Financial investment and financing in a from-whom-to-whom framework

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1. *The recent financial and economic crisis and the need to design financial connections*

The recent financial and economic crisis was characterised by various aspects: Triggered by the burst of the real estate bubble in the US housing market in late 2006 and 2007 failed mortgage products led to a severe drop in the value of assets, with financial institutions experiencing extraordinary high losses.[2] Widespread holdings of damaged assets, and a rigorous loss of confidence in the interbank market, brought liquidity and solvency problems across large parts of the global financial system which had become increasingly integrated.

Central banks played a key role in supplying liquidity and overcoming the paralysis in key money and financial markets. But the non-financial sector faced tighter credit conditions and wider credit risk spreads as financial institutions scaled back their activity. Moreover, households and institutional investors lost confidence in many deposit-taking institutions, uncertainty spread, and households and businesses held off consumption and investment, again affecting the real economy. Finally, the crisis brought recession in the USA and in many other economies.

The financial crisis has provoked much thought about the institutional structure to support work on, in particular, financial stability, and given rise to intense efforts to identify and close statistical gaps which the events have revealed. Two developments are of specific relevance: the Issing Committee report of March 2009; and the IMF/Financial Stability Board (FSB) report of October 2009 to G-20 Finance Ministers and Central Bank Governors, updated and elaborated in two progress reports, in June 2010 and in June 2011 (the G-20 reports), which contain many recommendations for statistical work.

There is a broad agreement that the financial and economic crisis has highlighted the need to better identify the build-up of risks in the financial sector and to understand financial connections among the sectors of an economy and between them and their counterparties in the rest of the world. Accordingly, analysts and policy makers increasingly focus their attention on integrated sector accounts and balance sheets underlying vulnerabilities. The application of this kind of analysis, however, has been hampered so far by the lack of adequate data. Moreover, most of the existing sector accounts and balance sheets are designed in a way to show the financial investment and financing activities and their results in the financial accounts and balance sheets with no or only partial from-whom-to- whom data.

Presenting an integrated system of sector accounts in a from-whom-to-whom (or debtor/creditor) framework is usually the final step of a process to develop a system of accounts. It would be a statistical tool to allow the analysis of the financial connections among institutional sectors in a national economy and abroad. However, its implementation requires a rather detailed set of source data.

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[1] Comments made by Aurel Schubert have been much appreciated.

[2] Peter Bull, Jean-Marc Israel and Reimund Mink, *Impact of the financial crisis*, in: UNECE, Guide on impact of globalization on national accounts, draft available at: http://www.unece.org/stats/groups/wggna.e.htm.

The from-whom-to-whom framework refers predominantly to the financial account, the other financial flow accounts and the financial balance sheet. For financial transactions, net acquisitions of financial assets are presented with a breakdown by debtor sector (thus showing the sectors on which the assets present claims). Moreover, net incurrences of liabilities are presented with a breakdown by creditor sector (that is showing the sectors acquiring the financial instruments concerned). However, the financial account designed in such a way does not provide any information on the institutional units to whom financial assets were sold or from whom financial assets were bought. This also applies to transactions in liabilities. The data with debtor/creditor details for financial transactions are extremely useful taking into account that consistent data may be derived for the other flow accounts and the financial balance sheet on a from-whom-to-whom basis.

Presenting financial transactions, other flows and positions in such a framework provides a broad range of uses in research and policy analysis. Looking at the various financial instruments the corresponding financial markets may be monitored like markets for debt securities or for equity securities. Based on a reasonably detailed sectoral breakdown, the framework allows the analysis of relationships between institutional sectors and sub-sectors within an economy and also between these sectors and sub-sectors and non-residents (broken down even further by country and sector). Such analyses shed light on the sectoral compositions of assets and liabilities, and on potential strengths and vulnerabilities in portfolios of specific sectors.

2.   *The SNA architecture*

There are various *constitutional elements* which determine the System of National Accounts (*2008 SNA*) architecture: First, the *infrastructure* which defines the institutional sectors and units as building blocks needed to construct a fully consistent set of economic accounts; and, second, the *integrated data system* which is the set of accounts. They are central to describing the economic process.[3]

a.   Institutional sectors, institutional units and their residency

The institutional sectors and the institutional units that are aggregated to measure them are the building blocks of the integrated sequence of accounts. There are two main types of units that may qualify as institutional units, namely persons or groups of persons in the forms of households, and legal or social entities. *Institutional units* are economic entities capable of owning goods and assets, incurring liabilities, and engaging in economic activities and transactions with other units in their own right.

