BANQUE DE FRANCE
EUROSYSTÈME

METHODOLOGY
Non-financial sector debt ratios

February 2021

This note explains the concept of debt used in the Stat Info "Non-financial sector debt ratios – international Comparisons".

1. Definition and concepts used for debt ratios

According to the system of national accounts (§22.104), debt is defined as a specific subset of liabilities identified on the basis of the type of financial instruments that it includes. In general, debt includes all the liabilities that require the payment of interests or a principal, at one or more future dates. Thus, all debt securities are liabilities, but some liabilities such as equities and financial derivatives are not debts.

1.1 Institutional sectors

Debt ratios are calculated for several institutional sectors[1] that correspond to those identified by the European System of Accounts (ESA):

- households: individuals, sole-traders and non-profit institutions serving households (NPISH);
- non-financial corporations (NFCs);
- general government, which comprises central government, State government[2] and local government bodies as well as social security funds.

The non-financial private sector corresponds to the household and NFC group; the non-financial sector comprises agents from the private non-financial and general government sectors.

1.2 Instruments concerned

The debt presented in the Stat Infos only includes three financial instruments defined by the ESA:

- Loans (AF4) for all institutional sectors (households, NFCs, general government);
- Debt securities (AF3) for NFCs, general government[3];
- Deposits (AF2) (i.e. those recorded on the liabilities side) for general government[4], since the concept of debt ratios used corresponds to that of Maastricht[5].

For instance, trade credits are not included for two reasons. On the one hand, their amounts are known with a lag. On the other hand, these transactions generally appear on both the asset and liability sides of the same sector and, as such, including them would lead to an overestimate of the debt ratio. Lastly, for similar reasons, loans between non-financial agents are not used, see *below* "Consolidation".

[1] For the particular case of the United States, see Section 2.4.

[2] This only applies to the federal States: United States and Germany.

[3] Households can in principle issue debt securities but this generally accounts for a marginal component of their liabilities.

[4] Only financial corporations and general government can record deposits as liabilities contrary to households and NFCs.

[5] http://ec.europa.eu/eurostat/documents/3859598/5937189/KS-GQ-14-010-EN.PDF/

1.3 Valuation

Contrary to the financial accounts[6] where outstanding financial instruments are recorded at market value, debt outstandings are expressed here at face value. Thus, for debt securities, the amounts recorded correspond to value due at maturity by the debtor and not that of the securities for their holders. For loans and debt securities denominated in foreign currency, the outstanding is converted into euro using the exchange rate information of the reference period. The amount of these transactions is therefore affected by fluctuations in the exchange rate of the euro against the currency in which they are denominated.

1.4 Consolidation

Consolidation consists in taking into account different entities belonging to the same sector and therefore in neutralising all the transactions or exposures between entities in this same sector. This sectoral consolidation is made possible thanks to the financial accounts produced using "who-to-whom" sources – even if these same accounts are presented on a non-consolidated basis –. Consolidation makes it possible to avoid double-counting, i.e. each time that asset/liability cross-holdings between agents in the same sector are significant or are likely to be so:

- For households, loan liabilities are not consolidated as they borrow almost exclusively from financial intermediaries;
- Conversely, for NFCs, intra-company loans are significant and are thus consolidated. Data on debt securities are not consolidated since the share of these securities held by NFCs vis-à-vis NFCs is marginal;
- For general government, all debt instruments (deposits, loans and debt securities) are consolidated net of assets held by the general government sector, in accordance with methods used to measure debt as defined in the Maastricht Treaty. For the United States and Japan, further details are given in Sections 2.4 and 2.5.

