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Developing and Implementing Euro Area Accounts

To be presented in Session 4 by Celestino Girón and Nuno Narciso Texeira da Silva

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DEVELOPING AND IMPLEMENTING EURO AREA ACCOUNTS

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This paper sets out the challenges in developing and implementing euro area accounts. It defines the scope of the euro area in terms of sector accounts and presents the various data sources and compilation strategies, including the historical choices in terms of collecting complete national financial and non-financial data sets. The paper highlights the issue of consistency of the euro area accounts with other euro area statistics and reiterates the case for a comprehensive internally consistent product. It describes specific challenges faced in the compilation process based on rather incomplete and heterogeneous data sets. The principle that the euro area data differ from the aggregation of member states data is presented, and the crucial role taken by the b.o.p./i.i.p. in this respect. It briefly describes the development of primary data sources that support the compilation of European aggregates, as well as developments to broaden the scope of the accounts in years to come. The compilation of non-financial assets and from-whom-to-whom detail on loans and deposits are discussed. A forward looking view into new developments such as security-by-security reporting in the context of securities issues and holdings statistics that will assist in the development of detailed from-whom-to-whom matrices for securities, interest income or financial intermediation services indirectly measured (FISIM). The ultimate challenge of providing relevant information early enough to policy makers (early estimates and T+90) is also addressed.

¹ The views expressed in this paper are those of the authors and do not necessarily reflect the views of the European Central Bank.

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1. Introduction

The European Central Bank (ECB) and Eurostat started publishing integrated quarterly euro area accounts by institutional sector (EAA) in June 2007.² The first release was followed by regular quarterly releases, published around 120 days after the end of the reference quarter. Quarterly euro area accounts provide a comprehensive overview of the euro area economy, including a breakdown by institutional sector. They show all transactions, other flows and balance sheet positions of non-financial corporations, financial corporations, general government and households within the euro area, as well as their interactions and positions vis-à-vis the (euro area) rest of the world. Quarterly euro area accounts are fully compliant with ESA 95 (and SNA 93).³

The joint effort by the ECB and Eurostat to compile euro area accounts is just the visible part of a much broader exercise supported by all EU national central banks and national statistical institutes. The compilation process starts with the transmission of the national financial and non-financial accounts by all euro area member states. These data sets are combined with other source data available for the euro area as a whole, namely balance of payments and international investment position statistics (b.o.p./i.i.p.) and MFI balance sheet statistics.

Euro area accounts are not the simple aggregation of the national accounts of the euro area member states. One example is the compilation of appropriate euro area rest of the world accounts, which entails the “consolidation” of the cross-border transactions and positions between euro area member states. Furthermore, the non-financial and financial accounts are compiled in parallel and integrated in three dimensions. First, for each transaction category (financial and non-financial) and each financial balance sheet category, total uses must equal total resources and total (changes in) financial assets must equal total (changes in) liabilities, when summed over all institutional sectors and the rest of the world (so-called horizontal consistency). Second, for each sector and the rest of the world, the sum of all resources and changes in liabilities should be equal to the sum of all uses and changes in assets (so-called vertical consistency). Third, the change in financial balance sheets (i.e. in stocks) for each asset category is equal to the changes arising from financial transactions and from other changes (stock-flow consistency).

While everybody recognises that the compilation and release of integrated quarterly financial and non-financial euro area accounts was a major European achievement, the work is not yet complete and major challenges are still to come. In this context, the relevant fora⁴ are leading the necessary development efforts to accomplish the outstanding tasks. This comprises, in particular: the publication of a comprehensive set of accounts at T+90 days fit for monetary policy purposes; from-who-to-whom detail for securities; the breakdown of other flows into revaluations and other volume changes; and, complete seasonally adjusted euro area accounts.

This paper is organised in 7 sections. Section 2 provides a brief description of the accounts, while section 3 provides the road-map to such achievement, drawing on the various stages from 1996 onwards. Section 4 presents the current compilation process and the underlying methodology. Section 5 describes some of the most challenging issues faced in the context of the euro area accounts compilation. Section 6 highlights the way forward, i.e. it presents the challenges ahead. Finally, section 7 concludes and describes the lessons learned from the overall euro area accounts development process.

² A comprehensive article on integrated quarterly euro area accounts was published in the November 2007 issue of the ECB’s Monthly Bulletin (<http://www.ecb.europa.eu/pub/pdf/mobu/mb200711en.pdf>). Eurostat also compiles and published non-financial sector accounts for the EU.

³ Council Regulation (EC) No 2223/96 of 25 June 1996 on the European System of national and regional accounts in the Community.

⁴ Namely, the joint Eurostat/ECB Task Force on Quarterly Sector Accounts (TF-QSA) and the Statistics Committee (STC) of the European System of Central Banks (ESCB) through its Working Group on Euro Area Accounts (WG-EAA).

2. Description of the accounts

Integrated euro area accounts present a complete and consistent set of data for all resident sectors in the euro area. They provide comprehensive information not only on the economic activities of households, non-financial corporations, financial corporations and government, but also on the interactions between these sectors and the rest of the world. In addition, euro area accounts link financial and non-financial statistics, thereby allowing for an integrated analysis of non-financial economic activities (such as gross fixed capital formation) and financial transactions (such as the issuance of debt). Euro area accounts also contain complete and consistent financial balance sheets, which together with a largely complete description of produced non-financial assets and households housing wealth, provide a good indication of the total balance sheet of the various sectors. An integral part of the accounts are the from-whom-to-whom detail currently available for deposits and loans in both transactions and outstanding amounts.

a. What is the euro area?

The euro area is a "supranational economic area" with a single monetary policy. Its economic territory is equal to the sum of the economic territories of its member states. In other words, it covers the national territories, including free zones, national air-space, territorial waters and territorial enclaves of the euro area member states and excludes extraterritorial enclaves of non-euro area member states.

European institutions are explicitly excluded from the sum of national economic territories; however, could they be part of the euro area? The answer to this question is linked to another question: do European institutions have a centre of economic interest in the euro area. There are three possible answers to this question, all with pros and cons from theoretical and practical grounds. Therefore, a decision was taken that only those institutions whose economic activity or function is exclusively linked to countries in the euro area would be part of the euro area. In this context, for euro area accounts purposes only the ECB, the institution responsible for the implementation of the single monetary policy for the euro area, is part of the euro area economic territory.

b. Institutional sectors

Euro area accounts support the basic breakdown into four resident sectors and the euro area external account. The institutional sectors combine institutional units with broadly similar characteristics and behaviour: households and non-profit institutions serving households (NPISHs), non-financial corporations, financial corporations, and the general government. Transactions and positions vis-à-vis non-residents in the euro area are recorded in the "rest of the world" account.

The households sector comprises all households, as well as sole proprietorships and most partnerships that do not have an independent legal status. Therefore, the households sector, in addition to consumption, also generates output and entrepreneurial income. In the euro area accounts, non-profit institutions serving households (NPISHs), such as charities and trade unions, are grouped with households. Their economic weight is relatively limited and data sources scarce. The non-financial corporations sector comprises all private and public corporate enterprises that produce goods or provide non-financial services to the market. Accordingly, the government sector excludes public corporations which are market producers. It comprises central, state (regional) and local governments and social security funds. The financial corporations sector comprises all private and public entities engaged in financial intermediation such as monetary financial institutions (MFIs), insurance corporations and pension funds (ICPFs), and the remaining financial intermediaries (e.g. investment funds) and financial auxiliaries. A detailed breakdown of the financial sector is available in the euro area financial account (part of the EAA).

A complete and consistent quarterly rest of the world account for the euro area is an integral part of the euro area accounts. This implies that cross-border transactions and financial claims between euro

area member states are not included in the external account of the euro area, as they constitute domestic transactions from the euro area viewpoint. Insofar as transactions between euro area countries are recorded *asymmetrically*, this will give rise to discrepancies at the euro area level that are resolved in the reconciliation process (integration phase). Consequently, for example imports and exports are much smaller than they would have been if a simple aggregation of the national data had been used; about half of the external trade of the individual Member States is within the euro area.

c. Transactions

Euro area accounts record, in principle, every transaction between economic agents during a certain period, as well as the opening and closing financial balance sheets. The transactions are grouped into various categories that have a distinct economic meaning, such as ‘compensation of employees’ (comprising wages and salaries, before taxes and social contributions are deducted, and social contributions paid by the employers). In turn, these categories of transactions are shown in a sequence of accounts, each of which covers a specific economic process. This ranges from production, income generation and income (re)distribution, through the use of income, for consumption and saving, and investment, as shown in the capital account, to financial transactions such as borrowing and lending (see Annex 2). Each non-financial transaction is recorded as an increase in the “resources” of a certain sector and an increase in the “uses” of another sector. For instance, the resources side of the “interest” transaction category records the amounts of interest receivable by the different sectors of the economy, whereas the uses side shows interest payable. For each type of transaction, total resources of all sectors and the rest of the world equal total uses. Each account leads to a meaningful balancing item, the value of which equals total resources minus total uses. Typically, those balancing items, such as GDP or net saving, are important economic indicators. They are carried over to the next account.