To describe production, income, expenditure, financial flows and balance sheets, institutional units are grouped into five mutually exclusive *institutional sectors* based on their principal functions, behaviour and objectives: non-financial corporations, financial corporations, general government, households; and non-profit institutions serving households. The five sectors together make up the total economy. The system allows for a complete set of flow accounts and balance sheets to be compiled for each sector, for the total economy and for the rest of the world.

The economic activities between the resident sectors and the non-resident institutional units are covered by the rest of the world (sector), which plays a role in the accounting structure similar to that of an

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[3] Karen Wilson, *The Architecture of the System of National Accounts: A Three-Way International Comparison of Canada, Australia, and the United Kingdom;* Working Paper 11106, 2005, http://www.nber.org/papers/w11106.
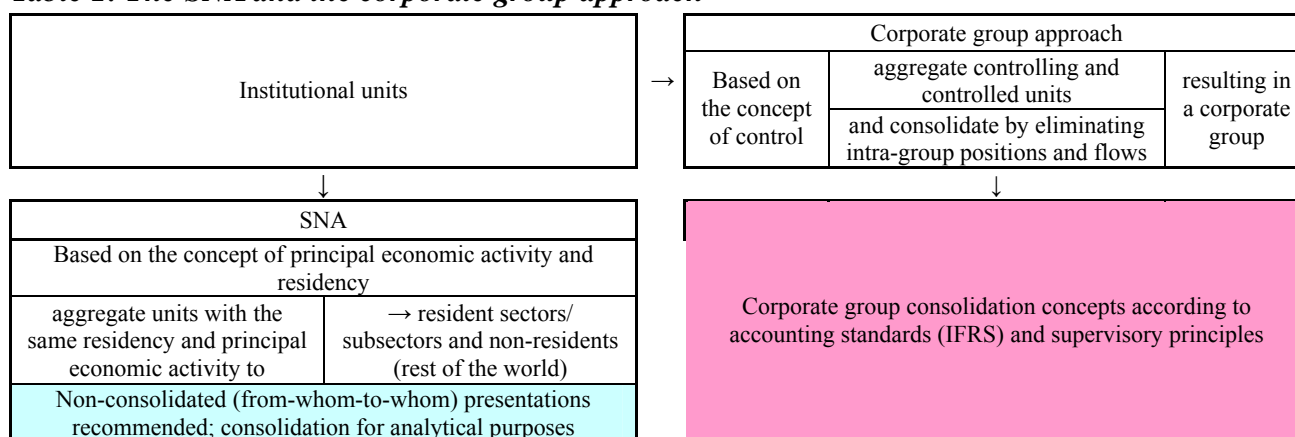
institutional sector. If a balancing item is positive, it means a surplus of the rest of the world and a deficit of the total economy, and vice versa if the balancing item is negative.

The residence of each institutional unit is the economic territory with which it has the strongest connection. This is expressed as the "centre of predominant economic interest." As a general principle, an enterprise is resident in an economic territory when the enterprise is engaged in a significant amount of production of goods and/ or services from a location in the territory. In the absence of any significant physical dimension to an enterprise, its residence is determined according to the economic territory under whose laws the enterprise is incorporated or registered.

b.   The SNA and the corporate group approach

The SNA defines institutional units which are aggregated in sectors and subsectors based on their residency and principal economic activity. The aggregated data are non-consolidated; however, consolidated presentations are occasionally applied to specific sectors or subsectors for analytical or policy purposes. The first column of Table 1 illustrates the approach.

Table 1: The SNA and the corporate group approach

Institutional units	→	Corporate group approach		
		Based on the concept of control	aggregate controlling and controlled units	resulting in a corporate group
			and consolidate by eliminating intra-group positions and flows	

SNA		Corporate group consolidation concepts according to accounting standards (IFRS) and supervisory principles
Based on the concept of principal economic activity and residency		
aggregate units with the same residency and principal economic activity to	→ resident sectors/ subsectors and non-residents (rest of the world)	
Non-consolidated (from-whom-to-whom) presentations recommended; consolidation for analytical purposes		

The concept of institutional units is also the starting point for explaining the corporate group approach. Based on the concept of control controlling and controlled units are aggregated and also consolidated by eliminating intra-group positions and flows resulting in a corporate group.

