSDs and monitoring organisations are good sources for data collection and cross-checking. Often they already collect data for regulatory and supervisory purposes, and compilers need only legal clearance to be able to access such data.

A complementary survey of stock exchanges and dealers (TFFS (2013)) could be another useful source of information. This approach is particularly useful in countries with smaller markets, where domestic banks tend to issue debt securities in foreign markets and domestic custodians may not provide sufficient information.

e. Estimation methods

As discussed above, surveying issuers and custodians, or even including other institutions that hold the relevant information, may not fully and precisely capture the description of holders. The question is how to fill in the remaining gap between the size of debt securities issued and what has been identified. As shown in Graph 2, besides allocating the remaining part to the market of issue, compilers can also split the unallocated remainder according to the distribution of the known part or using a distribution based on other reliable data sources.

The most prominent sources for this kind of mirror data are the Eurosystem's Securities Holding Statistics (SHS) and the IMF's Coordinated Portfolio Investment Survey (CPIS).

The SHS mainly focus on holdings of securities by euro area investors. The data are split by instrument type, issuer country and sector, maturity and other classifications. There are currently 26 euro area and non-euro area countries reporting to the SHS security by security by investor and custodian, and the data are released quarterly. By selecting debt securities issued by bank sector, the amounts of debt securities held by different euro-area countries can be determined. A big advantage is the availability of granular information ISIN by ISIN, which enables a higher degree of data accuracy and helps avoid double-counting.

What the SHS are for the euro area, the CPIS is for the world. This database collects information on a semiannual basis on the stock of cross-border holdings of securities, split by instrument (equity and debt securities), maturity, and counterparty country and sector. The data reported in the CPIS mainly focus on the asset side. In March 2018, data for 74 economies were available, but there are fewer series when filtering for debt securities issued by banks.

However, since different databases focus on different dimensions, they cannot match each other perfectly, so that caution should be exercised. Consider an example of the use of CPIS mirror data. First, the data reported in the CPIS comprise only positions of portfolio investments, while the data reported to the LBS also include direct investment. Therefore the quantities reported in the CPIS should in principle be smaller than those in the LBS. Second, the debt securities liabilities in the LBS are (by definition) issued by the bank sector, so that the "counterparty sector" in the CPIS should be narrowed down to banks excluding central banks. Third, instruments in the CPIS contain both equity and debt securities, so only debt securities assets should be selected. Fourth, the CPIS has a lower frequency and a longer lag than the LBS. Finally, although conceptually the LBS and the CPIS are both aligned with BPM6 and follow a uniform market valuation principle, in practice the valuation standards may vary across countries. For example, if the market price for a liability is not available, the nominal or contractual value can be used instead within the LBS (BIS (2013)).

There are three less prominent uses of the mirror data. First, and most importantly, for countries collecting full information from domestic institutions, these external databases can be used to check the quality of the collected data.

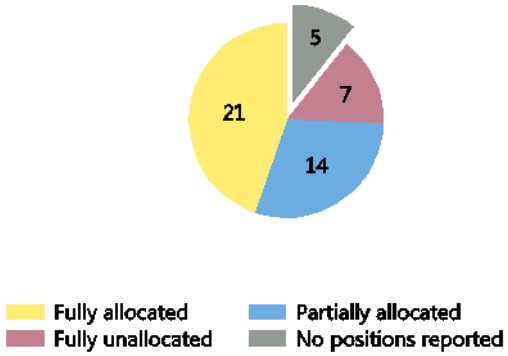
Falcão-Silva and Pradhan (2018) describe extensive methods for the cross-checking of reported data. Second, for countries that do not require any information on holders from their reporters, compilers can use mirror data to allocate the entire bulk of reported debt securities (BIS (2017)). Third, reported data may not be complete. At end-2017, the debt securities liabilities reported in the LBS add up to only a fourth of interbank claims (USD 413 billion vs USD 1,615 billion). This is a reiteration of the same problem: if banks do not know who holds their securities, they cannot identify them as banks. However, looking at the claims, we know the total size of the market and the identity of the holders. Mirror data could therefore help allocate the missing three quarters of liabilities. As a complement to that, ISIN-by-ISIN mirror data can be used to enrich the reported data with additional dimensions by matching those data to other reference databases (for example, missing currency or maturity information from the ECB's Central Securities Database matched to the SHS).