The production account records the output of goods and services as its main resource, to which taxes less subsidies on products are added to obtain total resources of the production account at market prices. The main use in the production account is “intermediate consumption” – such as the consumption of fuel within a production process. The difference between resources and uses is the balancing item “gross value added”. This gross value added is then carried over as a resource to the subsequent set of accounts, the generation and distribution of income accounts, which eventually yield “disposable income” as a balancing item. This conceptual and numerical inter-linkage of the accounts ensures the consistent derivation of key economic indicators. The link between the non-financial accounts and the financial accounts is established by the balancing item “net lending/net borrowing”, which can be derived both from the final non-financial account (capital account) and from the financial transactions account. “Net lending/net borrowing” is derived from the capital account by comparing “gross capital formation” (mainly investment in capital goods) plus the net acquisition of “non-produced, non-financial assets” (such as land or licences) with “gross saving” plus net “capital transfers” (such as investment grants). If saving plus net capital transfers received exceeds non-financial investment, a sector has a surplus of funds and becomes a net lender to other sectors, including the rest of the world. In the financial account, this means that this sector acquires more financial assets than it incurs liabilities.

d. Other flows and balance sheets

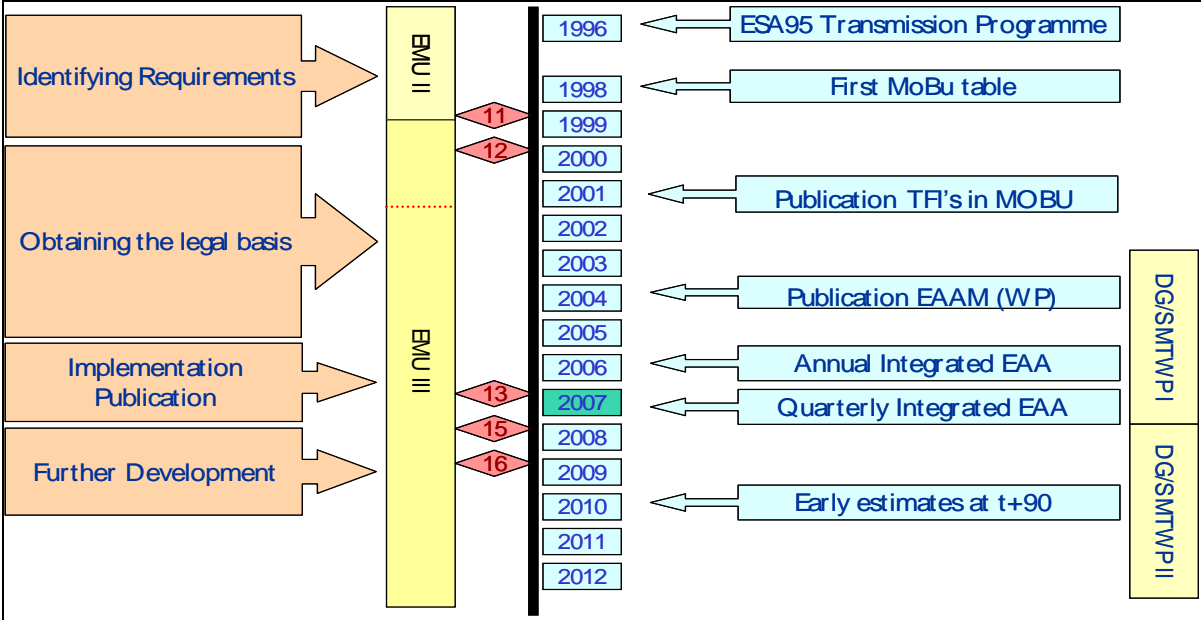
The financial balance sheets show the financial positions of all sectors (net financial assets – financial assets minus liabilities), broken down into categories of financial assets and liabilities (such as deposits, loans and shares) valued at market prices, at a particular point in time. The financial balance sheets change as a result of: a) the accumulated flows recorded in the financial transactions account; and, b) other changes in assets account. The latter category mainly reflects ‘revaluations’ due to changes in the market prices of financial instruments and so-called ‘other volume changes’, such as debt cancellations and reclassifications. The consistent derivation of holding gains and losses by sector and by financial instrument allows for comprehensive analyses into the effects of these changes on the economic behaviour, for instance of households and non-financial corporations.

From October 2010, euro area accounts also comprise euro area produced non-financial assets by institutional sector and by main asset type (for the total euro area economy). It also includes households' housing wealth, which covers the value of all residential dwellings including the value of the underlying land. Both indicators have an important economic meaning – the sum of produced non-financial assets and net financial assets constitutes a proxy for net worth of an economy or of a particular sector.

3. From a table on financing and investment to integrated euro area accounts

Early developments of euro area accounts have been driven by data availability and users' demand. When the ECB started conducting monetary policy in 1999, many statistical indicators were still under construction. This also applied to quarterly euro area accounts, whose compilation had just started. The potential value of quarterly sector accounts had already been explained for monetary policy analysis in the July 1996 implementation package, when such quarterly data were only available in few euro area countries, and was developed more fully in the booklet "Statistical information collected and compiled by the ESCB."⁵

Chart 1: Development phases of quarterly euro area accounts



Two complementary approaches were pursued in the context of developing quarterly euro area accounts. The first approach concentrated, as a first step, on a “reduced” set of quarterly financial accounts and financial balance sheets that could be achieved in the short term taking into account data availability constraints. Its compilation relied on available monthly and quarterly statistics, namely statistics on monetary financial institutions (MFIs), other financial intermediaries, insurance corporations and pension funds and securities markets. The outcome was summarised in a table on financing and investment of non-financial sectors (TFI). The first version of such a table was published in 2001 in the ECB Monthly Bulletin, and steadily improved over time until the first publication of an integrated system of quarterly euro area accounts by mid 2007.

The second approach, based on the expectation that quarterly national data sets would be necessary for the compilation of comprehensive quarterly euro area accounts was explored with the experimental

⁵ ECB, Statistical information collected and compiled by the ESCB, May 2000.

compilation of a euro area accounts matrix in 2003⁶ based on annual data followed by the publication of annual euro area accounts in 2006.

a. The table on financing and investment (1996 – 2007)

In May 2001, the ECB published for the first time financial account and balance sheet data for non-financial sectors which comprise households including non-profit institutions serving households, non-financial corporations, and general government and for major financial instruments, the table on financing and investment (TFI).⁷ The table was compiled by combining aggregated data from quarterly national financial accounts provided on a mandatory basis by euro area national central banks and consolidated MFI balance sheet data. Subsequent enhancements of the table made use of balance of payment data and enhanced national data, and provided a richer set of data on financial instruments and institutional sectors.⁸ From March 2002 onwards, the publication lag of the quarterly national data was reduced from the original 8½ months to 5½ months. The data shown in the quarterly TFI were commented upon in the March, June, September and December issues of the ECB Monthly Bulletin.⁹ In November 2002, an ECB Guideline was adopted by the ECB Governing Council to ensure the mandatory provision of quarterly data.¹⁰

The TFI intended to provide a consistent set of financial account and financial balance sheet data that were either dispersed across various euro area statistics. Selected components of financial assets and liabilities were included like currency and deposits, debt securities, loans, quoted shares (including mutual fund shares), and insurance technical reserves. While financing transactions and liability positions could be allocated across the various non-financial sectors, it was only possible to present a limited set of financial assets by individual non-financial sector because of the lack of reliable quarterly data, especially on securities. Transactions and outstanding amounts for insurance corporations and pension funds were introduced in the TFI at a later stage. Nevertheless, parts of the accounts like data on unquoted shares, other equity, financial derivatives and other accounts receivable/payable proved to be very difficult to cover. Therefore, the TFI was seen as a compromise between its analytical usefulness and its statistical feasibility. Table 1 illustrates a conceptual framework of a TFI based on three institutional sectors.

Table 1: Conceptual framework of a table on financing and investment of non-financial sectors

Financial assets			Transactions or positions	Liabilities		
Transactions in financial assets				Transactions in liabilities		
Financial investment				Financing		
Rest of the world	Financial corporations	Non-financial sectors		Non-financial sectors	Financial corporations	Rest of the world
			Currency and deposits			
			Debt securities			
			Loans			
			Quoted shares			
			Insurance technical reserves			
			<i>Balancing items</i>			

⁶ Jellema, T., S. J. Keuning, P. McAdam und R. Mink, Developing a euro area accounting matrix: issues and applications, ECB Working Paper Nr. 356, 2004

⁷ The first version of the table on financing and investment (TFI) was published in the ECB Monthly Bulletin issue of May 2001 (<http://www.ecb.europa.eu/pub/pdf/mobu/mb200105en.pdf>).

⁸ The TFI was extended in different directions by following a stepwise approach. It involved the further detailing of the non-financial sectors into the three constituent sectors which was implemented for the liability side. A second step followed, in 2003, by extending the reporting of national data to cover one additional sector, insurance corporations and pension funds.

⁹ ECB Monthly Bulletin, September 2002, pages 15 to 20.

¹⁰ See Guideline of the European Central Bank of 21 November 2002 on the statistical reporting requirements of the ECB in the field of quarterly financial accounts.

Nonetheless, the TFI allowed the combination of the broad development of financing and the financial investment of the non-financial sectors with the analysis of monetary developments in various respects (see Table 2). It facilitated the financial analysis to be extended to a broader spectrum of financial assets held by non-financial sectors including broad money. In this context, money was presented as the most important component of short-term financial investment. Nevertheless, a full integration of M3 and its components was not yet feasible at that time due to a lack of appropriate detailed data on short-term financial investments with a sufficient split by residency, sector and maturity.

The TFI also placed credit provided by MFIs in the context of the overall borrowing requirements and structure of financing of non-financial sectors, and identified the main financing instruments and their relative importance by non-financial sector. In particular, the outstanding amounts covered by the TFI allowed a more detailed structural analysis of the liabilities and the indebtedness of the various non-financial sectors related to the various instruments and their contractual maturity. Various types of the non-financial sectors' financing were distinguished in the form of loans, debt securities and quoted shares.