Box: Consolidation of NFCs' loans

Several measures of NFC indebtedness coexist: they differ in their level of consolidation and their treatment of loans between NFCs, which may be sometimes less relevant for the macroeconomic analysis of corporate debt.
The unconsolidated debt (Figure 1) of NFCs is the simplest and broadest approach. It measures the sum of all debts on the liabilities side of non-financial corporations. This approach includes all loans contracted between two non-financial corporations, which makes the measurement highly dependent on organisational choices within groups. Thus, the measurement of non-consolidated debt differs, depending on whether a subsidiary finances itself directly with a loan from a bank or whether it finances itself with its parent company, which itself takes out a bank loan for this purpose. In the latter case, the amount of the credit is counted twice (once for the parent company and once for the subsidiary) and this double counting would be neutralised if the parent company chose to absorb its subsidiary (reflecting the impact of organisational choices).

[6] http://webstat.banque-france.fr/fr/browse.do?node=5384333

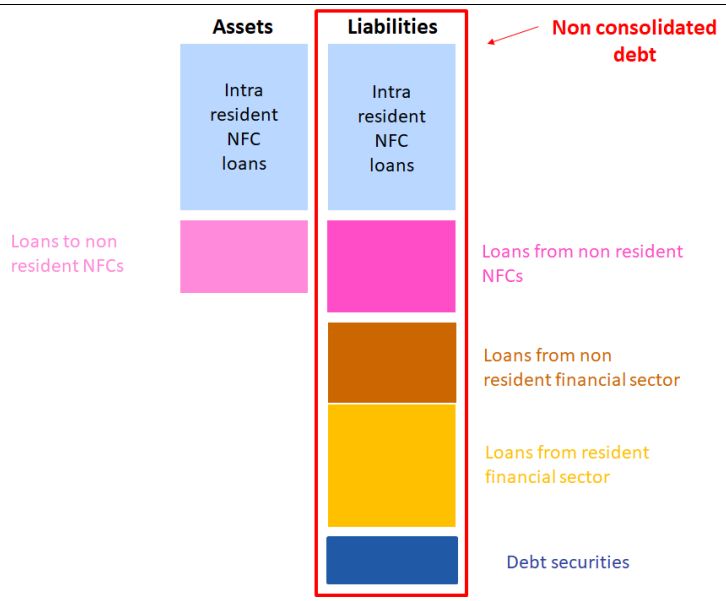

Figure 1 Non-consolidated debt perimeter

A first consolidation (Figure 2), taken up by Eurostat - which can be called resident intra-sectoral consolidation - consists in deducting loans between resident NFCs from total loans on the liabilities side of NFCs. This measure requires information on the counterparts of loans on the corporate balance sheet ("who-to-whom" data).

