# Mining individual securities databases for analytical purposes: the example of the BIS international debt securities statistics[1]

Denis Pêtre[2]

## 1.    Introduction

The BIS acted as a pioneer in setting up security-by-security databases.

Its international debt securities database was set up in the late 1980s. The data, collected from various market and institutional sources, contain detailed information on individual securities placed in international markets. In addition to the amount of funds raised and the dates of announcement, completion and maturity of deals, information is also available on the name of the issuer, the sector of the immediate borrower (issuer), the sector of the ultimate borrower (parent company of the borrower or guarantor), country of residence and nationality of the issuer, the type of instrument, the interest rate structure and market of issue and, for international bonds, the terms (coupon, issue price, interest base etc), conditions (call and put options, conversion clauses etc) and rating of individual issues. At end-December 2007, information on around 1,000,000 international bonds, notes and money market instruments was available in the BIS international debt securities database.

As regards securities placed in domestic markets, the BIS collects from various national sources time-series data covering 49 OECD and major emerging market countries. In contrast to its security-by-security database covering debt securities placed in international markets, its domestic database covers only aggregated information on amounts outstanding, broken down by sector of the issuer and type of instrument.

International debt securities are defined as all foreign currency issues by residents and non-residents, as well as domestic currency issues launched by non-residents. Additionally, domestic securities specifically targeted to international investors are also considered as international issues in the BIS database. In some cases, it might be difficult to identify the targeted investors. The composition of the group of intermediaries and underwriters arranging the deal is often taken as a first approximation in determining the domestic or international nature of the investment base. Domestic debt securities are defined as those issued by residents in domestic currency (with a few exceptions) and targeted at resident investors.

A new delineation line that is increasingly being used by analysts is to distinguish local issues (ie securities issued under local law, cleared and settled locally) from foreign issues.

This paper considers the practical issues that would allow the BIS to identify local and foreign issues separately in its international debt securities database. The methodology was applied to the fourth quarter 2007 data published in the March 2008 issue of the BIS *Quarterly Review*.

---

[1]    The views expressed are those of the author and not necessarily those of the BIS, the IFC or its member institutions.

[2]    Statistical Analyst, International Financial Statistics, Bank for International Settlements, denis.petre@bis.org.

## 2.      Tentative definition of an algorithm

In order to identify local and foreign issues separately in the BIS international debt securities database, we established an algorithm that makes use of four elements available in the BIS database or in the data reported by commercial data providers: the ISIN code, the governing law, the listing place, and the separate identification available for foreign issues.

- The ISIN code

ISIN codes are allocated by national numbering agencies. The two first letters of an ISIN code identify the ISO country code of the agency that allocates it. Each national numbering agency is competent for the debt securities issued in its own jurisdiction and typically held by the local central securities depository (CSD). The ISIN codes for issues held or deposited with Euroclear and Clearstream are allocated directly by Euroclear and Clearstream and start with the letters "XS" (cf ISO 6166 standard).

The assumption made by the algorithm is that the two first letters of the ISIN code indicate the local market where the security is issued. Securities starting with the letters XS are of foreign nature.

The ISIN code is available in the BIS database. In the examples in table 1 below, the two first letters of the code are given in the column "Cty_ISIN".

- The governing law

The governing law is defined as the national, state or provincial law under which the terms of a new issue are agreed. The governing law is provided in Dealogic Bondware.

The data were downloaded from Bondware and matched as far as possible with the content of the BIS database. Issues governed by multiple governing laws are marked "XS" indicating that they are of foreign nature. In the examples in table 1 below, the ISO country code of the governing law is given in the column "Cty_gov_law".

- The listing place

The listing place is defined as the stock exchange on which the security is traded. The information is provided in Dealogic Bondware. The data on the listing place were downloaded from Bondware, matched as far as possible with the content of the BIS database. In the example in table 1 below, the ISO country code of the listing place is given in the column "Cty_listing".

- The separate identification available for foreign issues

Foreign issues are defined as issues by non-resident borrowers placed on the local market of a given country, in the domestic currency of that country. Foreign issues are identified with specific names by market participants, for example "Yankee Bonds" for the United States, "Samurai Bonds" for Japan, "Bulldog Bonds" for the UK, "Kiwi Bonds" for New Zealand, and "Matador Bonds" for Spain.

Information on foreign issuance is available in the BIS database. These were the data used, and the local market on which the issue was placed are given in the column "Cty_foreign".

For each of the 996,483 international debt securities issues available in the BIS database at the end of December 2007, we allocated, as far as we could, the four elements described above. We then calculated a "compound" issue place. All debt securities with elements that indicate only a local nature were considered in the algorithm as local issues. In the example below, the result of the algorithm is given in the column "Cty_compound".

|  | Table 1 | | | | |
|---|---|---|---|---|---|
| **Bond number** | **Cty_ISIN** | **Cty_gov_law** | **Cty_listing** | **Cty_foreign** | **Cty_compound** |
| 132614 | ... | GB | IE | ... | XS |
| 133139 | ... | IT | ... | ... | IT |
| 133163 | XS | ... | ... | ... | XS |
| 133369 | AU | AU | AU | AU | AU |
| 133441 | CH | US | CH | CH | XS |
| 133654 | ... | ... | ... | ... | XS |

Source: Author's calculations.

- For bond 132614, two of the four elements were found in the data. The bond was issued under English governing law and is listed in Ireland. The available elements indicate that the issue is of foreign nature.