Table 2: Table on financing and investment of non-financial sectors (TFI) by maturity and financial instrument (transactions and positions)

1) Short-term financial investment related to monetary aggregates			
<i>Monetary aggregates as memo items:</i>			
<i>Currency</i>			
<i>Overnight deposits ²⁾</i>	<i>M1</i>		
<i>Deposits with an agreed maturity of up to two years</i>			
<i>Deposits redeemable at notice (of up to three months)</i>		<i>M2</i>	
<i>Repurchase agreements and money market paper</i>			
<i>Money market fund (MMF) shares or units</i>			
<i>Debt securities</i>			<i>M3</i>
2) Long-term financial investment			
<i>Deposits related to monetary liabilities</i>			
<i>Deposits with an agreed maturity over to two years</i>			
<i>Deposits redeemable at notice (over three months)</i>			
<i>Deposits vis-à-vis other euro area financial intermediaries</i>			
<i>Debt securities</i>			
<i>Quoted shares</i>			
<i>Non-MMF investment fund shares or units</i>			
<i>Insurance technical reserves</i>			
3) Financing			
<i>Securities other than shares</i>			
<i>Short-term</i>			
<i>Long-term</i>			
<i>Loans</i>			
<i>Short-term</i>			
<i>Of which: Consumer credit</i>			
<i>Long-term</i>			
<i>Of which: Lending for house purchases</i>			
<i>Quoted shares</i>			

The quarterly TFI combined data on the development of the financing and the financial investment of the non-financial sectors with the analysis of monetary developments in various respects.¹¹ It allowed the monitoring of the broad monetary aggregate M3 and its components to be complemented by the regular analysis of the investment behaviour of the non-financial sectors. Moreover, covering both outstanding amounts and transactions for major asset types, the TFI permitted a rough analysis of the other flows, which reflect mainly changes in asset prices for securities like quoted shares, mutual fund shares and, to some extent, debt securities.

¹¹ ECB Monthly Bulletin, May 2001, pages 75 to 82.

Finally, the TFI was seen as a powerful instrument for achieving consistency in high-frequency financial data provided by money and banking, balance of payments, capital market, and government finance statistics. Its design followed closely international statistical standards as reflected in the System of National Accounts (SNA 93) and in the European system of national and regional accounts in the Community (ESA 95).¹²

b. Annual euro area accounts

Efforts to obtain data on households and non-financial corporations had thus far focussed very much on available quarterly data (relying on the existing monetary statistics and on the regular transmission of national data for households, non-financial corporations and insurance corporations and pension funds). The transmission of national accounts data was incomplete, in that not all euro area countries provided data, not all financial instruments were reported, and not all sectors of interest were comprehensively covered. Moreover, as the TFI referred only to data from financial accounts and financial balance sheets, non-financial accounts were not available.

At the same time, the ESA95 transmission programme required the comprehensive transmission of both annual financial and non-financial accounts and financial balance sheets by institutional sector at a timeliness of 9 months and 12 months after the reference quarter, respectively. However the coverage of annual data was also imperfect, as these were early days in the development of the annual sector accounts in many countries, and because of the relative novelty of the ESA95 transmission programme. Supplementary work needed to be done in order to achieve a comprehensive coverage of the euro area.

In this context some research work was done in 2002 to incorporate in the TFI data on annual saving and non-financial investment and thus to provide a full coverage of investment (financial and non-financial) and financing (net saving, net capital transfers and net incurrence of liabilities)¹³. There is an identity in these accounts, the so-called accumulation accounts related to transactions, that the investment must be equal to the financing for each sector and for the euro area.¹⁴

An important statistical effort made in 2003 was the experimental compilation of a euro area accounting matrix based on available annual data sources. The euro area accounting matrix provided the first opportunity to explore the compilation of comprehensive euro area aggregates; encompassing detailed non-financial sector accounts incorporating supply and use tables (SUT), transactions matrices for interest, other property income and other distributive transactions, and a complete set of financial transactions. Estimations were made for several countries that did not yet at that time provide annual sector accounts data to Eurostat. Balance of payments data distinguishing transactions between euro area countries from transactions of euro area countries with third countries was used to construct the euro area rest of the world account. For the first time, an attempt was made to reconcile the accounts, transaction by transaction and instrument by instrument, and thus address the implications of asymmetries present in the euro area balance of payments and international investment position statistics.

¹² Commission of the European Communities – Eurostat, International Monetary Fund, Organization for Economic Co-operation and Development, United Nations, World Bank (1993): System of National Accounts 1993 (SNA 93), Brussels, Luxembourg, New York, Paris, Washington, D.C. and Council Regulation (EC) No 2223/96 of June 1996 on the European system of national and regional accounts in the Community (ESA95), Brussels 1995.

¹³ See paper presented at the STC thematic meeting in 2002 on: Compilation of a consistent accumulation account for the euro area - The treatment of the statistical discrepancies between the net lending/net borrowing compiled via the capital and the financial account, 14 May 2002.

¹⁴ See paper presented at the STC thematic meeting in 2002 on: Compilation of a consistent accumulation account for the euro area - The treatment of the statistical discrepancies between the net lending/net borrowing compiled via the capital and the financial account, 14 May 2002.

The work on the euro area accounting matrix provided the basis for the subsequent compilation of annual euro area accounts, jointly published by the ECB and Eurostat in June 2006.¹⁵ These accounts were derived from the annual data obtained from euro area countries based on recording requirements of the ESA transmission programme covering the financial and non-financial accounts and the financial balance sheets by institutional sector. Moreover, available balance of payments data were used to compile the euro area rest of the world account. Overall, consistency in the accounts was achieved for this sector as well as for the financial corporations sector and for general government. Finally, consistency of data used for the household sector and for the non-financial corporations sector was significantly achieved this process.

The outcome of this annual compilation exercise, covering data from 1999 to 2004 and available as late as 18 months after the reference year was not of immediate benefit for monetary policy analysis, which needs more timely and high frequency data. It did however provide a blueprint for the compilation of quarterly data and allowed testing the essential components of the supporting IT system. At the time of publishing these data, the regular and mandatory collection of comprehensive quarterly sector accounts data from the euro area countries had already been put in place.

c. Developing comprehensive quarterly euro area accounts

In the context of the importance of sustainable fiscal policies in the euro area (Stability and Growth Pact) and the need for monetary policy to avail itself of high frequency data on the fiscal position of countries, already in 2002, two EU regulations were in place to collect detailed quarterly information on government expenditure and revenue.¹⁶ Also in 2002, further work started at Eurostat and the ECB to provide for a similar regulation to obtain quarterly financial accounts and financial balance sheets for general government.

With the expectation of a complete coverage of both sectors, general government and the rest of the world and the availability of timely MFI balance sheet statistics, it became evident that the grounds were ready to arrange for the collection of national non-financial accounts data as well as of national financial accounts and balance sheet data for the remaining sectors.

Work started by means of a joint Eurostat-ECB task force set up to prepare a legal act to collect quarterly national non-financial accounts by institutional sector in 2002.¹⁷ The task force recommended the Regulation to contain a comprehensive coverage of institutional sectors and transactions to allow for the description of the full sequence of non-financial accounts, including major resident sectors and the national rest of the world account. The Regulation applicable to all EU countries also specified that these data should be available 90 days after the reference quarter; after a two year transition period where the transmission deadline was set at 95 days. This (2005) Regulation contained a clause exempting the smallest member states from having to report the full set of accounts (following the accession of 10 new member states to the EU in 2004).

In 2004 and 2005 the ECB, together with the member states, made an assessment of the data requirements for the financial accounts and balance sheets. Although data availability had already greatly improved due to the first MUFA guideline (ECB/2002/7), it was still not possible to compile separately comprehensive households and non-financial corporations accounts, as the underlying primary data sources did not support this breakdown. In response to these data shortages, a major amendment to the MUFA guideline was undertaken that not only covered the required sector breakdowns, but also recognised the need for a comprehensive coverage by institutional sectors and

¹⁵ For further details see the ECB Monthly Bulletin article “Integrated financial and non-financial accounts for the euro area”, October 2006 (<http://www.ecb.europa.eu/pub/pdf/mobu/mb200610en.pdf>).

¹⁶ Regulation (EC) No 1221/2002 of the European Parliament and of the Council of 10 June 2002 on the compilation of quarterly non-financial accounts for general government. Commission Regulation (EC) No 1500/2000 of 10 July 2000 implementing Council Regulation (EC) No 2223/96 with respect to general government expenditure and revenue.

¹⁷ Regulation (EC) No 1161/2005 of the European Parliament and of the Council of 6 July 2005 on the compilation of quarterly non-financial accounts by institutional sector.

instruments. This approach implicitly created redundant data reporting in some cases, like for MFIs (covered by monetary statistics as well).¹⁸

This redundancy was considered necessary to ensure a complete and correct classification of all transactions and positions not attainable with other statistics, like those covering the MFIs (monetary statistics) and the rest of the world (b.o.p./i.i.p.), which follow classifications and/or methodologies that do not completely follow national accounts definitions (SNA and ESA standards). It was believed that the national experts, responsible for preparing the national data covered by the Guideline, were the best placed to do the necessary adjustments to the primary statistics to obtain data compliant with the national accounts standards.. In order to emphasise the importance of full consistency with the collection of data on general government; reporting requirements of the QFAGG regulation were verbatim included in the MUFA guideline.¹⁹ The new Guideline also introduced the provision of from-whom-to-whom data on loans and deposits and a reduction of the transmission lag from 130 days to 110 days

To facilitate the transition from the original Guideline to amended new one, a calendar of derogations was introduced. All the derogations were abrogated by the end of 2008.

4. Compilation strategy

The compilation of national accounts statistics, of which sectoral flows and positions for financial assets and liabilities are an integral part, follows a set of generally accepted principles. These principles can be summarized as completeness, conformity and consistency. The first principle espouses completeness, i.e. compilers have to ensure that they compile the accounts using comprehensive source data. In the context of the sector accounts this means that each sector is described completely, and that where coverage of source data is insufficient, additional estimates are made to come to a meaningful total. The second principle, conformity, implies that all parts of the accounts conform to the definition and recording rules in the relevant international manuals (SNA, ESA, BPM etc.). These recording rules and definitions may be at odds with concepts used in primary data collection; which imposes on the compiler that adjustments should be made to the input data sets to allow for these differences. An example could be the use of nominal values rather than market valuation in securities issues statistics. The third principle, consistency, takes into account the identities present in the accounting framework; and puts the compiler of the accounts to task with respect to minimising these. As these identities are defined with respect to the accounting framework, these are referred to as *internal consistency*. Consistency can also be in respect to *primary data sources*, which can be named *external consistency*. There is also a case to be made for inter-temporal consistency, which applies to data that are published in different frequencies, and in the context of statistics for economic areas, that the aggregate for the area would be consistent with the aggregation of country data.