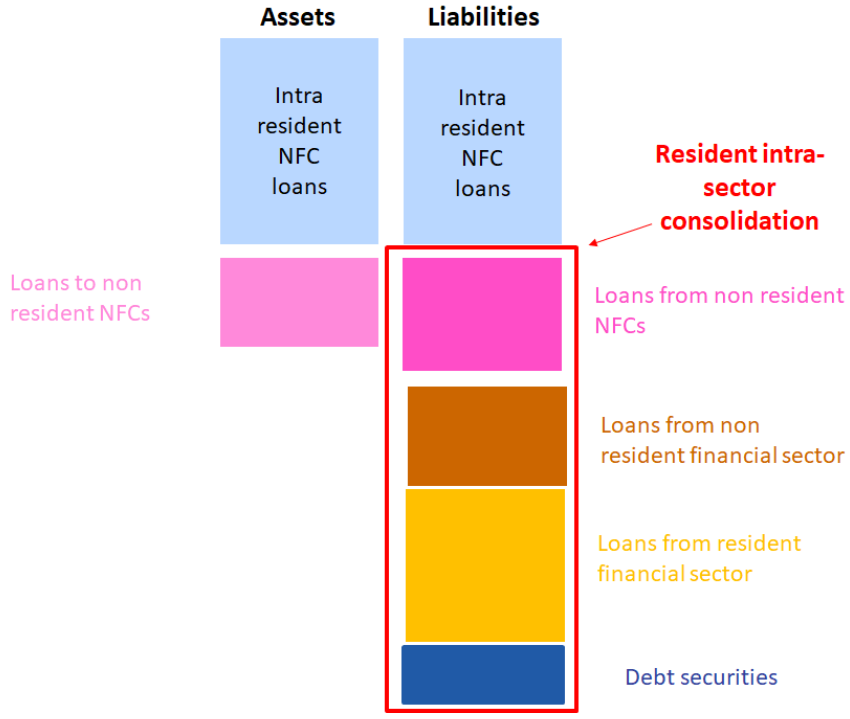

Figure 2 Resident intra-sector consolidation

A second consolidation (full intra-sectoral consolidation, Figure 3) records only the loans that are on the assets side of both resident and non-resident financial institutions. This is equivalent to removing, in addition to loans between resident NFCs, loans also taken out by resident NFCs from non-resident counterparties belonging to the same group. The exclusion of these specific transactions with the rest of the world (loans between affiliates) makes sector consolidation equivalent to group consolidation, particularly for France. It is possible to consider that the loans recorded in the assets of NFCs are mainly made within the framework of their group relationships, since the main economic function of non-financial agents is not financial intermediation. It is this second consolidation that is used for France in the framework of the Stat Info "Non-financial sector debt ratios - International comparisons". This consolidation leads to better international comparisons because it depends much less on the choices

made by NFCs' organisations and is based on a perimeter of in general more precise statistical data (mainly banking data).

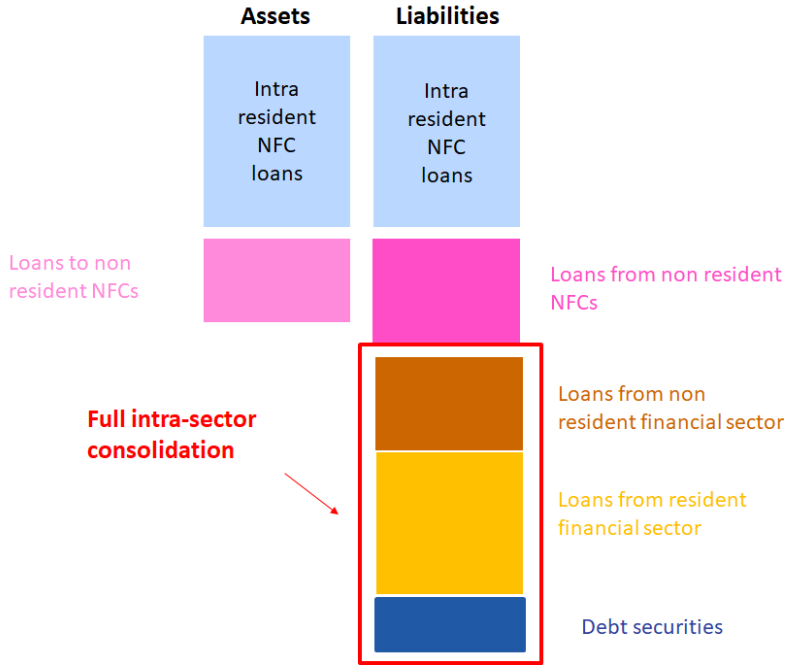

Figure 3 Full intra-sector consolidation

Due to the lack of detailed and published information on other direct investment (cross-border cash flows between affiliated enterprises), it is not possible to deduct loans taken out by resident NFCs vis-à-vis non-resident NFCs for the countries considered in this publication. For this reason, a third concept of consolidation (Figure 4) is used by deducting from total loans on the liabilities side of NFCs' balance sheets all loans on the assets side of NFCs to all sectors, including the rest of the world. This measure does not require "who-to-whom" data. The Banque de France considers that the second and third method of consolidation should give roughly the same results, on condition that loans from domestic NFCs to other NFCs in the rest of the world are roughly equal to loans from NFCs in the rest of the world to domestic NFCs.