3. Country practices

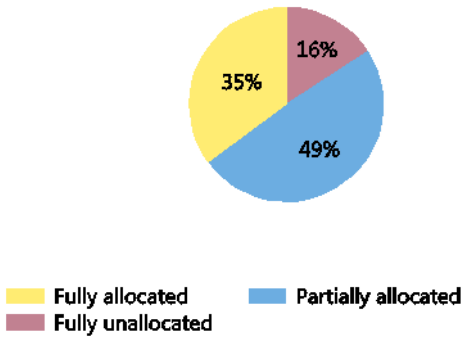
Out of 47 countries reporting the LBS data by residence, 11% do not report any debt securities liabilities positions. This means that the total amount of debt securities of these countries is certainly underestimated. Among the rest, 15% report all the positions unallocated, or classify all positions as cross-border but with no counterparty country being identified; one third report positions that are at least partially allocated; and the remaining portion of countries report a detailed counterparty country and sector breakdown (Graph 3, left-hand panel). The securities with detailed breakdowns account for only one third of total debt securities reported, and the securities allocated partially have a much bigger share (right-hand panel).

Reporting of debt securities liabilities in the LBS — Graph 3

Number of countries reporting different data granularity



Proportion of debt securities liabilities reported using different data granularity



Source: BIS LBS by residence.

Country practices as gleaned from our survey[8] are summarised in Table 2 (details of the methods used are discussed in the following subsections). Interestingly, the countries reporting no unallocated debt securities are not necessarily those that are following the most sophisticated data collection methods, as most of these countries allocate counterparties according to market of issue or residence of primary purchaser. In parallel, we do observe a positive relationship between use of the combined survey and the proportion of debt securities allocated by country and sector. Where only the issuer survey is used, the results are "noisier" and can be less reliable, though maybe granular.

Which methods do the central banks choose for the LBS?

Based on the survey of 18 LBS-reporting countries

Table 2

Issuer survey	Market of issue	1	*6%*
	Primary purchaser	4	*22%*
	Mix	5	*28%*
Combined survey	Method 1	2	*11%*
	Method 2*	1	*6%*
Estimation	External or internal sources	3	*17%*
Not replied or no allocation		2	*11%*
Total		18	*100%*

*Method 1 and 2 are discussed in detail in section b below.

Moreover, we hypothesised that countries with capital controls or a CSD could have better data sources supporting more precise information. Our survey shows that countries do not always take advantage of such sources. Whether they do or not depends on the legal authority to cover such institutions and on the data-sharing arrangements between government institutions.

a. Countries surveying only issuers

Countries that decide to survey only issuers do so due to three main constraints. The most binding constraint is the lack of legal authority over non-bank custodians or CSDs, so that compilers settle for less precise data and avoid the major underreporting problem. Several surveyed countries are facing this constraint. Second, in small open economies, domestic banks often issue debt securities in overseas market, in which case domestic intermediaries may not be a better information source than issuers. This is the case with three fourths of the countries in our sample surveying only issuers, where a significant proportion of bank debts are held by offshore investors who may be served by foreign custodians. Finally, a less prominent issue is the concern that the burden of covering financial

[8] To learn about the experience of countries that fully allocate debt securities to different counterparty countries and the rationale for their data collection design as well as to understand the main constraints on improving data quality, we surveyed groups of countries reporting debt securities fully, partially and unallocated. In total, we contacted 18 countries in the period May–June 2018. For survey questions, see Appendix C.

intermediaries in reporting could outweigh the benefits of more granular data (only one country in our sample cited this issue).

Reporting banks can have outdated data, and may therefore need to estimate data themselves. There are several ways to do that, often explicitly encouraged by the compiling central bank (first block of Table 2). For example, issuers could report the positions and residence of the primary purchasers when the debt security is issued and report them until maturity. Alternatively, banks in some other economies are required to report markets of issue as the counterparty countries. The third option would be to assign all foreign securities as unallocated and all domestic as local. Finally, a quarter of compilers in our sample require issuers to report using a mix of methods, sometimes called the "best efforts" basis: if banks can identify the current holders, they report the information accordingly; if banks cannot identify them, they report either primary purchasers or the market of issue.