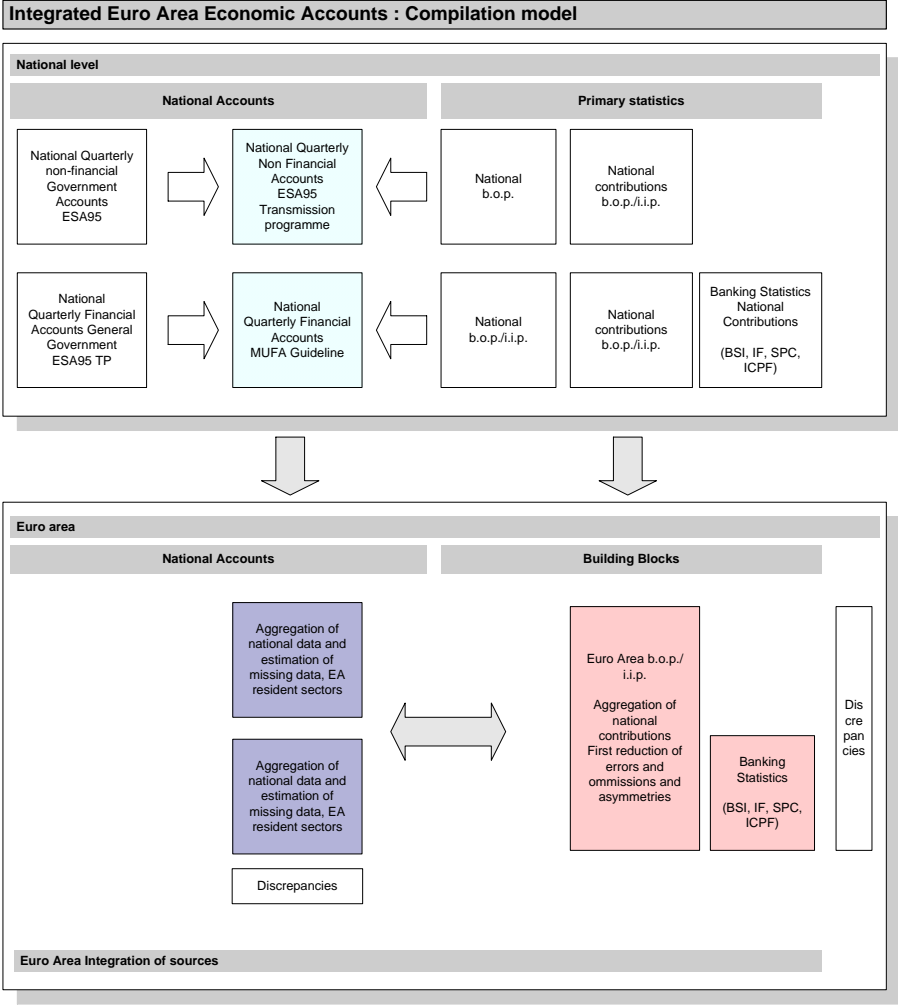
a. Building blocks and national contributions

The compilation of euro area accounts follows a unique pattern (see Chart 2). As described above, comprehensive national data sets are being collected by Eurostat and the ECB that would open the possibility of deriving euro area aggregates by the ‘simple summation’ of national data sets. This is the compilation model that is used in many euro area and EU statistics, including macro economic aggregates and banking statistics.

¹⁸ Guideline of the ECB of 17 November 2005 amending Guideline ECB/2002/7 on the statistical reporting requirements of the ECB in the field of quarterly financial accounts (ECB/2005/13).

¹⁹ Regulation (EC) No 501/2004 of the European Parliament and of the Council of 10 March 2004 on quarterly financial accounts for general government.

Chart 2: Euro area accounts compilation model



In the euro area accounts, however, certain parts of the national data sets are not directly relevant for the euro area aggregate. In the first instance, as the euro area is being described as a single economic area, it requires a rest of the world account that describes the transactions of euro area resident institutions with institutions that are not resident in the euro area. Hence the euro area rest of the world account cannot be achieved by means of aggregation of the national data sets' rest of the world accounts. Transactions between euro area residents, even if they reside in different euro area countries, are considered domestic transactions and should not be reflected in the euro area rest of the world account. Therefore, the euro area accounts need to incorporate the euro area b.o.p./i.i.p. data as a euro area level building block. The euro area b.o.p./i.i.p. is itself the product of aggregation of euro area countries' b.o.p./i.i.p. data, but only after the geographical split in transactions and outstanding amounts vis-à-vis euro area residents and non-euro area residents is made (intra-extra euro area split). This geographical breakdown of the national contributions yields an immediate validation rule as regards b.o.p./i.i.p. data, in that in transactions as well as in outstanding amounts intra euro area assets by definition are equal to intra EA liabilities. Whenever this is not the case, transactions and outstanding amounts contain errors that are known as intra euro area asymmetries, which lead to statistical discrepancies at the level of individual transactions and instrument types.

The euro area Monetary Financial Institutions' (MFI) balance sheet statistics are the source of the monthly statistics on the monetary aggregates (M1 through to M3), and are therefore extremely policy relevant, it has a monthly frequency and is used to determine the monetary aggregates. In the compilation of the euro area accounts these data therefore supersede most data pertaining to the MFI sector, and the MFI counterpart sectors as regards loans and deposits.

b. Consistency as a design criterion

In bringing together national data sets, i.e. national contributions and euro area building blocks a fundamental choice needs to be made as to the level of integration of the accounts. Because an exhaustive coverage of sectors, transactions and instruments is provided, consistency relationships can be validated, and in some cases, used to estimate missing data. In the context of the euro area accounts, internal consistency means the consistency between the various parts of the accounts; external consistency means consistency with alternative data sources; and, time consistency means that annual data are equal to the total of the quarters.

Quarterly euro area accounts aim at being fully internally consistent. All transactions and stocks are horizontally reconciled, that is to say, the transaction balance, expressed for any transaction or asset type as the sum across institutional sectors of uses / changes in assets equals the sum across institutional sectors of resources / changes in liabilities. This relationship holds at the national level in all national sectoral data sets, and must hold therefore also at the euro area level.

Euro area accounts also achieve vertical consistency for the key sectors of financial corporations, general government and the rest of the world. This requirement is key to the compilation of the accounts, as the non-financial accounts provide a support for the compilation and reconciliation of the financial accounts. The two remaining sectors, households and non-financial corporations, which are of a higher analytical interest, are however not fully reconciled. In the process of reconciliation, as a rule, vertical imbalances for these sectors are reduced by a substantial amount.

The consistency between the flow accounts and balance sheet data is completely kept. Whereas the reported data usually comprise transactions and balance sheets, implying other flows, current euro area accounts compilation practice focus on transactions and other flows and derives balance sheets as residual. In other words, balance sheets are calculated from a reference period by accumulating transactions and other flows forward and backward.

The consistency of who-to-whom data with the main accounts is guaranteed by incorporating the counterpart sector dimension in the overall compilation process. In most cases, the compilation is “from the inside out”, i.e. the outside is derived by the aggregation of the inside detail. This will ensure horizontal consistency for the relevant instruments (loans and deposits)

In making adjustments to achieve internal consistency, external consistency is lost. This means that euro area accounts necessarily deviate from the summation of national data, or from most available building blocks. This is both a consequence of the needs to select between alternative data sources, as well as the need to make reconciling adjustments. For instance, the euro area rest of the world account is not identical to the b.o.p./ i.i.p., mostly because of the need to fully reconcile the rest of the world.

5. Selected compilation themes 2007 – 2010

a. Consistency with MFI statistics

The main use of euro area accounts within the ECB is to enhance monetary policy analysis. Beyond what the mere MFI balance sheet analysis enables, euro area accounts allows for monitoring the interaction of the MFI balance-sheets with the balance-sheets of other financial institutions and non-financial sectors, unveiling broader developments in financing and investment and their interactions with the real economy (then also serving as a bridge between the monetary analysis and the economic analysis).

To fulfil this role, it is crucial that euro area accounts are as consistent as possible with the high-frequency MFI statistics²⁰ used for the regular monetary analysis. In fact, the latter are the main source for drawing the accounts of the MFI sector within euro area accounts.

However, full consistency is not always possible due to the non-perfect alignment of the banking statistics with the national accounts methodology. This leads the compiler to face a trade-off between accounting consistency with banking statistics (*external consistency*), and methodological soundness. Moreover, the compiler is confronted with a communication challenge when euro area accounts cannot but depart from banking statistics (and monetary aggregates).

In some occasions, complicated production solutions have to be implemented to try and resolve this tension. This is the case of the MFI portfolio of debt securities. While the banking statistics data on transactions are generally in line with the national accounts standards, the same cannot be said of balance-sheet data and implicitly of other flows data: given the accounting standards in place for banking statistics, they scarcely cover actual revaluations of debt securities. It is difficult to exaggerate the importance that the latter had recently in the euro area in the context of the tensions triggered by the 2010 sovereign debt crisis.

The solution adopted consisted in using transaction data as provided by the banking statistics -ensuring therefore full consistency in transactions- but, rather than doing the same for other flows, estimating them from national financial accounts, where the national compiler has already made the effort of capturing actual other flow developments. This solved most of the internal consistency problems and allowed for full consistency with banking statistics transactions, but not for stocks and other flows.