The controlling and controlled units forming a corporate group belong usually (in terms of the SNA) to different economies and also sectors or subsectors. It is therefore impossible to reconcile to each other the SNA aggregated data and data underlying the corporate group approach. One option, however, is to truncate a corporate group in different subgroups of units with different residencies and belonging to various resident sectors.

Other modifications emerge from different consolidation concepts as they are applied according to international accounting standards (IFRS) and supervisory principles.

c.   An integrated system of institutional sector accounts

The SNA accounting structure is used to organise and present data on transactions, other flows, and positions of assets and liabilities for the sectors and subsectors of an economy and the rest of the world. *Integrated economic accounts* by institutional sector trace the production of income through to wealth accumulation for each institutional sector.

The sequence of accounts on current transactions records consistently the production, distribution and use of income, with saving as a final balancing item. The sequence of accounts on current transactions is

followed by the accumulation account. While all changes in assets, liabilities and net worth are included in the accumulation account, the corresponding positions are shown in the balance sheet. The balance sheet comprises three elements: non-financial asset, financial asset and liability positions and net worth as the balancing item between assets and liabilities. Table 2 shows how transactions, other flows, and positions are presented in the *SNA*.

Drawing up a balance sheet makes it possible to focus on the net worth of a sector or subsector of an economy or of the rest of the world and how it changes over time. Accordingly, the change in net worth is composed of saving, net capital transfers receivable, holding gains less holding losses, and other (net) changes in the volume of assets or liabilities.

Table 2: Transactions, other flows and positions as presented in the SNA

		Transactions	Other flows	Positions
	Current account	Production of goods and services, generation, distribution, redistribution, and use of income		
Accumulation account	*Capital account*	Net acquisition of non-financial assets, saving and capital transfers		
	Financial account	Net acquisition of financial assets and net incurrence of liabilities		
	Revaluation account		Holding gains and losses in non-financial assets, financial assets and liabilities	
	Other changes in the volume of assets account		Other changes in the volume of non-financial assets, financial assets, and liabilities	
	Balance sheet			Non-financial assets, financial assets, liabilities and net worth as a balancing item

3.   *The from-whom-to-whom framework of transactions, other flows and positions*

The underlying principles of the *2008 SNA* allow for compiling from-whom-to-whom accounts for transactions, other flows and positions. Especially, Chapter 27 of the *2008 SNA* provides some input to an integrated framework of financial flows and positions on a from-whom-to-whom basis. It describes that detailed flow of funds accounts are based on three-dimensional tables. Such a table records transactions, other flows or financial asset and liability positions cross-classified by type of asset, by creditor sector and by debtor sector.

The BIS-ECB-IMF *Handbook on Securities Statistics*, in particular its Part 2 on debt securities holdings covers the conceptual framework for flows and positions as outlined in the *2008 SNA* but also extends this approach by reflecting in detail on from-whom-to-whom relationships.[4] It also outlines that the approach is crucial for monetary and fiscal policy formulation – and also useful in the context of consolidated data at the level of corporate groups for financial stability purposes.

a.   The quadruple-entry accounting principle

The three-dimensional analysis of transactions, other flows and positions refers to the quadruple-entry accounting principle as described in the *2008 SNA*. Transactions, other flows and positions across sectors are recorded in four counterpart entries. For an institutional unit, each transaction is recorded twice, once as a resource (or as a change in liabilities) and once as a use (or as a change in assets) or twice as a change in assets or as a change in liabilities (an increase combined with a corresponding decrease). The sum of

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[4] BIS-IMF-ECB *Handbook on Securities Statistics*, Part 1 and 2, http://www.imf.org/external/np/sta/wgsd/hbook.htm.

transactions recorded as resources or changes in liabilities must equal the sum of transactions recorded as uses or changes in assets, thus permitting a vertical check on the transaction accounts' consistency. This also applies to other flows and positions.