These assumptions used to hold as far as the securities were held by resident investors in the market of issue, or were not traded across borders. However, financial markets have become considerably more sophisticated. Debt securities are often issued internationally and actively traded across countries. As a result, this assumption could lead to sizeable discrepancies (Gruić and Wooldridge (2012)).

Our survey results show that no country requires exclusively custodians to report. This is reasonable because, first, most LBS compilers are central banks and have direct legal authority to collect information from banks, whereas comparable legal authority over custodians may be absent. Second, banks have more comprehensive information on the debt securities they issued, and by surveying them, compilers can at least obtain the correct total volume of debt securities. Finally, it is difficult to cover the whole domestic market using only the custodian data without the risk of double-counting.

However, what is even more surprising is that, in some countries, very detailed data from custodians are collected but not shared across government institutions or even within the same institution.

b. Countries surveying both issuers and custodians

Two different surveying methods are provided by countries surveying both custodians and issuers.

In Method 1 (Table 3), compilers require both banks having liabilities and custodians holding positions for customers over a certain set of thresholds[9] to report. Issuers are required to report all debt securities issued by them in foreign markets, and attribute the market of issue to the counterparty country. Resident custodians are required to report the debt securities issued by resident banks they hold for non-resident customers, security by security. Double-counting could occur when custodians report that they are administering the debt securities issued abroad, which are also reported by issuers. Since both parties report security by

[9] Threshold 1: a certain level of total debt securities issued (for issuers) or total debt securities holdings (for custodians). Threshold 2: a certain level of amount of debt securities issued in a single country (for issuers) or amount of debt securities held by investors from a single country (for custodians). Institutions are required to report if at least one of these thresholds is exceeded.

security, the overlapping part can be easily tracked by matching the ISIN codes and dropped, and the extent of double-reporting would be equal to the part reported by custodians (Bertaut and Judson (2014)). Beyond that, a good deal of additional attention is paid to double-counting of repos and short sales (FRBNY (2016)).

Method 1

Reporting practices depending on where a domestic bank issues — Table 3

Market	Respondent	Information
All markets	Resident custodian	Security by security
Foreign markets	Issuing bank	Market of issue as counterparty country with no resident custodians involved, security by security

In Method 2 (Table 4), issuers, custodians or the CSD are required to report depending on the circumstances. If the debt securities are issued in a foreign market, issuers report positions and counterparties on a best efforts basis, ie they report the current holder's residence if they know it and the market of issue if they do not. If the debt securities are issued in the domestic market and resident custodians are employed to administer the account, resident custodians are required to report the positions, residence and sector information of their non-resident customers; if no resident custodians are involved, the CSD reports the information on non-resident holders based on trading records in its system. Moreover, when domestic banks issue credit-linked notes to foreign customers, they can identify their residence and report accordingly. With this method, all debt issued by banks is covered and no overreporting can occur. The CSD is not used as a unique data source as discussed in the Chapter 2 but as a complementary source.

Method 2

Reporting practices depending on where and how a domestic bank issues — Table 4

Market	Situation	Respondent	Information
Domestic	Non-resident investors invest directly	Central security depository	Residence and sector of non-resident investors, positions
	Non-resident investors entrust domestic custodians with administering transactions	Domestic custodian (bank and non-bank)	Residence and sector of non-resident trustee, positions
Foreign	Bank issues debt security directly	Issuing bank	Residence and sector of non-resident trustee, positions Holders' residence: if holders can be identified, they are allocated accordingly; if holders cannot be identified, the market of issue is reported as the counterparty country
	Bank issues credit-linked notes to specific countries	Issuing bank	Residence of holders, positions

c. Countries using mirror data

Other countries avail themselves of other reliable data sources to estimate the bank-issued debt securities liabilities held in other countries (third block of Table 1).

As discussed in Section 3, one of the available data sources in the euro area is the ECB's SHS database used by some of the euro area countries. To use this database to determine counterparty allocation, compilers first require issuing domestic banks to report the ISIN codes of their debt securities. With the ISIN codes, compilers search for information on holders within the SHS database. If full information on holders is available in the database, then it is straightforward to allocate the counterparty countries accordingly. If no information on holders is available, the debt security is assigned as unallocated. If only partial information can be found, then the remaining unknown amount is allocated according to the proportions of known amounts. Using the SHS can be viewed as an attractive alternative to a custodian survey – it is possible to cover some non-resident custodians and investors and the costs of the survey are pooled among all participating countries.