Other areas where the banking statistics are not the primary source, but instead national financial accounts are, are holdings and issues of equity (where the valuation and concepts, particularly on the liabilities side, are different in the two statistical domains), debt securities issued (for similar reasons as for holdings of debt securities) and other accounts receivable and payable, where the banking concept (remaining assets/liabilities) has a completely different scope, covering for instance some accruals on securities or profit and losses for the running year.

b. The integration of general government data

Although not as important from a monetary policy perspective, consistency with quarterly government data is seen as a basic quality aspect. In fact, while, as described above, certain discrepancies with MFI data are allowed, no difference at all is allowed between euro area accounts and the aggregate of quarterly national government data.²¹

This is mainly due to the high political sensitivity of the data, in particular in the European Union where the government data are also used for administrative procedures within the Union, in particular for the Excessive Deficit Procedure²² (EDP). But, at the same time, it is also the result of a compilation choice made on the basis of analysing the quality of the various data sources. The government data are very carefully collected and closely scrutinised, precisely because of their use for administrative purposes, which provides them with a level of accuracy not attainable in other statistical domains.

An example of the importance attached to the government data can be seen in the compilation choices made when those conflict with also important, quality statistics as the banking data. The latter includes a breakdown of loans granted by counterpart sector, government being one of them. At the same time, such assets are reflected as liabilities of the government in the government statistics. Although these

²⁰ Regulation (EC) No 2423/2001 (ECB/2001/13) concerning the consolidated balance sheet of the monetary financial institutions sector, as amended.

²¹ Regulation (EC) No 501/2004 of the European Parliament and of the Council of 10 March 2004 on quarterly financial accounts for general government and Regulation (EC) No 1221/2002 of the European Parliament and of the Council of 10 June 2002 on the compilation of quarterly non-financial accounts for general government.

²² Commission Regulation (EC) No 1500/2000 of 10 July 2000 implementing Council Regulation (EC) No 2223/96 with respect to general government expenditure and revenue.

two pieces of statistical information cover the same economic concept – loans granted by MFIs to government – and should present the same value, they usually do not for a number of statistical reasons (mainly the fact that, for MFI reporters, it is sometime difficult to distinguish between a proper government body and an institution own by the government but operating independently and carrying out the functions of a private corporation, i.e. a government-owned company).

The government data are given here precedence for political reasons, but also, as said, because their quality is clearly superior: the government sources are best place to know whether a certain body constitute a part of the government or not; the banking sources can only approximate this; at the same time, no serious doubt can be in place that the highly scrutinised government sources are misreporting loans taken from banks.

Incidentally, this compilation choice has consequences beyond those on the accounts of the government and MFIs. Given the importance also attached to keeping consistency with money and banking statistics, in particular with the associated money and respective counterparts, euro area accounts compilers also take on board the total loans granted by banks as reflected in the banking statistics. This implies that the difference referred above on loans from banks to government has to be imputed to loans from banks to some other sector, so that the total bank loans remain the same as in banking statistics while the counterpart sector breakdown does not but is consistent with government statistics. In other words, loans taken by this other sector also includes the discrepancy government versus banks.

As can be easily anticipated, the sector used for such adjustment is the non-financial corporation sector, building on the argument above that the core of the discrepancy lies with a wrong allocation of bank loans to government and non-financial corporations.

The government accounts have been attracting lately more the attention of the monetary policy users. To the traditional concerns on crowding out effects produced by the large public deficits and debt, it has been added the de-stabilising effects on the monetary transmission mechanism caused by the turbulences in the debt markets triggered by concerns on their sustainability. At the same time, this has raised interest on their financial stability implications through the exposure of the various sectors, particularly of MFIs, to government liabilities.

All this is in principle shifting the concerns of euro area accounts compilers away from merely keeping consistency with the data source – no matter how relevant this aspect is – to correctly reflecting the now very relevant economic facts. Fortunately, and contrary to the situation as regards banking data, the methodology behind government data is the ESA one in all aspects, also broadly in the framework of the EDP. Consistency with primary statistics and methodological soundness go, in this case, hand in hand.

c. Euro area balance of payments and international investment position

Since the beginning of the euro area accounts compilation/publication that a decision was taken to reconcile vertically the rest of the world accounts, i.e. a zero net errors and omissions (n.e.o.) policy was chosen. Based on a pragmatic set of assumptions, the financial account has been adjusted to completely remove these imbalances. However, the growing euro area n.e.o. (especially from 2003 onwards) called for a more definitive – “at source” – solution to this problem.

In this context, ECB’s external statistics (b.o.p.) compilers carried out a comprehensive study on the development and potential sources for these large euro area n.e.o.. The weakest points in the accounts were identified and a methodology was developed to reduce euro area n.e.o. (via a reduction of net asymmetries), which envisaged the reallocation of intra and extra euro area flows. In addition, some national problems were also identified and tackled in the course of 2009, ahead of the implementation of the methodology in October 2009.

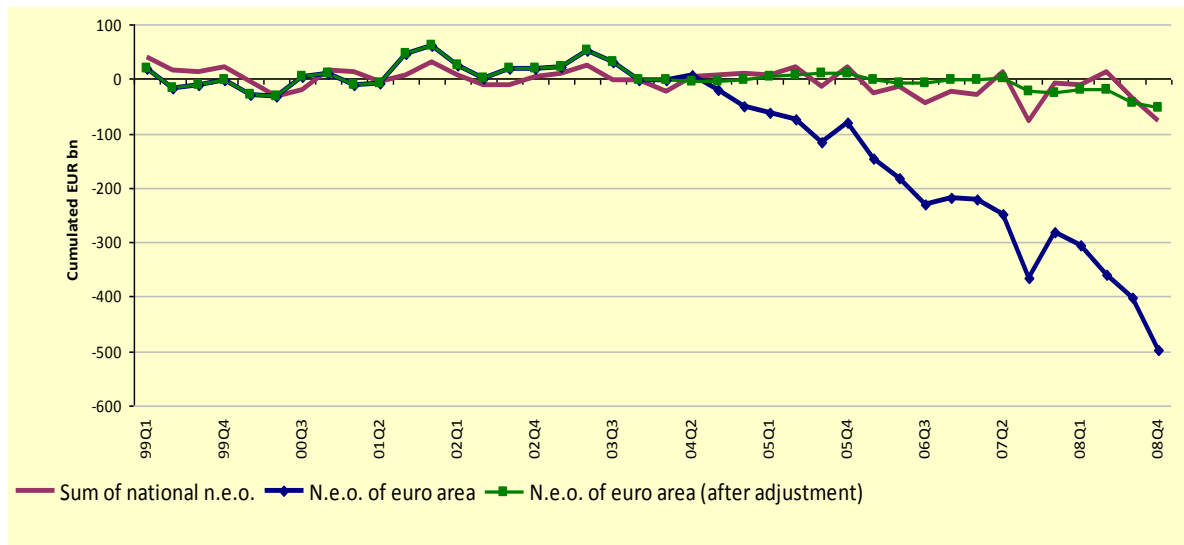
The euro area n.e.o projected identified four items in the b.o.p. that displayed significant asymmetries among euro area countries. In turn, these asymmetries were the main source of n.e.o. in the euro area b.o.p.. A decision was taken to subject three of these items to an adjustment procedure using additional information and building on (ECB's) expert assessment. Residual (remaining) discrepancies were then minimised using an optimisation method that would also minimise revisions and preserve the pattern of the time series. For the fourth item, foreign direct investment, it was decided to reduce asymmetries by improving the consistency of the data collection across countries through an exchange of micro-data under strict controls for preserving data confidentiality.

The adjustments made to the euro area b.o.p. are presented below:

- A comparison between portfolio investment liabilities of each euro area country and the assets held by residents in other countries of the world was conducted using data from the IMF Coordinated Portfolio Investment Survey. That comparison revealed that equity securities issued in some euro area countries and held by residents in other euro area countries had been considerably underestimated (i.e. intra euro area liabilities significantly exceeded intra euro area assets for such instruments). This seemed to be associated with an under coverage of households' holdings of investment fund shares/units and a consequent overestimation of holdings by the RoW. This erroneous attribution of portfolio investment assets was corrected at the euro area level, resulting in an increase of euro area assets in euro area investment fund shares mirrored by lower assets by the RoW.
- In addition, an asymmetric geographical recording of transactions among euro area countries has been observed for loans between non-MFIs. The correction for those asymmetries has resulted in an increase of euro area assets.
- Evidence from the MFI statistics suggested an underestimation of non-MFIs' deposits held abroad. Again, many of those deposits are likely to be held by euro area households and non-financial corporations. There is anecdotal evidence of households having accounts in financial offshore centres such as Liechtenstein that are not captured in the statistical reports.

The application of the adjustment method for these three items led to a considerable reduction of the euro area n.e.o. For the period from 1999 to 2008 the adjustments lower the cumulated n.e.o. from EUR 497 billion to EUR 53 billion, with minimal impact on the time series patterns of the adjusted items (see Chart 3).

Chart 3: Macro-adjustments to the euro area b.o.p. (original data)



The rather large initial vertical inconsistencies for the rest of world, observed until new b.o.p. data were available in October 2009, had to be resolved by looking into the plausibility of the various instruments and horizontal imbalances by instrument. To better understand the work at hands, Chart 4 below (red line) presents the initial vertical imbalances for the rest of the world, as available in the euro area accounts.²³ Between 2007 and 2008, the average absolute quarterly vertical imbalance was around 66 EUR bn, reaching four times an amount of over 90 EUR bn.