Looking at two institutional units, transactions, other flows and positions need to be recorded on the basis of a quadruple-entry accounting, since most flows and positions involve two institutional units. Each transaction of this type is recorded twice by the two transactors involved. For example, interest paid in cash by a financial corporation to a household is recorded in the accounts of financial corporations as a use under property income and a negative acquisition (a disposal) of assets under currency and deposits. In the household sector accounts, it is recorded as a resource under property income and an acquisition of assets under currency and deposits. On the other hand, transactions within a single unit (such as the consumption of output by the same unit that produces it) require only two entries, whose values have to be estimated.

The quadruple-entry accounting ensures symmetry of the reporting by the institutional units involved thus permitting complete consistency within the accounts in measuring variables across sectors and accounts. It guarantees that the closing balance on the balance sheet of each sector also reflects the transfer of income from one sector to another, thereby imposing stock-flow consistency on the system as well. This is very important for analysing and understanding the economic process.

b. The SNA framework for presenting inter-sector linkages

From-whom-to-whom accounts permit tracing the debtor/creditor relationships between institutional sectors, i.e. they can be used to show transactions, other flows and balance sheet positions cross-classified by debtor sector and creditor sector.

Table 3 shows the integrated framework of accounts on a from-whom-to-whom basis by institutional sector and the rest of the world in a matrix format. For an economy, it shows transactions, other flows and positions for a financial instrument acquired/held by residents, grouped into (sub) sectors, and non-residents vis-à-vis institutional units as debtors, broken down by residency and by institutional sector (cells of Table 3 shaded grey).

For residents, the presentation of unconsolidated data is recommended. This means that intra-sectoral positions, transactions, and other flows are not eliminated (cells shaded grey with diagonal lines). The financial assets of non-residents issued by non-residents are not covered (black cell). These are not relevant from a national economy's perspective.

Table 3: From-whom-to-whom transactions for one financial instrument, non-consolidated

Debtor by residency and by resident sector / Creditor by residency and by resident sector		Residents					Non-residents	All creditors
		Non-financial corporations	Financial corporations	General government	Households	Non-profit institutions serving households		
Residents	Non-financial corporations							
	Financial corporations							
	General government							
	Households							
	Non-profit institutions serving households							
Non-residents								
All debtors								

Holdings of financial instruments by non-residents (vis-à-vis resident sectors as debtors) are shown as positions in the rest of the world balance sheet, acquisitions by non-residents of financial instruments issued by residents as financial transactions in the rest of the world financial account. Revaluations or other changes in the volume of assets and liabilities are reflected in the rest of the world accumulation account (cross-hatched cells in the non-residents column of Table 3). Corresponding liabilities positions and flows are shown in the non-residents row of the table. For economies where the role of the global financial markets is important, information on counterparty economies and non-resident sectors might be of interest.

The from-whom-to-whom financial account of an institutional sector or of the rest of the world is an extension of the non-consolidated financial account (matching debtor and creditor sectors). Similarly, the from-whom-to-whom financial balance sheet of a sector or of the rest of the world is an extension of the non-consolidated financial balance sheet (again matching debtor and creditor sectors). Deriving the from-whom-to-whom financial account and balance sheet makes it also possible to draw up from-whom-to-whom revaluation accounts and other changes in the volume of assets and liabilities accounts by (sub) sector. The information on revaluations has substantive analytical value, as it allows quantifying the effects of asset (and liability) price movements for a specific financial instrument by sector vis-à-vis other sectors.

4. Some experiences in compiling sector accounts on a from-whom-to-whom basis

A broad implementation of the from-whom-to-whom framework for financial flows and positions within the *SNA* has not yet been taken place. However, several national compilers have already extended their systems of financial accounts and balance sheets towards such frameworks.

a. Quarterly national accounts on a partial from-whom-to-whom basis[5]

A review of the availability of quarterly systems of national accounts with partial from-whom-to-whom data in G-20 economies recently conducted by the IMF reveals that Australia disseminates financial transactions and positions with a breakdown by counterparties within an integrated framework. Other countries like the USA and Japan disseminate also financial accounts and financial balance sheets with significant details for financial instruments and subsectors that make it possible to identify the debtor/creditor relationships in many cases.