4. Conclusion

Our paper makes two main contributions. First, we conduct a unique survey of current practices among countries reporting the BIS LBS to understand the best practices in and the main obstacles to reporting good-quality data. Second, as the best feasible conceptual solution, we recommend a combined approach of surveying issuers and custodians (Appendix Table B1), complemented by an estimation and a quality check using mirror data. Alternatively, we suggest using CSD data as the main source for the domestic market.

However, detailed information may not be fully captured even with the most sophisticated method. The debt securities left unallocated after the surveys have been completed can be filed using estimation. Compilers could avail themselves of mirror data to allocate the debt securities in this overhang, or to cross-check the quality of the data reported. In addition, if countries opt not to collect data from domestic institutions, they could apply the known mirror data distribution of counterparties to their estimated size of the market of issue.

Again, there is no one-size-fits-all solution for all countries. In practice, there are various challenges that countries with different jurisdictions and market circumstances may face, and therefore they may not be able to adopt the best survey we recommend. Compilers are strongly encouraged to thoroughly research their market and related institutions and to adjust their collecting framework with reference to the methods discussed in this paper.

Last but not least, the proportion of unallocated positions in debt securities liabilities is by no means a good indicator of data quality. In our survey sample, we find evidence of countries perfectly allocating their positions, only to discover that they are reporting exclusively those positions which they can attribute easily, or attributing the counterparty country using overly simplistic estimation methods. While it is recommended that compilers look for ways to determine a breakdown of debt securities counterparties by residence and sector, misallocating the positions to wrong counterparties could worsen the quality of the data and thereby undermine the data comparability for research and policy analysis.

It may be useful for researchers employing the LBS debt securities liabilities data to be aware of reporting practices. To that end, our recommended list of questions for collecting information on such practices is provided in Appendix D.

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Appendix A

Reported debt securities liabilities, end-2017 Table A1

Reporting country	Total liabilities	Cross-border	*Of which: unallocated by country*	Local	Unallocated
Australia	648,160	37%	*0%*	53%	10%
Austria	154,827	39%	*0%*	41%	19%
Bahamas	26,595	94%	*0%*	6%	
Bahrain					
Belgium	115,752	40%	*0%*	60%	
Bermuda	117	100%	*0%*		
Brazil	437,108	3%	*0%*	97%	0%
Canada	26,834	/	/	/	72%
Cayman Islands	34,487	100%	*100%*		
Chile	66,547	14%	*0%*	86%	
China	183,919	100%	*9%*		
Chinese Taipei	53,208	3%	*0%*	97%	
Curaçao					
Cyprus	755	34%	*0%*	27%	39%
Denmark	550,519				100%
Finland	102,719	93%	*0%*	7%	
France	1,372,027	53%	*0%*	47%	
Germany	1,371,754	50%	*100%*	50%	
Greece					
Guernsey	31,766	29%	*0%*	40%	31%
Hong Kong SAR	194,072	17%	*0%*	83%	0%
India	84,654	0%	*0%*	100%	
Indonesia	14,354	27%	*0%*	73%	
Ireland	70,121	74%	*0%*	26%	
Italy	455,158	1%	*0%*	79%	20%
Isle of Man					
Japan	/				/
Jersey	14,093	11%	*0%*	0%	89%
Korea	393,624	20%	*0%*	80%	
Luxembourg	76,540				100%
Macao SAR	9,286	52%	*0%*	48%	
Malaysia	/	/	/	/	
Mexico	38,130	39%	*0%*	61%	
Netherlands	564,779				100%
Norway	/	/	/	/	
Panama	15,832	99%	*0%*	1%	0%
Philippines	3,853	57%	*0%*	43%	
Portugal	47,316	1%	*0%*	99%	
Russia	50,481	11%	*48%*	89%	
Singapore					
South Africa	70,623	3%	*100%*	97%	
Spain	272,630	/	/	/	
Sweden	536,430			40%	60%
Switzerland	94,132				100%
Turkey	36,942				100%
United Kingdom	1,209,324	75%	*98%*	25%	
United States	130,376	100%	*0%*		

As some countries do not report local or cross-border liabilities, the total number is underestimated. This simple distinction between local and cross-border potentially harbours the same problem as identifying debt security holders by issuing bank.