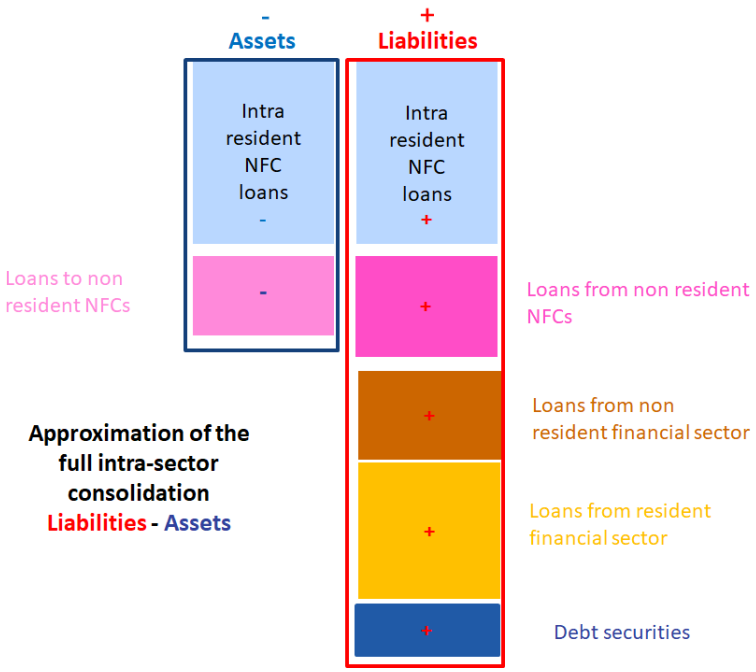

Figure 4 Third consolidation approach (approximation of full intra-sector consolidation)

Beyond the measures retained in the publication, the various indebtedness measures complement each other and may be more or less relevant depending on the different need for economic analysis.

1.5 Normalisation and ratios

The debt ratios published show the ratio of each sector's debt to an income or activity indicator: value added for NFCs, gross disposable income[7] (GDI) for households and GDP for all sectors. Irrespective of the variable used for the normalisation (GDI, VA or GDP), the series are measured at current prices, seasonally adjusted and annualised[8].

1.6 Frequency and seasonal adjustment

The debt ratios in the Stat Info are presented at a quarterly frequency: for each date, the value is that of the last day of the corresponding quarter. Ourstandings are not seasonally adjusted, with the exception of French data (see Section 2.1).

2. Characteristics of the data by country

Section 1 gives an overview of the debt ratio concept used. However, owing to the characteristics of the national accounts data published, specific processing methods are sometimes used.

2.1 France

NFC debt ratios. The "loan" component of NFC debt corresponds, for France, to loans from resident and non-resident credit institutions (therefore with the exception of intragroup and intergroup loans). It therefore diverges from that which is calculated for the other countries for which data are less comprehensive and where the loan component of NFC debt is measured as the asset-liability balance (see box above). In the case of France, however, these two measurements are fairly close for a number of reasons: (1) the amount of intragroup loans taken out by resident NFCs from non-resident firms is almost identical to that which they grant to non-resident firms; (2) the loans taken out by NFCs from other agents (i.e. excluding MFIs and intragroup) are very marginal; (3) loans granted by NFCs to other agents (i.e. excluding intragroup) are also small.

Seasonal adjustment of outstandings. Debt is seasonally adjusted[9] in three steps. (1) Flows are seasonally adjusted at a disaggregated level, for each non-financial agent and each financial instrument (deposits, loans and debt securities) according to their maturity (short/long-term). (2) Seasonally adjusted quarterly flows are then made consistent with gross annual flows, so that, for each year, the sum of the seasonally adjusted quarterly flows is equal to the corresponding annual amount. (3) Lastly, the seasonally adjusted quarterly debt outstandings are calculated by cumulating the seasonally adjusted quarterly transaction flows and the quarterly valuation and volume change series (which do not display an identifiable seasonal pattern) using the initial outstanding (end-1994)[10]. Only NFC and household debt is seasonally adjusted; general government debt corresponds to Maastricht debt figures published by Insee which is not seasonally adjusted.