Quarterly euro area accounts also show some detailed from-whom-to-whom data for loans and deposits, but also for non-financial transactions. This also applies for the quarterly sector accounts compiled by many European countries like Germany, Spain, France, Italy, Austria, Portugal or the UK.

Partial information on financial flows and positions by sector and corresponding counterparty, although available in many cases for financial institutions, is not fully integrated within a macroeconomic statistics framework, such as the *SNA*. Thus, commonly existing information on financial flows and positions showing creditor/debtor relationships can be found on a wide range of statistics compiled by central banks showing the interactions of the financial sector with other sectors of the economy and the rest of the world.

b. The IMF experience in data on a from-whom-to-whom basis

The balance sheet approach

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[5] M. Shrestha and R. Mink, *An Integrated Framework for Financial Flows and Positions on a From-Whom-to-Whom Basis*, paper presented at the IMF-OECD Conference on Strengthening Sectoral Position and Flow Data in the Macroeconomic Accounts, 28 February and 1 March 2011, http://www.imf.org/external/np/seminars/eng/2011/sta/pdf/whom.pdf

The IMF's balance sheet approach (BSA) is an analytical framework for ascertaining how balance sheet weaknesses contribute to the origin and propagation of a financial crisis.[6] Instead of dealing with the analysis of flows, the BSA focuses on the examination of stocks of assets and liabilities in a country's sectoral balance sheets. Weaknesses of one sector can spill over to other sectors and can have an impact on the whole economy since financial difficulties of a debtor represent difficulties for its creditors.

In assessing balance sheet risks, the BSA framework considers four types of balance sheet mismatches that can trigger a financial crisis. These mismatches are (a) currency mismatches (liabilities in foreign currency and assets in domestic currency – capital losses and default risk from devaluation of the exchange rate); (b) maturity mismatches (assets are long-term and liabilities are short-term causing risk of defaults associated with difficulties on debt rollover and increase in short-term interest rates); (c) capital structure mismatches (excessive reliance in debt instead of equity); and (d) solvency risk (assets not sufficient to cover liabilities).

The sector breakdown of the BSA matrices consist of general government and its subsectors central, state and local government, the financial sector and its subsectors central bank, other deposit-taking corporations, other financial corporations, non-financial corporations, households including non-profit institutions serving households and the rest of the world. The currency denominations and the (original) maturity breakdowns of assets and liabilities play an important role in the classification of assets and liabilities in the BSA. The classification of financial instruments by category follows the *SNA*.

At present, the BSA matrices are compiled monthly for 120 countries. The main sources are statistics reported periodically to the IMF, including monetary and financial statistics, the international investment position, the Coordinated Portfolio Investment Survey and the Quarterly External Debt Statistics.

The Coordinated Portfolio and Direct Investment Surveys

Other IMF data collection schemes on a from-whom-to-whom basis are the Coordinated Portfolio Investment Survey (CPIS) and the Coordinated Direct Investment Survey (CDIS). [7]

The purpose of the *CPIS* is to collect information on the stock of cross-border holdings of portfolio investment in securities. The CPIS is conducted annually since 2001 and collects data from more than 70 countries on their year-end portfolio investment positions on the targeted financial instruments with a breakdown by country of issuer. The coverage of the CPIS corresponds to the coverage of the portfolio investment in the international investment position. The concepts and principles underlying the *CPIS* are those contained in the *BPM5,* data are collected by immediate counterpart economy.

The data collected permit the presentation at the level of each financial instrument on a from-whom-to-whom basis showing the holders of the assets vis-à-vis the issuer countries. The results of the survey show a continuous increase in the value of cross-border portfolio investment. At the end of 2008 the total positions of cross-border holdings of portfolio investments decreased to the level of 30.7 trillion US dollars.

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[6] Mark Allen, Christoph Rosenberg, Christian Keller, Brad Setser, and Nouriel Roubini , *A Balance Sheet Approach to Financial Crisis*, IMF Working Paper, 2002: (http://www.imf.org/external/pubs/cat/longres.aspx?sk=16167.0); and: Johan Mathisen and Anthony Pellechio, *Using Balance Sheet Approach in Surveillance: Framework and Data Sources and Availability*, IMF Working Paper 2007: http://www.imf.org/external/pubs/cat/longres.aspx?sk=19800.0.