"/" means the data are classified as confidential or restricted by reporting countries; a blank space means no position is reported; "0%" means a position is reported but is practically zero as a fraction of the total liabilities.

Source: BIS LBS by residence.

Appendix B

Information to be reported by issuers and custodians — Table B1

Items to be reported	Issuer	Custodian
ISIN codes	√	√
Amounts outstanding	√	√
Counterparty country	√	√
Counterparty sector	√	√
Currency denomination	√	
Maturity	√	
Primary purchaser	√	
Market of issue	√	

Data collection on a quarterly or monthly basis is recommended, to comply with the quarterly schedule of the LBS data.

Appendix C

Survey questions

1. *What kind of institutions are required to report to you data on holders of debt securities liabilities? (Select as many as are applicable):*

    a. *Banks.*

    b. *Bank custodians.*

    c. *Non-bank custodians.*

    d. *Central securities depository.*

    e. *End-investor.*

    f. *Other data source. Please specify: _____.*

2. *If only banks are required to report, what are the constraints from surveying other institutions? (Select as many as are applicable):*

    a. *Legal authority to cover non-bank custodians.*

    b. *Most custodians are foreign.*

    c. *Consideration of reporting benefit and burden.*

    d. *Other reason. Please specify: _____.*

3. *Do you use external databases to allocate reported debt securities by holder (eg CPIS, SHS)?*

4. *How do you allocate counterparties of debt securities liabilities?*

    a. *Market of issue.*

    b. *Primary purchaser.*

    c. *Mix (current holder complemented with primary purchasers or market of issue).*

5. *Do you take measures to avoid double-counting of securities covered in different surveys?*

6. *Do you use mirror data to cross-check the quality of the reports?*

Appendix D

Reporting practices for debt securities liabilities

1. *What concept do you use to define the issuers and holders of debt securities?*

    a. *Nationality.*

    b. *Residence (consistent with BPM6).*

    c. *Other. Please specify: _____.*

2. *What valuation principle do you employ in reporting debt securities liabilities?*

    a. *Market value or market equivalent value.*

    b. *Nominal value.*

    c. *Face value.*

    d. *Other. Please specify: _____.*

3. *How do you allocate counterparties of debt securities liabilities?*

    a. *Market of issue.*

    b. *Primary purchaser.*

    c. *Mix (current holder complemented with primary purchasers or market of issue).*

4. *How do you require institutions to report data?*

    a. *On a security-by-security basis.*

    b. *On an aggregate basis.*

    c. *Left to the discretion of reporters, provided the information required is appropriately reported.*

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Ninth IFC Conference on "Are post-crisis statistical initiatives completed?"

Basel, 30-31 August 2018

Who holds banks' debt securities? Statistical methods for allocation by holders[1]

Meng He, China State Administration of Foreign Exchange,
and Zuzana Filkova, Bank for International Settlements

[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Who holds banks' debt securities? Statistical methods for allocation by holders