2.2 The euro area

For the euro area debt series, ECB data are used. These series may differ from the sum of the assets and liabilities of euro area countries[11]. Indeed, the ECB makes the adjustments necessary to ensure consistency between the financial accounts and other statistical sources (monetary statistics and balance of payments).

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[7] For Japan and the United States, see Sections 2.4 et 2.5 respectively.

[8] The denominator variables (GDI, VA or GDP) are calculated over four rolling quarters.

[9] See Working Paper No. NER-E 147 "Seasonal Adjustment of Monetary Aggregates and Loans Series at the Banque de France: Theoretical Background and Implementation", E. Fonteny, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1698150

[10] The initial outstanding (T41994) results from a direct seasonal adjustment on the series of outstandings. Thus, in the forth quarter we do not find an equality between the gross series of outstandings and the seasonally adjusted series of outstandings.

[11] The euro area comprises 19 countries (fixed composition): Germany (1999), Austria (1999), Belgium (1999), Spain (1999), Finland (1999), France (1999), Ireland (1999), Italy (1999), Luxembourg (1999), the Netherlands (1999), Portugal (1999), Greece (2001), Slovenia (2007), Cyprus (2008), Malta (2008), Slovakia (2009), Estonia (2011), Latvia (2014), Lithuania (2015).

2.3 The United Kingdom

The valuation of negotiable debt securities. For the United Kingdom, negotiable debt security outstandings issued by NFCs at face value are not available at a quarterly frequency, but only at an annual frequency. Data on debt at market value are used to interpolate annual data at face value.

2.4 The United States

Sectoral breakdown. In order to reflect as closely as possible ESA conventions, the NFC sector corresponds to the non-financial corporate business sector including corporate farms, while the non-farm, non-corporate business sector is therefore combined with households and non-profit institutions serving households (NPISH).

NFC debt. It covers the whole of general government (federal government, federal states, local government and social security agencies) and includes the instruments AF2, AF3 et AF4. It is only partially consolidated as only deposits are concerned (by asset and liability difference).

Adjustment of gross disposable income (GDI). GDI is adjusted to make it comparable with the ESA definition. It is calculated using the "disposable personal income" concept published by the Bureau of Economic Analysis (BEA) less personal interest payments and personal current transfer payments. Then the consumption of fixed capital[12] is added to obtain the GDI.

2.5 Japan

General government debt. Public debt includes negotiable debt securities and loans. The latter are consolidated but debt securities are not.

Adjustment of gross disposable income (GDI). Japan's quarterly GDI is calculated using quarterly household net disposable income (see sources below). This series is adjusted to take account of fixed capital consumption, which is estimated initially on the basis of the data for previous years. The amounts are then aligned with the Japanese household annual GDI figures when they are published by the OECD (with a lag of 18 months).

3. Sources used

The data used to calculate the debt ratios of non-financial agents (households, NFCs, general government) are taken from the quarterly national accounts of the different countries under review (Germany, Spain, United States, France, Italy, Japan, and the United Kingdom) as well as from the euro area, and from the publications of central banks or national statistical institutes (see Table below).

Countries	Debt instruments	GDP, VA of NFCs, Household GDI
France	Banque de France http://webstat.banque-france.fr/fr/	INSEE http://www.insee.fr/fr/
Germany	Eurostat http://ec.europa.eu/eurostat/fr/home BCE http://sdw.ecb.europa.eu/	Eurostat http://ec.europa.eu/eurostat/fr/home
Spain		
Italy		
Euro area		
United Kingdom		
United States	Fed www.federalreserve.gov	Bureau of Economic Analysis http://www.bea.gov/
Japan	Bank of Japan www.boj.or.jp	Cabinet Office (CAO) http://www.esri.cao.go.jp

[12] For households and NPISH and sole traders (non-corporate business sector).

4. Series available on Webstat

The Stat Info series are posted on the Webstat website (*http://webstat.banque-france.fr/fr/*). Supplementary series are calculated at market value. For households, debt is identical irrespective of the valuation method used.