- For bond 133139, only one element was found in the data. The bond was issued under Italian governing law. The available element indicates that the issue is of Italian local nature.

- For bond 133163, only one element was found in the data. The ISIN code was allocated by Euroclear or Clearstream. The available element indicates that the issue is of foreign nature.

- For bond 133369, all the four elements were found in the data and indicate that the issue is of Australian local nature.

- For bond 133441, all elements were found in the data. The ISIN code was allocated by Telekurs Financial Ltd, the numbering agency for Switzerland. The bond was issued under US governing law and is listed in Switzerland. The data indicate that it is an issue in CHF by non-residents and placed in the Swiss domestic market. The available elements indicate that the issue is of foreign nature.

- Finally, for bond 133654, no element was found in the data. By default, the issue is considered as being of foreign nature.

## 3. Global results should be interpreted with some caution

Global results presented in table 2 were computed by aggregating the security-by-security data available in the BIS international debt securities database, by place of issue (ie the compound issue place described before), currency (local currency / foreign currency) and issuer sector.

The results indicate that around 30% of all international debt securities outstanding at end December 2007 were issued in local markets and found their way into the international database because they were sold through international underwriting syndicates to international investors. It is worth mentioning that the results are similar to those obtained at the end of 2005.

Table 2

**International debt securities – outstanding at end 2007**

USD billion

| Market | Currency | Corporate issuers | Financial institutions | Govern-ments | Interna-tional Institutions | Total |
|--------|----------|-------------------|------------------------|--------------|------------------------------|-------|
| Local | Local | 657.0 | 4,119.6 | 700.2 | 0.0 | 5,476.7 |
|       |       | *29%* | *23%* | *38%* | *0%* | *24%* |
| Local | Foreign | 249.7 | 901.4 | 157.0 | 56.5 | 1,364.5 |
|       |       | *11%* | *5%* | *8%* | *9%* | *6%* |
| Foreign | Local | 774.8 | 6,403.0 | 418.4 | 0.0 | 7,596.2 |
|       |       | *34%* | *36%* | *22%* | *0%* | *33%* |
| Foreign | Foreign | 575.1 | 6,570.1 | 585.1 | 604.8 | 8,335.1 |
|       |       | *25%* | *37%* | *31%* | *91%* | *37%* |
| Total |       | 2,256.6 | 17,994.0 | 1,860.7 | 661.3 | 22,772.6 |

Source: Author's calculations.

We need, however, to introduce a note of caution when interpreting the results of the algorithm, due to the scarcity of the information underlying the computation of the "compound" field, and the assumptions that were made.

While we allocated, as far as we were able, the ISIN country information, the governing law, the listing place and the foreign country information to each international debt securities issue available in the BIS database, the resulting matrix (see example table 1) is far from perfectly completed. Table 3, below, shows the actual contribution of the four elements to the amount outstanding, for issues outstanding at end December 2007.

Additional time could be invested in trying to improve the coverage of the four elements used in the algorithm in order to reduce the identified information scarcity. The CSDB available at the ECB, as well as data available from Thomson Financial, could be used for this purpose.

## Table 3

**International debt securities – outstanding at end 2007**

USD billion

| Number of iden-tified ele-ments | ISIN | Gov_law | List-ing | For-eign | Bond | | Notes_&_ Money_ Market_ Instruments | | Total | | Total – cumu-lative per-centage |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | X | X | X | X | 299.2 | 2% | 121.9 | 1% | 421.2 | 2% | 2% |
| 3 | X | X | X | ... | 5,692.1 | 44% | 5,492.8 | 46% | 11,184.9 | 45% | 46% |
| 3 | X | X | ... | X | 393.9 | 3% | 45.9 | 0% | 439.8 | 2% | 48% |
| 3 | X | ... | X | X | 0.2 | 0% | 0.0 | 0% | 0.2 | 0% | 48% |
| 3 | ... | X | X | X | 9.8 | 0% | 0.0 | 0% | 9.8 | 0% | 48% |
| 2 | X | X | ... | ... | 3,382.4 | 26% | 911.8 | 8% | 4,294.2 | 17% | 65% |
| 2 | X | ... | X | ... | 15.9 | 0% | 59.3 | 0% | 75.2 | 0% | 66% |
| 2 | X | ... | ... | X | 81.4 | 1% | 12.9 | 0% | 94.3 | 0% | 66% |
| 2 | ... | X | X | ... | 145.0 | 1% | 0.0 | 0% | 145.0 | 1% | 67% |
| 2 | ... | X | ... | X | 28.6 | 0% | 0.0 | 0% | 28.6 | 0% | 67% |
| 2 | ... | ... | X | X | 0.6 | 0% | 0.0 | 0% | 0.6 | 0% | 67% |
| 1 | X | ... | ... | ... | 1,225.8 | 9% | 5,373.1 | 45% | 6,598.9 | 26% | 93% |
| 1 | ... | X | ... | ... | 118.7 | 1% | 0.0 | 0% | 118.7 | 0% | 94% |
| 1 | ... | ... | X | ... | 9.5 | 0% | 0.0 | 0% | 9.5 | 0% | 94% |
| 1 | ... | ... | ... | X | 96.0 | 1% | 1.1 | 0% | 97.1 | 0% | 94% |
| 0 | ... | ... | ... | ... | 1,480.4 | 11% | 6.7 | 0% | 1,487.1 | 6% | 100% |
| Total | | | | | 12,979.4 | 100% | 12,025.6 | 100% | 25,005.0 | 100% | |

Source: Author's calculations.