Meng He and Zuzana Filková***

IFC Conference, *Are post-crisis statistical initiatives completed?*

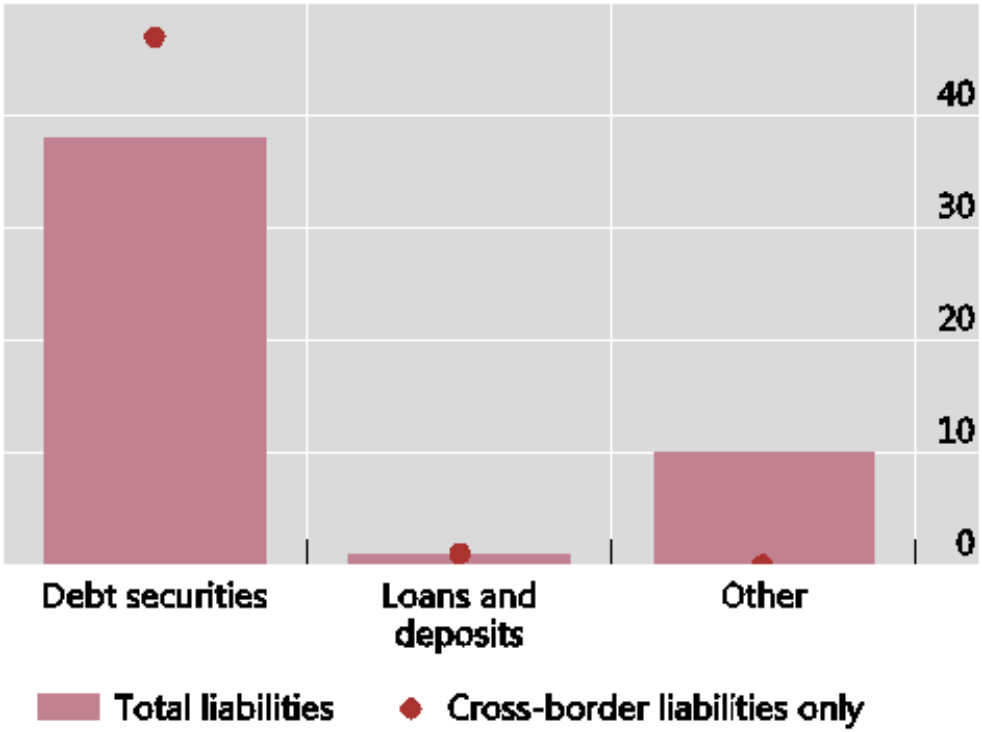
Basel, August 30-31, 2018

**he-meng@mail.safe.gov.cn, State Administration of Foreign Exchange, China*

***zuzana.filkova@bis.org, Bank for International Settlements*

40% of total debt securities liabilities is unallocated

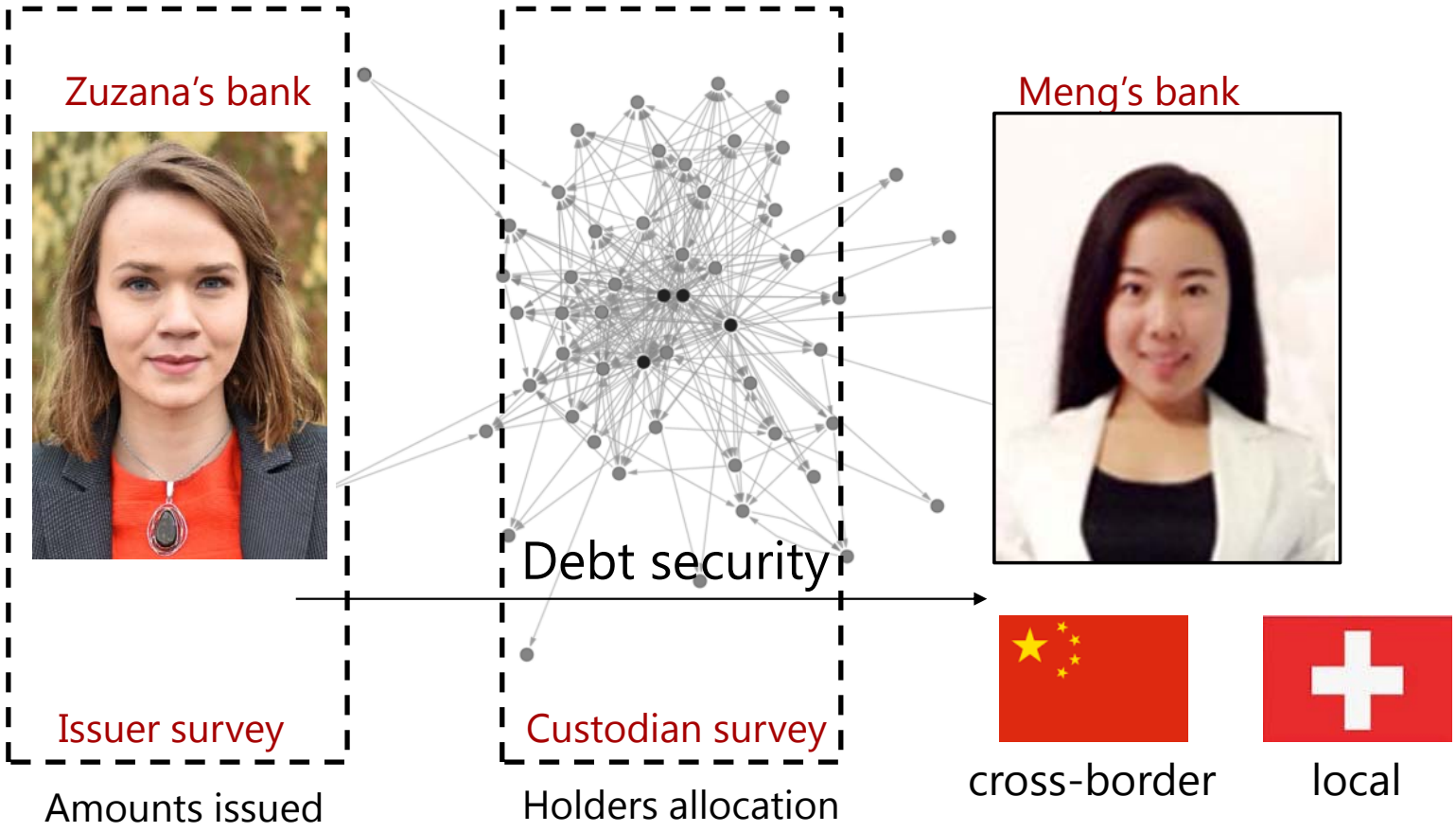
Unallocated residence in total per instruments