[7] For the CPIS and CDIS see: http://www.imf.org/external/np/sta/pi/cpis.htm and http://www.imf.org/external/np/sta/cdis/index.htm.

In addition to this required set of data, the *CPIS* also encourages the reporting of securities held by resident sectors with a breakdown of sectors into banks, other financial institutions like insurance corporations and pension funds, investment funds, and others, and non-financial corporations.

The IMF conducted for the first time in 2009 a *CDIS* in conjunction with its interagency partners, including the OECD, Eurostat, the ECB, and UNCTAD. As of October 2009, 132 economies had indicated interest in the CDIS, including virtually every major foreign direct investment investor and receiving economy. At the end of 2010, data related to the end of 2009 were published.

The *CDIS* collects comprehensive and harmonised data on foreign direct investment (FDI) positions for end-year by economy of direct investor (for inward direct investment) and by economy of investment (for outward direct investment). It also provides a number of breakdowns, including separate data on equity and debt positions. The survey collects information on the basis of country to country but without a breakdown by sector of the investor and the recipient.

The purpose of the *CDIS* is to improve the quality of direct investment position statistics in the international investment position and by immediate counterpart economy. Specifically, the objectives of the *CDIS* are to collect comprehensive and harmonised data, with geographic detail of counterpart country, on direct investment positions, with equity reported separately from debt investment.

c.   The BIS locational international banking statistics

The BIS compiles quarterly data on gross balance sheet positions of banks in major banking centres against entities (banks and non-banks) located in other countries worldwide.[8] The statistics cover separate data on cross-border claims and liabilities in all currencies and claims and liabilities vis-à-vis residents in foreign currency.

The data are based on the residency and non-consolidated concepts, consistently with the balance of payments and international investment position statistics. There is however a deviation from these statistics in that the locational statistics also include bank's foreign currency positions vis-à-vis residents.

The locational international banking statistics provide information on international claims and liabilities for more than forty of the most important banking centres by country of residence of the counterparties, by major individual currencies, and sectors (only banks and non-banks). Financial assets and liabilities are presented for three aggregated categories: (a) loans and deposits; (b) holdings and own issues of debt securities; and (c) other assets and liabilities. The latter two categories mainly cover portfolio and direct investment.

The statistics, aggregated at the country/ financial centre level are reported by central banks and monetary authorities in the countries and financial centres that conduct large volumes of international lending and borrowing or deposit-taking. The statistics provide a measure of the role of banks in intermediating international capital flows, a measure of the external debt owed to banks as reported from the creditor side, and a measure of the importance of financial centres and offshore banking activity.

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[8] For the BIS locational international banking statistics: http://www.bis.org/statistics/bankstats.htm. The BIS also publishes consolidated banking statistics on banks' financial claims on the rest of the world: http://www.bis.org/statistics/consstats.htm.

d. The ECB experience in euro area accounts on a from-whom-to whom basis

The reasons for collecting and compiling financial flows and positions on a from-whom-to-whom basis (by debtor/creditor[9]) for euro area aggregates are mainly analytical. Three examples of such a data framework should be presented in this context. From-whom-to-whom statistical information enriches considerably the approach of monitoring (a) monetary transmission processes; (b) general government debt; and (c) securities issues and holdings.

Monitoring monetary transmission processes by integrating money in a from-whom-to-whom framework

The integration of monetary aggregates and its counterparts in a from-whom-to-whom framework is derived from the consolidated financial transactions and balance sheets of the resident money issuing sector vis-à-vis the resident money holding sectors.[10] An initial set of available source data are the balance sheets of monetary financial institutions (MFI) from which monetary aggregates and the main counterparts to broad money are compiled. These balance sheet statistics comprise often rather detailed breakdowns of various financial instruments, such as deposits, loans and debt securities by maturity and counterpart sector. Balance of payment statistics and statistics on securities issues by general government and by financial and non-financial corporations complement this dataset.

The corresponding financial accounts and balance sheets derived from these source data, with a breakdown of the financial corporations sector, of the financial asset and liability categories, and of the counterparts allow the identification of broad money, which then helps in analysing monetary developments in the widest possible financial framework and in a way which permits them to be related more easily to the economic developments recorded in the production, income and capital accounts.