The partial allocation of the euro area n.e.o. to selected instruments has contributed to a much more consistent BoP building block. This project has therefore contributed to:

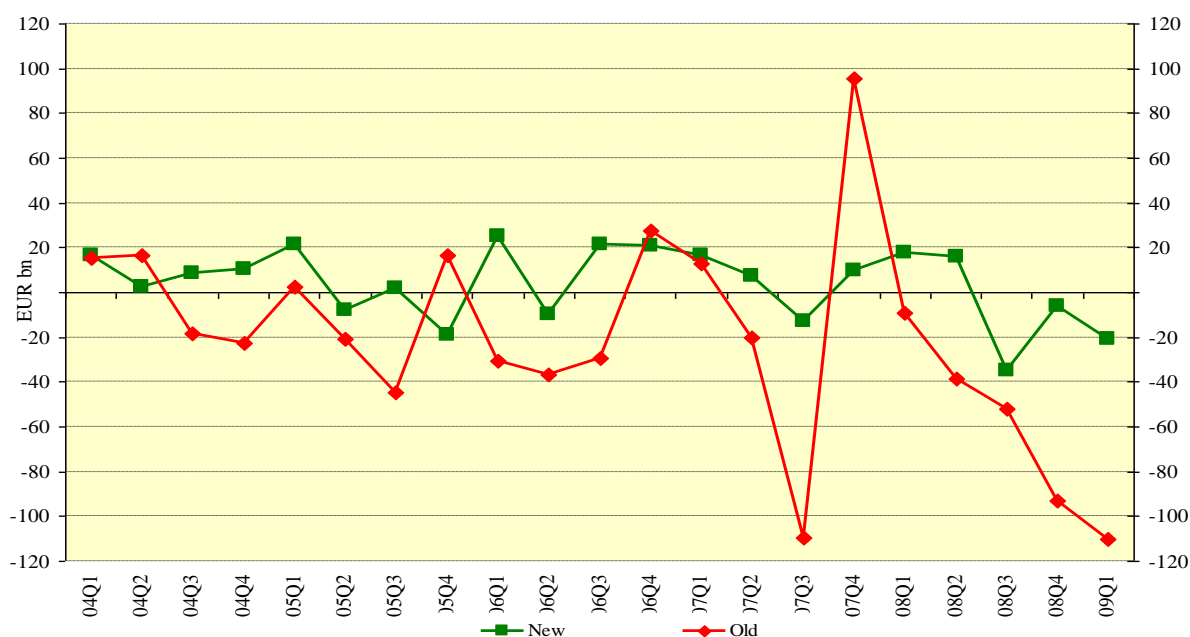
- A reduction in the vertical imbalances of the rest of the world, although the euro area accounts imbalances and BoP errors and omissions are still different for the reasons presented in footnote 23;
- Different initial horizontal imbalances for the revised instruments (deposits and loans and shares and other equity);
- A revision of the overall euro area accounts due to different initial imbalances and subsequent reconciliation assumptions.

As regards point one (reduction in the vertical imbalances), Chart 4 is rather clear in highlighting the major developments achieved with the BoP project. Whereas there was a clear bias in the original data towards an excess of liabilities, which was very visible in cumulated terms, the revised figures move randomly around zero.

The revised b.o.p. data have “generated” new initial euro area accounts horizontal imbalances. While the new figures had a slightly positive impact in the horizontal imbalances of loans and deposits, the imbalances for shares and other equity have increased quite considerably, which have created additional reconciliation pressure on the resident sectors, since the degrees of freedom to adjust in the rest of the world have been considerably reduced.

²³ The initial vertical imbalances of the rest of the world sector in the euro area accounts are not equal to the b.o.p./i.i.p. euro area net errors and omissions for several reasons, but mainly because of the inclusion of insurance technical reserves in the financial account and the so-called “hybrid RoW” compilation of the non-financial account.

Chart 4: Initial vertical imbalances for the euro area rest of the world sector before and after the BoP revision



Finally, the new b.o.p. data had an impact in all euro area accounts transactions and sectors' balances, directly or indirectly. Directly by means of new data for loans and deposits and shares and other equity and, indirectly, by reducing the need of balancing adjustments in debt securities, shares and other equity and other accounts receivable and payable.

d. Metadata: the financial crisis

Since summer 2007, the sequence of events that evolved into a period of financial turmoil that eventually unfolded into a recession posed a number of compilation difficulties not seen before. First, the usual inconsistencies in the raw data that euro area accounts compilers have to cope with on a regular basis became larger due to the unprecedented volume of transactions involved, in particular of financial flows. Similarly, sharp changes in asset prices resulted in large revaluations which exacerbated the difficulties for balancing other economic flows.

Under these circumstances, having wealthy “metadata” – “data on data” or information on the data – at the compiler disposal is crucial to understand the difficulties and tackle them. For euro area accounts compilation, the members of the ESCB Working Group on euro area accounts, responsible for the provision of most of the data needed for the financial accounts, also provide on a regular basis, metadata to help in the compilation process. The metadata comprise information on major financial transactions, other changes in the volume of assets, revisions of data and major balancing adjustments made to compile national financial accounts.²⁴

In a similar fashion, the compilers of other sources of financial information used in the compilation process, all of them members of the ECB staff, also have at their disposal information on relevant aspects of their data. Euro area accounts compilers have access to that information as well to help make compilation judgments.

During this crisis, the sheer size of some transactions, or changes occurred in regular patterns, gave rise to difficulties that were previously masked by smoothness in economic flows. This was for

²⁴ The metadata are made available to the ECB, responsible for the compilation of the financial accounts, in textual form in accordance with a pre-defined template (as requested in the MUFA Guideline).

instance the case of short-selling transactions during 2008. These transactions, arising when an agent sells assets of which it is not the legal owner – for instance borrowed through securities lending –, happened to be treated differently in different data sources: MFI statistics would treat such selling as incurrence in a liability, while balance of payments would treat it as a disposal of an asset (even if not owned, therefore giving rise to a negative stock). This difference in treatment led to horizontal imbalances both for the asset sold short and for the liability registered by the MFI.

During the period prior to the crisis the amounts involved were high, but also with a very high turnover, implying that new short-positions would offset expiring short-positions, resulting in a minor impact on discrepancies. However, as new short operations practically disappear overnight in the context of the most severe moments of the financial crisis, the unwinding of existing positions suddenly became apparent causing massive discrepancies. The availability of metadata proved crucial to disentangle and minimise the problem.

This episode also illustrates one of the uses of integrated accounts, as a tool for cross-checking the consistency of primary statistics. The compilation of the accounts, in putting together information coming from various sources, unveils inconsistencies in coverage, valuation and treatment among them, and provide useful insights on the reasons behind such discrepancies.

The usefulness of metadata goes beyond the assistance to the compilers. At the ECB, metadata also help providing users with relevant information on the developments covered by the accounts. This use is to a certain extent a consequence of the special status of the ECB in this context, both as a producer and as a user of the accounts.

Metadata have always been extensively used for briefing users, notably at occasions of mergers and acquisitions or other large corporate operations, but it was in the period of the crisis that it proved most useful. Since 2007, new phenomena appeared in parts of the accounts that needed thorough explanation, like retained securitisations – securitisations fully subscribed by the originator – to gain access to repo financing. Moreover, large transactions started to unfold, like massive interventions of governments in banks under financial distress. More generally, sizable changes in financing and investment patterns emerged, like sharp substitution of bank financing by market financing, large household portfolio shifts, first towards monetary assets and then away from them, or a general rebalancing of the intermediation function to less bank-related channels.

For understanding all these challenging developments, the availability of metadata to complement the data turned out to be an extraordinary tool. Quality metadata are however an expensive item. They require that in the various phases of the statistical process, data collection, primary compilation and integration at different levels (national and international in the case of euro area accounts), the compiler retrieves the relevant information and pass it on to the next phase. The design of appropriate protocols is then needed to ensure that this process works efficiently and effectively, and that no relevant information is lost, while no irrelevant information is uselessly gathered.

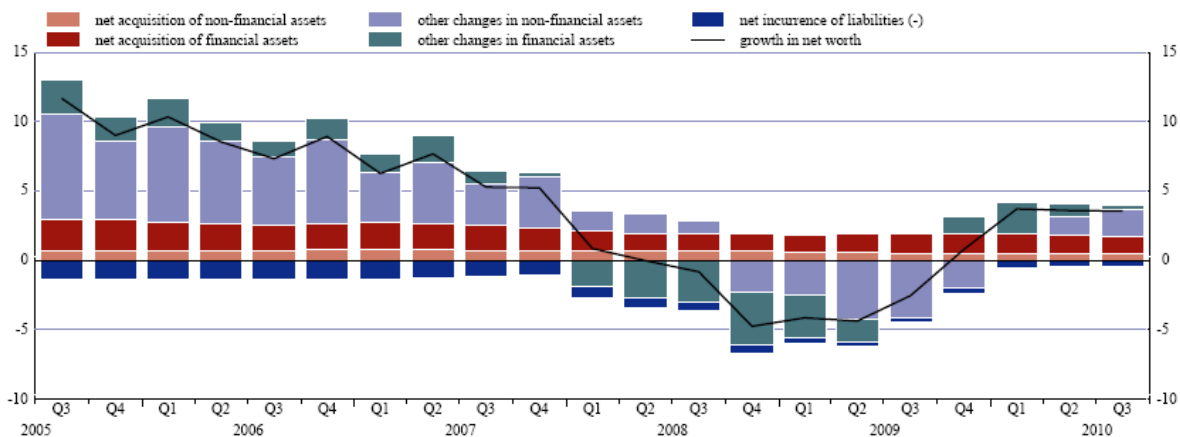
e. Completing the balance sheet: non-financial assets

As part of the euro area accounts development framework, the ECB elaborated a methodology to estimate annual and quarterly euro area produced non-financial assets by institutional sector and by main asset type for the total euro area economy, thus complementing previous experimental annual estimates for total economy capital stock and wealth.