For issuers it is more difficult to identify the holders of their debt securities than other instruments

→ And that's why they report them as unallocated

Data source: BIS locational banking statistics (LBS) by residence



Two main challenges:

A. Negotiability

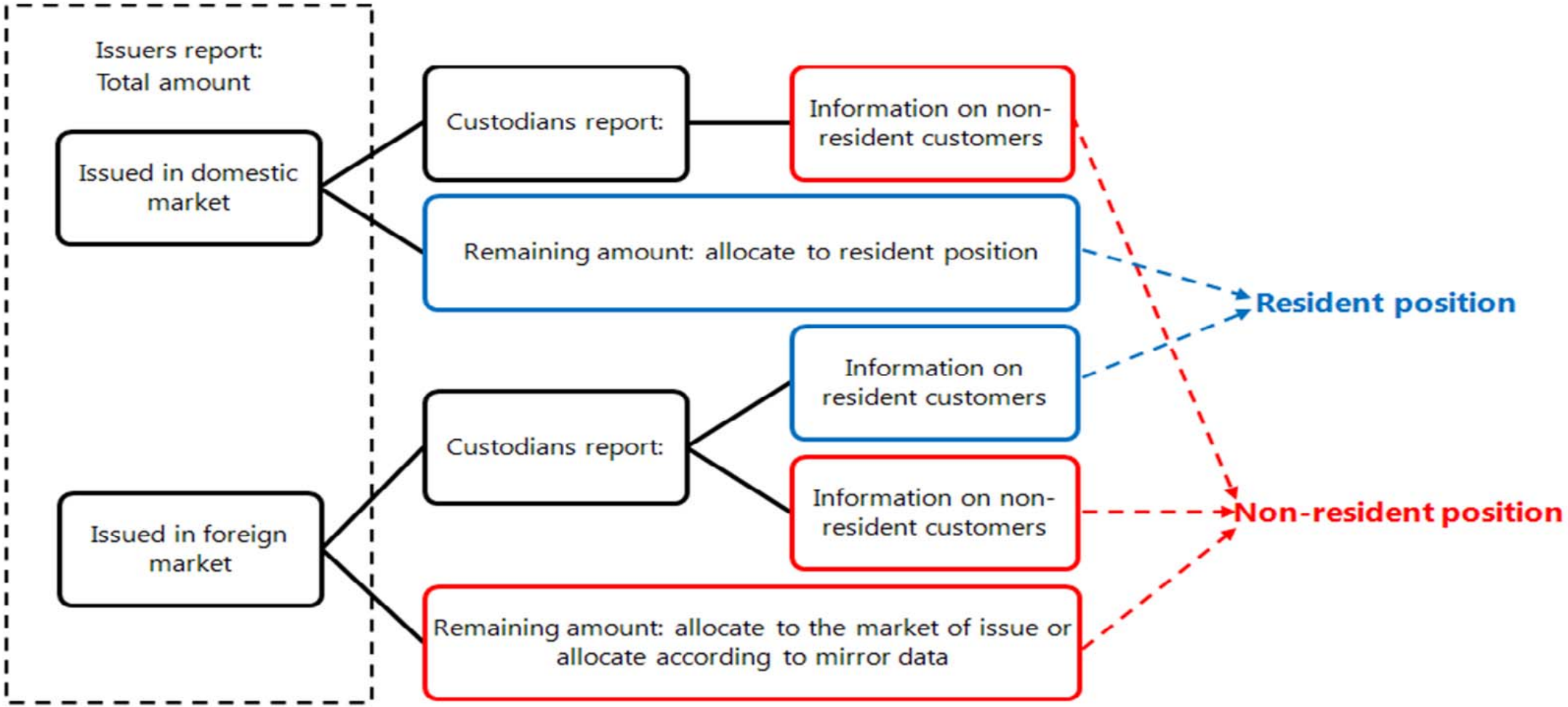
B. Intermediation

Conceptual Options

Pros and cons of different surveys

	Pros	Cons
Issuers survey	• Precise amount of total debt securities issued • Precise information in case of direct investment • Already covered in central banks' jurisdiction • If no domestic custodian hired, issuer may have superior information	• Information potentially outdated
Custodian survey	• Precise and up-to-date information • Cost-effectiveness	• Non-bank custodians potentially not covered in central banks' jurisdiction • If hired by another custodian, may still not identify the end-beneficiary • Risk of over- and under-reporting
Combined approach	• Precise amount of total debt securities issued • Precise and up-to-date information from custodians • Precise information from issuers in case of direct investment • Issuers already covered in central banks' jurisdiction • If no domestic custodian hired, issuer may have superior information • Cost-effectiveness in covering custodians	• Non-bank custodians potentially not covered in central banks' jurisdiction • If hired by another custodian, may still not identify the end-beneficiary • Risk of over-reporting

Combined approach - solution to double counting



Survey results

Results		Number	Percentage
Combined survey	Method 1	2	*11%*
	Method 2	1	*6%*
Issuer survey	Market of issue	1	*6%*
	Primary purchaser	4	*22%*
	Mix	5	*28%*
Estimation	External or internal sources	3	*17%*
Not replied or no allocation		2	*11%*
Total		18	*100%*

Country practices: Combined survey

Method 1 **Reporting practices depending on where a domestic bank issues**

Market	Respondent	Information
All markets	Resident custodian	Security-by-security
Foreign markets	Issuing bank	Market of issue as counterparty country with no resident custodians involved, security-by-security

Method 2 **Reporting practices depending on where and how a domestic bank issues**

Market	Situation	Respondent	Information
Domestic	Non-resident investors invest directly	Central security depository	Residence and sector of non-resident investors, positions