The *money issuing sector* is assumed to consist of the central bank, resident deposit-taking corporations and resident money market funds, together comprising the MFI sector. Money holders are the remaining resident sectors, including the remaining subsectors in the financial corporations sector and all subsectors of general government. (This is a simplification – in reality, central government may have monetary liabilities, and its holdings of monetary instruments issued by MFIs may be excluded from the monetary aggregates.) Holdings of money by the money issuing sector itself are netted out. The rest of the world sector is assumed to be money-neutral, that is, neither the liabilities of non-residents, nor non-residents' holdings of money issued by resident money issuers, are counted in money.

Monetary variables are considered to comprise (a) currency (issued by the central bank), (b) transferable deposits held with MFIs, (c) deposits redeemable at a period of notice of up to and including three months (i.e., short-term savings deposits) held with MFIs, (d) deposits with an agreed maturity of up to and including two years (i.e., short-term time deposits) held with MFIs, and (e) repurchase agreements, money market fund shares or units, and debt securities with an original maturity of up to and including two years issued by MFIs. These monetary variables may also cover structured securities and structured deposits.

Depending on the coverage, various *monetary aggregates* may be derived: (a) a narrow monetary aggregate M1 comprising currency and transferable deposits held with MFIs; (b) an intermediate monetary

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[9] The *2008 SNA* uses the term flow of funds (see *2008 SNA* Chapter 27).

[10] European Central Bank, Monthly Bulletin, various issues and statistical section.

aggregate M2 comprising M1 and short-term savings deposits and short-term time deposits held with MFIs; and (c) a broad monetary aggregate M3 comprising M2 and marketable instruments as listed in (e) above.

Monitoring government debt in a from-whom-to-whom framework

Data on general government gross debt are used to monitor fiscal developments within the euro area. General government gross debt or Maastricht debt excludes, as gross consolidated debt, any government debt held as a financial asset by government units. It comprises the financial instruments currency and deposits, debt securities and loans.

Maastricht debt provides debt data with a breakdown by creditor. They are split into debt held by residents of an economy within the euro area or within the EU and by non-resident holders. Holdings of debt by residents are calculated as the sum of the debt held by the central bank, other monetary financial institutions, other financial institutions, and other residents. A memo item covers the debt held by non-residents inside the euro area. In addition to their breakdown by instrument and holder, debt is also presented by original and residual maturity and by currency denomination.

Monitoring securities issues and holdings in a from-whom-to-whom framework

The from-whom-to-whom framework allows for a detailed presentation of financing and financial investment via securities, which has a number of uses within the ECB, especially in the context of monetary policy and financial stability analysis. It sheds light on the sectoral compositions of assets and liabilities, and on potential strengths and vulnerabilities in portfolios.[11]

The complexity of from-whom-to-whom tables for securities is determined by the detail of the breakdowns chosen for securities (by sub-category, position and sub-position) and for the creditors and debtors (by residency, sector and sub-sector). Combining these breakdowns leads to a rather large number of from-whom-to-whom relationships, especially as the data may need to be shown as positions and flows. Accordingly, a selection by security sub-category, sector and sub-sector is essential.

At the ECB, a centralised security-by-security database (CSDB) has been set up by the European System of Central Banks (ESCB) to further improve the quality of flow and position data for securities. The CSDB is a micro database that stores information on individual securities, from which statistics can be compiled flexibly to serve diverse needs. The CSDB covers various categories of financial instruments, such as debt securities, shares and investment fund shares or units. Information stored on an instrument is broken down into attributes that describe its selected characteristics. The selection of attributes may vary depending on the purpose of the database. Attributes useful for statistical applications include the international securities identification number (ISIN), name, residence and sector or sub-sector of the issuer, issue date, redemption date, the type of security, the currency of denomination, the issue price, the redemption price, the outstanding amount or the market capitalisation, and the coupon payments and dates.

The production of statistics from the CSDB can be presented as a three-stage process. First, it involves the inputs by collecting and purchasing data on individual securities from a range of sources, such as central banks, government agencies, commercial data providers and securities exchanges (in their capacity as custodians). Second, it covers data quality management. The individual security data collected from different sources are received into the database, merged, and stored. Checks for completeness, plausibility and

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[11] See BIS-IMF-ECB *Handbook on Securities Statistics*, Part 1 and Part 2.

consistency are then performed, and where errors are detected, observations are corrected. And third, it involves the storing of individual security data according to various classification criteria.