In line with the ESA, capital stock reflects the value of all fixed assets in use, where fixed assets are described as produced assets, i.e. excluding land, that are used in the production process for more than one year. Households' housing wealth covers the value of all residential dwellings, including the value of the underlying land. Both indicators have an important economic meaning – the sum of non-financial assets and net financial assets (i.e. financial assets minus liabilities) constitutes the net worth of an economy or of a particular sector. Information on capital stock allows for a better understanding of the asset structure in a given production process, while housing wealth, which accounts for a large

part of the total households' wealth, is important to assess households' consumption, investment, saving and portfolio decisions. Chart 5 below, which is regularly published in the quarterly euro area accounts Press release, depicts changes to households' net worth by type of asset.

Chart 5: Growth of households' net worth and contributions by type of asset change (annual percentage changes and percentage point contributions)



The compilation of the euro area annual and quarterly non-financial assets is based on information from different data sources, namely:

- Tables 20 and 26 of the ESA 95 transmission programme for country capital stock, annual data;
- Eurostat's National accounts, annual and quarterly (QNA), for gross fixed capital formation (GFCF) by activity and gross domestic product (GDP) data;
- Quarterly euro area (non-financial) accounts;
- Euro area residential property price index (RPP).

The estimation process is done in several steps making use of available national stock (balance sheet data) and flow (GFCF and GDP) series; however, not being a simple aggregation of country data.²⁵ The estimation of the euro area capital stock is based on the following capital accumulation equations:

$$(1) \quad GCS_t = [1 - r_t + \beta_t]GCS_{t-1} + GFCF_t \text{ and}$$

$$(2) \quad NCS_t = [1 - \delta_t + \beta_t]NCS_{t-1} + GFCF_t$$

with retirement rate r_t , retirement + depreciation rate δ_t and revaluation rate β_t .

In a nutshell, formulae 1 and 2 indicate that gross capital stock in a given year (GCS_t) equals that of the previous year (GCS_{t-1}) minus that part of the stock that has reached the end of its service life (determined by the retirement rate r_t) plus the gross fixed capital formation in the current year $GFCF_t$ and the revaluation of the existing capital stock β_t . The same reasoning holds for net capital stock, but taking also into account the depreciation δ_t rate.

GFCF volume series are a crucial input to derive capital stock estimates for total economy – whether using the PIM or the equivalent capital accumulation equations. The so-called “shortcut method” is applied to derive euro area accounts consistent GDP and total economy GFCF volume series. In short,

²⁵ National capital stock data are not available for all euro area countries; furthermore, euro area accounts introduce corrections for the misreporting at the national level of exports and imports due to asymmetries, which influences euro area expenditure components (notably GFCF).

this involves dividing the euro area accounts nominal series by the corresponding deflator available from Eurostat's euro area QNA.

In order to produce, however, a breakdown of the euro area total economy capital stock by main asset type, the corresponding breakdown of GFCF series by main asset type is needed. Euro area accounts consistent GFCF by main asset type are constructed by applying the respective shares of the main asset types as available in QNA nominal total economy GFCF to the euro area accounts nominal total economy GFCF series. Deflators for GFCF by asset type are also taken from QNA.

Estimates for the euro area capital stock series by institutional sector are compiled broadly in the same way. However, data availability constraints require alternative methods to estimate euro area accounts GFCF deflators by sector, as well as the average retirement and depreciation rates. Deflators for the euro area accounts GFCF by sector are derived by combining information on the relative shares of the main asset types in the total capital stock of the different sectors with QNA deflators for GFCF by asset type. This results in weighted average GFCF deflators for the different sectors with annual changing weights. Retirement and depreciation rates were constructed as weighted averages, combining information on the relative shares of the main asset types in the total capital with the retirement and depreciation rates that were derived for the main asset types of the total economy capital stock.

Euro area households' housing stock estimates are also estimated via the capital accumulation equations. The annual euro area net households' housing wealth (HHW) is estimated by applying the average annual ratio of net HHW to households' housing stock for the available countries to the euro area annual households' housing stock series. The estimation of quarterly euro area net HHW, due to the lack of data, is done by applying temporal disaggregation techniques to the annual HHW estimates, using the euro area quarterly residential property price index (RPP) as indicator. Residential land, both at annual and quarterly frequency, is derived as the difference between the respective euro area HHW and net households' housing stock.

6. Future developments

a. The compilation of euro area accounts at T+90 days

Since its first publication in 2007, euro area accounts have proven to be an important analytical tool. Its comprehensive portrait of the euro area economy makes it a unique platform for understanding the various economic developments and the inter-linkages between them. In the framework of the ECB monetary policy strategy, euro area accounts can serve as a framework for both enhancing monetary policy analysis and undertaking the economic analysis, as well as a cross-checking device between these two analytical streams. Furthermore, since the start of the economic crisis the accounts have attracted a growing interest as a tool to reveal vulnerabilities from a financial stability perspective.

Timeliness is an essential quality dimension which is of particular relevance for monetary policy purposes. For this reason, the endeavour of reducing the current t+120 publication schedule figures prominently in the agenda of both Eurostat and the ECB, as joint compilers of quarterly euro area accounts and, in the case of the ECB, also as a prominent user.

Even before the first publication of the accounts, at the end of 2006, the ESCB had already established a strategy towards a reduction of the publication lag to 90 days after the end of the reference quarter (t+90). The implementation of the strategy took place in the subsequent years, a major milestone being the transmission of experimental national financial accounts data at t+80 starting in 2008. Those data, which can be deemed as flash-estimates of the national accounts transmitted thereafter at t+110, are compiled on the basis of high frequency national data available at that timeliness, but also from other incomplete and provisional data, making use of statistical inference techniques in some cases.

These national data combined with euro area financial statistics, all of them available prior to t+80, enabled the production of experimental financial accounts for the euro area at t+90 since June 2010.

To move from the current experimental production of financial accounts at t+90 to fully fledged final euro area accounts, financial and non-financial, it is required the improvement in the timeliness of key data sources. In particular, should b.o.p./i.i.p. and government data being available with sufficient timeliness to serve as input for national accounts and euro area b.o.p./i.i.p. at around t+80/85, the pool of data sets available for compiling accounts at t+90 would be of quality comparable to that available for the current euro area accounts at t+120.

Recently, the prospects for timeliness for both primary data sets have been clarified in the euro area. First, ESCB statisticians have agreed on a plan for reducing the timeliness of the national b.o.p./i.i.p. to t+85 in 2014, and gradually to t+80 by 2019. Second, the plans for implementing the new national account standards in the European Union also envisage a reduction in the transmission of government data to t+85 as of 2014.

These developments had an immediate effect on the availability of national non-financial accounts, that, also as part of the plans for data transmissions associated to the revision of the accounting standards, are proposed to be produced by t+85. At the same time, financial accounts compilers will start soon discussing the implications of these developments for national financial account data deliveries in the corresponding forum, the WG on euro area accounts.

b. Development of new data sources

Euro area accounts aim at portraying the whole process of generation of value and its accumulation in assets. This endeavour is a considerable challenge that requires the use of practically all economic and financial statistics available. In doing so, there is a need to remove discrepancies in the methodological treatment of economic facts and of pure statistical nature, but also of estimating part of the accounts from partial or inadequate information.

The quality of the integrated accounts depends critically on the severity of these drawbacks. Enhancing the quality of the underlying data, in terms of coverage and methodological consistency, and filling in the existing gaps result in better integrated accounts. But the accounts are not only direct beneficiaries of the statistical improvement, but also one of the main driving forces behind it by identifying inconsistencies and gaps and exerting pressure for them to be corrected.

Improving the accounts does not only refer to the aforementioned aspects of reducing inconsistencies and gaps. It also refers to enhancing the level of detail provided with a view to satisfying user needs. This is particularly challenging in what usually is a context of rapidly changing analytical needs. One of the lessons of the recent crisis is that the financial turmoil brought the focus of interest to areas previously less relevant and therefore poorly covered by the accounts, like trade credits and inter-company loans or acquisitions of debt securities by counterpart sector. The crisis also gave rise to, from the point of view of integrated account uses, completely new analytical areas, like financial stability and macro-prudential surveillance.

There are a number of areas where recent data improvements or forthcoming developments will soon enhance the quality of euro area accounts. Related to ECB financial statistics, which cover not only MFI balance sheet statistics but also statistics for other financial intermediaries, several initiatives are underway. Comprehensive statistics on investment funds have recently started to be published. Furthermore, by mid 2011 securitisation vehicle corporations' statistics will also be released. These two developments of high frequency statistics will help to underpin the quality of the data compiled for financial intermediaries.

Moreover, the ECB started, in 2008, a medium-term project to compile comprehensive quarterly financial accounts and balance sheets for insurance corporations and pension funds separately, with

improved timeliness compared to the previously available data. Preliminary data are already available for internal proposes for ICPFs as a whole.

A second area from where a significant progress is expected is security-by-security information. The ESCB has set up a database for securities, the Centralised Securities Data Base (CSDB) that would allow the compilation of timely and accurate securities issues statistics. The flexibility of the security-by-security approach also allows for quickly reacting to user requirements and for producing non-standard aggregates or details. For instance, the CSDB will enable the provision of breakdowns based on residual maturity, rather than original maturity as usually available in standard ESA compliant statistics, which is a growing focus of interest for financial stability. Moreover, CSDB will be an excellent tool to develop statistics on securities on a from-whom-to-whom basis (see section 6d).

An area that is still relatively poorly covered is that of financial transactions and positions within the non-financial sector when not intermediated through a financial institution or channelled through and organised market (in which cases they would be covered by the correspondent monetary statistics or market statistics). This applies in particular to trade credit, inter-company loans, unquoted shares and other equity.