	Non-resident investors entrust domestic custodians to administer transactions	Domestic custodian (bank & non-bank)	Residence and sector of non-resident trustee, positions
Foreign	Bank issues debt security directly	Issuing bank	Residence and sector of non-resident trustee, positions Holders' residence: if holders can be identified, they are allocated accordingly; if holders cannot be identified, the market of issue is reported as counterparty country
	Bank issues credit linked notes to specific countries	Issuing bank	Residence of holders, positions

Country practices: Issuer survey and mirror data

Countries surveying issuers

Main Constraints

- Lack of legal authority
- Domestic banks often issue debt securities in overseas market
- Costs

Main practices

- Report primary purchasers
- Report market of issue as counterparty country
- Mix

Countries using mirror data (ECB's SHS)

1. Require issuing domestic banks to report the ISIN codes of their debt securities.
2. With the ISIN codes, compilers search for information on holders within the SHS database.
   2.1 If in the database full information on holders is available, then it is straightforward to allocate the counterparty countries accordingly.
   2.2 If no information on holders is available, the debt security is assigned as unallocated.
   2.3 If only partial information can be found, then the remaining unknown amount is allocated according to the proportions of known amounts.

How we contribute to the post-crisis statistical initiatives

① Unique survey of current practices of identifying debt securities counterparty countries;

② Combined approach using mirror data for cross-checking, possibly with a centralized security depository as the main data resource for domestic market

Suggestions for compilers:

① To thoroughly research their market and related institutions and to adjust their collecting framework with reference to the methods discussed in here.

② To use estimation and cross-checking by taking advantage of established databases.

Unallocated position is not necessarily a good indicator of data quality: It is indeed recommended that compilers search for ways to break down residence and sector of debt securities counterparties, but allocating the positions to wrong counterparties could worsen the data quality and thereby undermine the comparability of data for research and policy analysis.

Thank you!