There is a project ongoing to link the CSDB dealing with securities issues statistics to securities holdings statistics for resident holders grouped by sector and sub-sector, as well as for non-resident holders. For this purpose, the data provided by respondents (as holders or custodians) are linked at the individual security level to the data stored in the CSDB. The link is often made using the ISIN, but also referring to information on the debt securities holders and holdings: (a) the holder by residency and institutional sector and sub-sector and also by large and complex financial or non-financial group; and (b) the amount of holdings in currency.

Current reporting schemes on securities holdings are mainly based on two groups of agents having access to such information: (a) custodians (and centralised securities depositories); and (b) direct reporters. In most cases, data are collected from custodians on a security-by-security basis. This also refers to the collection of data on securities holdings of residents from non-resident custodians to allow the breakdown of holdings by the residency of the issuer to be derived. Direct reporters provide security-by-security data on their holdings with various breakdowns: by type of instrument, maturity, residence of issuer, etc.

Establishing an integrated compilation system for securities issues and holdings statistics which provides timely and high-frequency data with breakdowns by type of financial instrument, currency, maturity, issuing country, and sector or sub-sector is rather demanding and cost intensive. It will take a couple of years to use it also for the regular production of several financial statistics that include securities.

5.   *Some conclusions*

From-whom-to-whom accounts that show, by sector and type of financial instrument, transactions, other flows, and positions of financial assets and liabilities vis-à-vis the counterpart sector whether resident or cross-border reflect more accurately the reality of an 'interconnected' national economy, and provide more useful information for dealing with the financial flows and positions that can be at the origin of a financial and economic crisis.

Especially in the context of requirements related to multilateral surveillance, financial stability and policy coordination; sector accounts on a from-whom-to-whom basis are a powerful tool to provide comparable data for national economies and economic areas. Such indicators reflecting imbalances may cover data on the current account derived consistently from the rest of the world, data on deficit and debt derived from general government or data on private savings and debt derived from the non-financial corporations and households sector accounts.

Transactions on a from-whom-to-whom basis permit to understand how surpluses by one sector are allocated among different financial instruments and sectors and cross-border or how sectors with deficits meet their financial needs in terms of financial instruments used and sectors providing it. They also reflect the increasing activities in the financial markets for the sake of financial returns and speculative gains. Not less important is to identify changes in balance sheets that result from revaluations and other changes like mergers and acquisitions.

The compilation of the SNA accounts for financial flows and positions on a from-whom-to-whom basis fills some important data gaps in the currently available macroeconomic statistics. This, however, requires further investment in new data collection systems as described for securities databases.

The collection of more detailed data from markets and institutional sectors has to be weighed against the response burden to the statistical units, confidentiality constraints, and the cost of collecting and processing the additional source data. As a result, compromises need to be found in the level of aggregation of the data to be collected as well of the sources to be used.

RÉSUMÉ (ABSTRACT)

A widespread conclusion among international organisations and national authorities is that the recent financial and economic crisis has highlighted the importance of obtaining a better understanding of the interconnections between entities of a national economy and between them and their counterparties abroad. This has led to a strong support for statistical systems such as the IMF's Coordinated Portfolio and Direct Investment Surveys (CPIS and CDIS) or the BIS's international banking statistics. Work has also started to explore financial networks in which global systemically important financial institutions operate and high priority has been given to improving sector accounts, particularly balance sheet data. Such data help better understand financial connections, real and financial linkages, and the role played by nonbank financial corporations.

The paper describes how to improve sector accounts by developing a from-whom-to-whom framework as the basis to describe financial connections between entities – resident and non-resident. Section 1 deals with the recent financial and economic crisis and the emerging need to design financial interconnections. Section 2 outlines the SNA architecture as the basis of a from-whom-to-whom framework, while Section 3 describes the from-whom-to-whom approach for the various types of accounts. Section 4 provides various examples in which partial from-whom-to-whom information is presented. Some conclusions are in Section 5.