For the current euro area accounts, these items are estimated from balance of payments and survey data, in some cases of annual frequency, but still the coverage and quality of the estimates could be improved. A key instrument for developing such data sets is corporate balance sheet databases which cover individual data on balance sheets and profit and loss accounts of non-financial corporations. In the euro area, some national compilers have such well-developed databases at their disposal, while others lack them or can only use very limited and fragmented data.

The development of new data sources is a continuous process, always paying attention to gaps and inconsistencies found and to emerging user needs. In the euro area, the legal instruments in force to underpin the statistical function are revised on a regular basis considering these elements. For instance, new requirements are already in financial accountants' minds regarding the next update of the regulatory framework for banking statistics. A more detailed coverage of financial derivatives, richer from-whom-to-whom breakdowns or profit and loss accounts are some of those would-be enhancements.

c. Revaluations and other changes in the volume of assets

The financial crisis has changed the focus of the monetary policy analysis in many respects. Most notably, a growing interest in balance sheets and their components, in particular whether their changes are due to transactions or other flows, is behind recurrent themes like wealth effects, leverage behaviour, value of collateral and real-financial feedback loops.

The interest in understanding flows other than transactions has led euro area accounts compilers to start developing the statistical infrastructure for distinguishing different sub-categories, in particular between flows due to revaluations and other volume changes.

A first experimental approach developed in 2009-2010 uses an outlier detection scheme based on Kalman-Filter to infer on other volume changes and residually derive revaluations. In parallel, the compilers of national financial accounts, in the Working Group on euro area accounts, have started developing sources and methods to derive a split at that level, to be thereafter used for euro aggregates.

Moreover, the high-frequency primary financial statistics are more and more developing such a split. In the first place, money and banking statistics provide such a split since late 90s; in fact transactions are derived residually from changes in stocks after deducting for reclassifications and price adjustments. At the same time, a Kalman-Filter outlier detection scheme has also been used for balance of payment purposes already since 2007.

The new investment funds and securitisation vehicles statistics present a novel approach, compared with banking statistics, in that transactions are directly reported by national central banks, while these may collect directly from the reporting population transactions or (price) revaluations.

Finally, the recently introduced statistics on insurance corporations and pension funds will be soon extended to transactions and (implicitly) other flows.

d. Securities on a from-whom-to-whom basis

In the past two years several statistical developments have materialized, contributing to an improvement in the availability of the necessary data for the compilation of from-whom-to-whom accounts for securities. These are, in particular, experimental (internal) securities holdings statistics (SHS), investment funds statistics (IF) with comprehensive counterpart information and additional b.o.p./i.i.p. instrument detail.

The combination of these new or improved data sets with the national accounts data sets, MFI balance sheet statistics and other euro area statistics allowed the first compilation of experimental euro area from-whom-to-whom balance sheets for debt securities (F33), quoted shares (F511) and mutual fund shares (F52) for 2009. These experimental results are still not in line (“consistent”) with the published quarterly euro area accounts since new compilation methods need to be developed to account for the additional dimensionality of the compilation problem.

The main use of euro area from-whom-to-whom accounts and balance sheets is structural financial and economic analysis. However, such detailed data serve further purposes. First, they pave the way for a more informed discussion on the update of the MUFA Guideline, as regards the transmission of from-whom-to-whom data for securities. Second, they provide valuable references for the development of other statistical products, namely interest matrices and the breakdown of other flows into revaluations and other changes in the volume of assets and liabilities (see section 6c). Finally, they reveal data weaknesses (also in the quarterly euro area accounts) deserving further consideration and analysis to improve the overall data quality of euro area statistics.

The first attempt to compile euro area from-whom-to-whom accounts and balance sheets for debt securities relied broadly on national accounts data provided by euro area countries, quarterly general government financial accounts, i.i.p. and securities holdings data. The first three data sources were broadly used to estimate the “exterior of the matrix” (as in the current euro area accounts compilation process), while securities holdings data have been extensively used to estimate the from-whom-to-whom detail (‘interior of the matrix’).

B.o.p./i.i.p. compilers have made an extra effort in the last two years to improve the availability of detailed information for shares and other equity. In particular, annual data are now available with the breakdown of ‘direct investment - equity’ between listed (quoted) and unlisted (unquoted) corporations, as well as ‘of which’ information on mutual fund shares on ‘portfolio investment - equity’. This allows, on the one hand, a perfect breakdown of ‘direct investment – equity’ into its quoted/unquoted components and, on the other hand, the estimation of quoted shares on ‘portfolio investment – equity’ by residual; assuming that unquoted shares are only recorded under ‘direct investment – equity’.

However, the confrontation of these new b.o.p./i.i.p. data with the national accounts and securities holdings data sources did not yet yield satisfactory results. Assuming that data on total euro area issues are quite reliable it means that either the estimates for the rest of the world or the portfolio (holdings) of the resident sectors, or both, are erroneous. Taking into account the simplification introduced in the compilation of the rest of the world, namely that unquoted shares are not recorded in ‘portfolio investment – equity’, one may conclude that the bulk of the imbalance would certainly arise from this fact.

Out of the three instruments for which experimental from-whom-to-whom matrices were developed, mutual funds shares is by far the one with more comprehensive data sources, even overlapping in certain areas. The euro area from-whom-to-whom balance sheets for mutual funds shares were compiled on the basis of a multitude of data sources. The overlapping data sources, in particular as regards total mutual funds shares issued by OFIs, still shows relevant differences between national accounts and investment funds statistics, which need further investigation. The combination of the data sources shows a large imbalance between total holdings by sector (national accounts data) and counterpart who-to-whom information (investment funds and MFI statistics and i.i.p.). This seems to be supported by empirical evidence collected in the context of the b.o.p./i.i.p. net errors and omissions exercise (see section 5c), of a possible underestimation of intra-euro area cross border positions. In this context, the from-whom-to-whom data are quite different from official euro area accounts data, e.g. holdings by households at the end of 2009 are estimated to be around 10% higher in the experimental data.

e. Implementation of the updated international statistical standards

At its sessions in February 2008 and February 2009, the UN Statistical Commission adopted the new System of National Accounts (2008 SNA) as the international statistical standard for national accounts and has encouraged countries to implement it. In August 2009, the Intersecretariat Working Group on National Accounts (ISWGNA) made available an edited version of the 2008 SNA on the project website maintained by the UN Statistics Division (UNSD).²⁶ A printed version is also available since mid-2010. The SNA update was essentially driven by a list of issues for discussion and clarification. Many of these issues were linked to topics related to new financial phenomena, to relevant features of institutional units and how to group them into institutional sectors or sub-sectors. Some focus has been on how to identify financial corporations which are involved in innovative financial intermediation activities like securitisation transactions, securities lending, or repurchase agreements. As many of these are cross-border activities, related issues dealt with the question of how to determine the main residence criteria of a unit.

In the area of balance of payments, the revised IMF Balance of Payments and International Investment Position Manual, 6th edition (BPM6) was published at the beginning of 2009 and the new OECD Benchmark Definition of foreign direct investment (BD4) has been released.²⁷

The revision process to replace the ESA95 is under way. Eurostat's timetable foresees that the ESA 2010 will be adopted by European Parliament and Council in 2012 although preparatory work on its implementation has to start from 2011 onwards so that the new data can be compiled and transmitted by all EU countries as from early 2014. An important step in preparing the coordinated implementation in the EU is also to review the ECB Regulations and Guidelines.

When implementing ESA 2010 work will concentrate on the sub-sectoring of the financial corporations sector, like the identification of sub-sectors such as for securitisation corporations, investment funds or for insurance corporations and pension funds. A second important task will be to reconsider the new breakdown of financial instruments by category, sub-category and sub-position.

7. Conclusions

The publication of the integrated quarterly euro area accounts by institutional sector in 2007 was a major European statistical achievement. It was a major step in a rather long development process, which started back in 1996 following the introduction of ESA95 and the creation of the European Central Bank. Lack of primary data and uncertainty over the merits of the unknown statistical product

²⁶ See <http://unstats.un.org/unsd/nationalaccount/sna2008.asp>. Countries are recommended to use the 2008 SNA as the framework for integrating economic and related statistics and in the international reporting of national accounts.

²⁷ Both manuals are available on the web as <http://www.imf.org/external/pubs/ft/bop/2007/bopman6.htm> and as http://www.oecd.org/document/33/0,3343,en_2649_33763_33742497_1_1_1_1,00.html.

delayed the whole process, which only in 2001 with the publication of the first Table on Financing and Investment took off.

Quarterly euro area accounts are now a well established product in the monetary and economic analysis framework of the ECB. A quarterly Press Release on euro area accounts is made available to the public at large and feeds into the briefing material to the ECB Executive Board. A quarterly box is available in the February, May, August and November issues of the ECB Monthly Bulletin and comprehensive euro area data are disseminated in the statistical section of the Monthly Bulletin, the Statistical Pocket Book (SPB) and the Statistical Data Warehouse (SDW).^{28,29}

The euro area accounts are a rather unique product, which draws on a multitude of data sources from several countries and brings together two institutions in the compilation process. The difficulties inherent to the compilation of statistics for a monetary union are taken to the limit; the euro area accounts are not a simple aggregation of the national accounts of the euro area countries, a number of adjustments are needed to ensure a meaningful statistical product comparable across countries.

The initial (2007) product has already been considerably improved. Euro area produced non-financial assets by institutional sector, total euro area economy produced non-financial assets by main asset type, and households housing wealth, as well as who-to-whom data for loans and deposits, have been added in the course of 2010. Nevertheless, work is not yet complete and major challenges are still to come. This comprises, in particular: the publication of a comprehensive set of accounts at T+90 days fit for monetary policy purposes; who-to-whom detail for securities; the breakdown of other flows into revaluations and other volume changes; and, complete seasonally adjusted euro area accounts.

²⁸ More information available at the ECB website: <http://www.ecb.europa.eu/home/html/index.en.html>.

²⁹ National financial accounts data are also available in the SDW.

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